72nd Joint Annual Meeting & Continuing Education Program

June 23 – 28, 2018

Vancouver, CANADA

Program Schedule, Abstracts, CPC, Hotel Floor Plan
On behalf of the IAOP and AAOMP, it is with enthusiasm that we invite you to Vancouver, Canada for this joint meeting. The scientific component of the meeting will highlight various symposia, lectures, and slide seminars, which will meet our highest expectations of research and scholarship. It is the mission of both the IAOP and AAOMP to advance the science and practice of Oral and Maxillofacial Pathology and this meeting will undoubtedly achieve this aim.

We encourage as many of the attendees as possible, to present their research in either a poster or platform presentation format to further achieve the goals of this congress. The meeting will be held at the Westin Bayshore Hotel. Experience the unbridled energy of downtown Vancouver, BC with a visit to this hotel. Boasting unparalleled views of the mountains, the coastline, and scenic Stanley Park, The Westin Bayshore, Vancouver provides an elegant, restful base from which to explore. The meeting will also provide a number of social events to help foster friendships and potential scientific collaborations. The last joint meeting was in San Francisco in 2008 and the bonds of fellowship formed at that time still exist today, with new bonds surely to be developed with our veteran and younger members. It is therefore a privilege for the IAOP to work with the AAOMP ten years later; and the AAOMP is most appreciative of the opportunity to host our international colleagues.

We look forward to welcoming you to Vancouver.

Dr. WM Tilakaratne                          Dr. Steven Vincent
IAOP President                             AAOMP President
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<th>Year</th>
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<td>1948</td>
<td>Lester R. Cahn*</td>
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<td>Robert J. Gorlin*</td>
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<td>1950</td>
<td>Donald A. Kerr*</td>
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<td>Francis V. Howell*</td>
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<td>1953</td>
<td>Hamilton B.G. Robinson*</td>
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<td>Victor Halperin*</td>
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<td>James C. Adrian*</td>
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<td>1954</td>
<td>Myron S. Aisenberg*</td>
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<td>S. Miles Standish*</td>
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<td>Norman K. Wood</td>
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<td>1958</td>
<td>Charles A. Waldron*</td>
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<td>George E. Garrington*</td>
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<td>Bruce F. Barker</td>
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<td>1960</td>
<td>Robert A. Colby*</td>
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<td>George G. Blozis</td>
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<td>Russell L. Corio*</td>
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<td>1964</td>
<td>Louis S. Hansen</td>
<td>1982</td>
<td>Leon Eisenbud*</td>
<td>2000</td>
<td>Ronald A. Baughman</td>
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*deceased
GENERAL INFORMATION

All of the scientific programs and continuing education programs will be held at the Westin Bayshore in Vancouver, Canada. The meeting is open to all interested individuals.

Information regarding social programs, points of interest and restaurants will be available at the Registration Desk.

The Registration Desk will be in the Bayshore Grand Foyer. The Registration hours are as follows:

- Sunday, June 24: 7:00 a.m. – 5:00 p.m.
- Monday, June 25: 7:00 a.m. – 5:00 p.m.
- Tuesday, June 26: 7:00 a.m. – 5:00 p.m.
- Wednesday, June 27: 7:00 a.m. – 5:00 p.m.
- Thursday, June 28: 7:00 a.m. – 12:00 a.m.

CONTINUING EDUCATION PROGRAM

Two continuing education courses will be held on Sunday, two will be held on Monday and two will be held on Tuesday. Three continuing education courses will be held on Wednesday and one will be held on Thursday. Pre-registration is required.

CONTINUED COMPETENCY ASSURANCE PROGRAM (CCA)

The AAOMP is again offering a Continued Competency Assurance Program. The CCA slides are available daily from 7:00 a.m. to 8:00 p.m. in the Seymour Room Sunday through Wednesday and until 11:00 a.m. on Thursday. Microscopes will be available for the slide review and informal consultations.

SPOUSES’ HOSPITALITY

A continental breakfast will be available Sunday, June 24th thru Wednesday, June 27th from 8:00 a.m. – 10:00 a.m. located in H2 Breakfast 2 for registered spouses/guests.

MESSAGE BOARD and QUESTIONS

Attendees having questions during non-registration hours should leave a message on the message board located by the Registration Desk. If you wish to leave a message for another attendee, you may leave it on the message board or use the Whova app. The AAOMP does not guarantee receipt and/or delivery of the message.

NO SMOKING PLEASE

There is no smoking in any meeting rooms in the Westin Bayshore.

ADA CERP® Continuing Education Recognition Program

The American Academy of Oral and Maxillofacial Pathology is an ADA CERP Recognized Provider.

ADA CERP is a service of the American Dental Association to assist dental professionals in identifying quality providers of continuing dental education. ADA CERP does not approve or endorse individual courses or instructors, nor does it imply acceptance of credit hours by boards of dentistry.

The American Academy of Oral and Maxillofacial Pathology designates this activity for 36 continuing education credits.

OUR SPONSORS/EXHIBITORS AT THIS YEARS MEETING INCLUDE:
Wednesday, June 20
Staff Office
Fraser Room

Thursday, June 21
Staff Office
Fraser Room

Friday, June 22
Staff Office
Fraser Room

Saturday, June 23
7:00 a.m. – 5:00 p.m. (07:00 – 17:00)
Staff Office
Fraser Room

Fellowship Examinee Breakfast
Cypress Room 1

8:00 a.m. – 5:00 p.m. (08:00 – 17:00)
Fellowship Examination
Salon 3

8:00 a.m. – 5:00 p.m. (08:00 – 17:00)
Fellowship Committee Meeting
Oak Room 2

8:00 a.m. – 12:00 p.m. (08:00 – 12:00)
ABOMP Re-Certification Exam
Cypress Room 2

9:00 am – 5:00 pm (09:00 – 17:00)
IAOP Council Meeting
Coquitlam Room

12:00 p.m. – 1:00 p.m. (12:00 – 13:00)
Fellowship Examinees and Committee Luncheon
Cypress Room 1

12:00 p.m. – 7:00 p.m. (12:00 – 19:00)
Council Meeting
Prospect Room

6:30 p.m. - 8:30 p.m. (18:30 – 20:30)
AAOMP & IAOP Joint Council Dinner
International Suite

Sunday, June 24
7:00 a.m. – 5:00 p.m. (07:00 – 17:00)
Registration and Coffee Service
Bayshore Grand Foyer

Monday June 25
7:00 a.m. – 5:00 p.m. (07:00 – 17:00)
Registration and Coffee Service
Bayshore Grand Foyer

7:00 a.m. – 8:00 p.m. (07:00 – 20:00)
CCA Room
Seymour Room

7:00 a.m. – 5:00 p.m. (07:00 – 17:00)
Staff Office
Fraser Room

7:00 a.m. – 5:00 p.m. (07:00 – 17:00)
Table-top displays
Bayshore Grand Foyer

8:00 a.m. – 10:00 a.m. (08:00 – 10:00)
Spouse Breakfast
Marine Room

8:00 a.m. – 11:30 a.m. (08:00 – 11:30)
AAOMP Seminar
Moderator: Dr. Grace Bradley
Speakers: Drs. Martin Hyczka, Iona Leong, Cristina McCord, Catherine Poh, Firoozeh Samim, Marco Magalhaes
Bayshore Ballroom A-C

1:30 p.m. – 5:30 p.m. (13:30 – 17:30)
Scientific Session
Speaker: Dr. Brian Rubin
Topic: Soft tissue and bone sarcomas of the head and neck with emphasis on ancillary studies to include IHC and molecular
Bayshore Ballroom A-C

6:00 p.m. – 8:00 p.m. (18:00 – 20:00)
Welcome Reception
Bayshore Ballroom D-F
8:00 a.m. – 10:00 a.m. (08:00 – 10:00)  
**Spouse Breakfast**  
*Marine Room*

8:00 a.m. – 11:00 a.m. (08:00 – 11:00)  
**Symposium #1**  
*Speakers: Drs. Tuula Salo, Dan Lambert, Toshinari Mikami, Gareth Thomas*  
*Topic: Tumour Microenvironment*  
*Bayshore Ballroom A-C*

11:30 a.m. – 12:45 p.m. (11:30 – 12:45)  
**Speaker & Education Committee Luncheon**  
*MacKenzie Room*

12:00 p.m. – 4:30 p.m. (12:00 – 16:30)  
**Poster Presenters Set-up**  
*Bayshore Ballroom D-F*  
*You must have your posters up by 4:30 pm (16:30)*

1:00 p.m. – 4:00 p.m. (13:00 – 16:00)  
**Founders Seminar**  
*Speaker: Dr. Bob Robinson*  
*Topic: Challenging Cases in Head and Neck Pathology*  
*Bayshore Ballroom A-C*

4:30 p.m. – 6:30 p.m. (16:30 – 18:30)  
**Poster Presentation Session #1**  
*Bayshore Ballroom D-F*  
*Presenters must be at their posters for duration of this session*

6:00 p.m. – 7:30 p.m. (18:00 – 19:30)  
**Canadian Academy of Oral Pathology Reception**  
*Oak Room 1*

6:00 p.m. – 7:30 p.m. (18:00 – 19:30)  
**ROUR Reception**  
*Oak Room 2*

6:00 p.m. – 7:30 p.m. (18:00 – 19:30)  
**Indiana Reception**  
*Coquitlam Room*

6:00 p.m. – 7:30 p.m. (18:00 – 19:30)  
**Emory Reception**  
*Cypress Room 2*

6:00 p.m. – 7:30 p.m. (18:00 – 19:30)  
**OSU Alumni Reception**  
*Arbutus Room*

6:30 p.m. – 9:00 p.m. (18:30 – 21:30)  
**NY Hospital Queens – Oral Pathology Lab Reception**  
*Cypress Room 1*

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**Tuesday, June 26**

7:00 a.m. – 5:00 p.m. (07:00 – 17:00)  
**Registration and Coffee Service**  
*Bayshore Grand Foyer*

7:00 a.m. – 8:00 p.m. (07:00 – 20:00)  
**CCA Room**  
*Seymour Room*

7:00 a.m. – 5:00 p.m. (07:00 – 17:00)  
**Staff Office**  
*Fraser Room*

7:00 a.m. – 5:00 p.m. (07:00 – 17:00)  
**Table-top displays**  
*Bayshore Grand Foyer*

7:00 a.m. – 9:00 a.m. (07:00 – 09:00)  
**AAOMP Fellows Business Meeting**  
*Bayshore Ballroom A-C*

8:00 a.m. – 9:00 a.m. (08:00 – 09:00)  
**IAOP Business Meeting**  
*MacKenzie Room*

8:00 a.m. – 10:00 a.m. (08:00 – 10:00)  
**Spouse Breakfast**  
*Marine Room*

9:00 a.m. – 12:00 p.m. (09:00 – 12:00)  
**Symposium #2**  
*Speaker: Dr. Rossitza Lazova*  
*Topic: Dermatologic Tumors for Oral and Maxillofacial Pathologists (Tumors of the face etc.)*  
*Bayshore Ballroom A-C*

12:00 p.m. – 1:30 p.m. (12:00 – 13:30)  
**Program Directors’ Luncheon**  
*MacKenzie Room*

2:00 pm – 3:00 pm (14:00 – 15:00)  
**IAOP President’s Prize Lecture**  
*Speaker: Dr. K W Chang*  
*Topic: Defining the Role of miR-31 in Oral Squamous Cell Carcinoma*  
*Bayshore Ballroom A-C*
3:00 p.m. – 4:30 p.m. (15:00 – 16:30)
**Spouse Reception**
*Marine Room*

3:30 p.m. – 6:00 p.m. (15:30 – 18:00)
**Oral Essays/Free Papers #1**
*Stanley Park Ballroom – Salon 1*

3:30 p.m. – 6:00 p.m. (15:30 – 18:00)
**Oral Essays/Free Papers #2**
*Stanley Park Ballroom – Salon 2*

3:30 p.m. – 6:00 p.m. (15:30 – 18:00)
**Oral Essays/Free Papers #3**
*Stanley Park Ballroom – Salon 3*

3:30 p.m. – 6:00 p.m. (15:30 – 18:00)
**Oral Essays/Free Papers #4**
*Cypress Room 1 & 2*

6:30 p.m. – 8:30 p.m. (18:30 – 20:30)
**Poster Session #2**
*Bayshore Ballroom D-F*
*Presenters must be at their posters for duration of this session*

7:30 p.m. – 9:30 p.m. (19:30 – 21:30)
**Resident’s Reception**
*Bayshore Grand Foyer*

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**Wednesday, June 27**

7:00 a.m. – 5:00 p.m. (07:00 – 17:00)
**Registration and Coffee Service**
*Bayshore Grand Foyer*

7:00 a.m. – 8:00 p.m. (07:00 – 20:00)
**CCA Room**
*Seymour Room*

7:00 a.m. – 5:00 p.m. (07:00 – 17:00)
**Staff Office**
*Fraser Room*

7:00 a.m. – 5:00 p.m. (07:00 – 17:00)
**Table-top displays**
*Bayshore Grand Foyer*

7:00 a.m. – 8:00 a.m. (07:00 – 08:00)
**Education/AV Committee Breakfast**
*Prospect Room*

8:00 a.m. – 10:00 a.m. (08:00 – 10:00)
**Spouse Breakfast**
*Marine Room*

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8:00 a.m. – 11:00 a.m. (08:00 – 11:00)
**Symposium #3**
*Speaker: Dr. Thomas Underhill*
*Topic: Case studies Involving Head and Neck Radiology*
*Bayshore Ballroom A-C*

11:00 a.m. – 12:00 p.m. (11:00 – 12:00)
**Lab Directors Meeting**
*15-20 people*
*Salon 1*

11:30 a.m. – 12:30 p.m. (11:30 – 12:30)
**ADEA Meeting**
*Salon 2*

11:30 a.m. – 1:00 p.m. (11:30 – 1:00)
**Past President’s Luncheon**
*Marine Room*

1:30 p.m. – 3:00 p.m. (13:30 – 15:00)
**Plenary Keynote**
*Speaker: Dr. Nishant Agrawal*
*Topic: Molecular alterations in head and neck cancer/salivary gland tumors/thyroid cancer with emphasis on diagnosis and treatment*
*Bayshore Ballroom A-C*

3:30 p.m. – 5:30 p.m. (15:30 – 17:30)
**Symposium #4**
*Speakers: Drs. Kristiina Heikinheimo, Rob West, Mary MacDougall, Ricardo Gomez*
*Topic: Odontogenic Tumors: Molecular Pathology to Personalized Medicine*
*Bayshore Ballroom A-C*

7:00 p.m. – 7:30 p.m. (19:00 – 19:30)
**Gala Reception**
*Bayshore Grand Foyer*

7:30 p.m. – 11:00 pm (19:30 – 23:00)
**Gala Dinner**
*Bayshore Ballroom A-C*

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**Thursday, June 28**

7:00 a.m. – 12:00 p.m. (07:00 – 12:00)
**Registration and Coffee Service**
*Bayshore Grand Foyer*

7:00 a.m. – 11:00 a.m. (07:00 – 11:00)
**CCA Room**
*Seymour Room*

7:00 a.m. – 12:00 p.m. (07:00 – 12:00)
**Staff Office**
*Fraser Room*
7:00 a.m. – 12:00 p.m. (07:00 – 12:00)
**Table-top displays**
Bayshore Grand Foyer

8:00 a.m. – 12:00 p.m. (08:00 – 12:00)
**CPC**
*Contributors and Discussants from across both organizations*
*Bayshore Ballroom A-C*
Plan now to attend the 73rd AAOMP Annual Meeting & Continuing Education Program

in

Miami, Florida
Intercontinental Miami
June 7 – June 12, 2019

FUTURE AAOMP ANNUAL
Meeting & Continuing
Education Program Dates

2019
Miami, FL
Intercontinental Miami
June 7 – 12, 2019

American Academy of Oral
and Maxillofacial Pathology
401 W. St. Charles Road
Lombard, Illinois 60148
USA

Toll Free Tel: (888) 552-2667
Tel: (630) 510-4552
Fax: (630) 510-4501
Email: info@aaomp.org
Poster Program #1
Monday, June 25, 2018
4:30pm – 6:30pm
(16:30 – 18:30)

Poster Program #2
Tuesday, June 26, 2018
6:30pm – 8:30pm
(18:30 – 20:30)

Essay Program
Tuesday, June 26, 2018
3:30pm – 6:00pm
(15:30 – 18:00)
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Ms. Meri Sieviläinen, Dr. Fabricio Passador-Santos, Ms. Rabeia Almahmoudi, Mr. Solomon Christopher, Dr. Maria Siponen, Dr. Sanna Toppila-Salmin, Prof. Tuula Salo, Dr. Ahmed Al-Samadi

### #2 KNIEST SYNDROME: CASE REPORT AND REVIEW OF LITERATURE
Dr. Tania Jhamb, Dr. Hayat Masood, Dr. Emile Rossouw

### #3 VALIDATION OF A FOUR PROTEIN SIGNATURE FOR DETERMINING LYMPH NODE METASTASIS AND SURVIVAL IN ORAL SQUAMOUS CELL CARCINOMA IN 3 MAIN DIAGNOSTIC CENTERS IN MALAYSIA
Dr. Fairuz Abdul Rahman, Dr. Anand Ramanathan, Dr. Lau Shin Hin, Dr. George, Boey Teik Foo, Prof. Sok Ching Cheong, Dr. Noor Akmar Nam, Prof. Rosnah Mohd Zain

### #4 Down-expression of tetraspanin CD9 is a sensitive marker for identifying pre-malignant changes in the oral epithelium
Prof. Marilena Vered, Dr. Ido Georgy, Mrs. Sara Hamer, Prof. Amos Buchner, Dr. Ayelet Zlotogorski-hurvitz

### #5 High throughput sequencing reveals circadian rhythm gene RORα is cooperatively suppressed by multiple microRNAs in oral squamous cell carcinoma
Prof. Jiali Zhang, Dr. Xueqing Zheng, Dr. Yanan Sun, Dr. Yuemei Pan

### #6 Comparative study of Ki67 and MCM4-6 complex in ameloblastoma and unicystic ameloblastoma
Ms. Vanesa Pereira-Prado, Ms. Delmira Apellaniz, Prof. Adalberto Mosqueda Taylor, Dr. ROGELIO GONZALEZ-GONZALEZ, Prof. Nelly Molina Frechero, Ms. Gabriela Vigil, Ms. Estefania Sicco, Prof. Ronell Bologna-Molina

### #7 Association of MAPK/ERK pathway activation with KRAS mutations in Adenomatoid Odontogenic Tumors
Prof. Ronell Bologna-Molina, Dr. TOSHINARI MIKAMI, Prof. Adalberto Mosqueda Taylor, Dr. Ikuko Ogawa, Prof. Takashi Takata, Prof. Yasunori Takeda

### #8 Clinicopathological significance of expression of miR-26a, miR-107, miR-125b and miR-203 in head and neck squamous cell carcinomas
Dr. Wilfredo Alejandro González-Arriagada, Dr. Pablo Olivero, Mrs. Belén Rodríguez, Dr. Carlo Lozano-burgos, Dr. Carine Ervolino De Oliveira, Dr. Ricardo Della Coletta

### #9 Influence of radiation dose in collagen IV and MMP20 immunoexpression and the tooth immediate adhesive properties
Dr. Wilfredo Alejandro González-Arriagada, Dr. Issis Luque-Martinez, Dr. Miguel Ángel Muñoz, Dr. Eduardo Couve

### #10 The Pararadicular Radiolucency with Viable Pulp: Clinicopathologic Features of 21 Cemental Tears
Dr. Hiba Qari, Dr. Jerry Bouquot
#11 A Pilot Study of Select Cell Cycle Markers in Glandular Odontogenic Cysts
Dr. Yingci Liu, Dr. Elizabeth Ann Bilodeau

#12 Minimally-invasive oral exfoliated cells study for premalignant lesions using Raman microspectroscopy
Ms. ISHA BEHL, Dr. Genocy Calado, Ms. Alison Malkin, Dr. Sheila Galvin, Dr. Stephen Flint, Dr. Marina Leite Pimentel, Prof. Hugh J Byrne, Prof. Fiona Lyng

#13 Hyperkeratosis of the oral mucosa related to use of Goro: A case report
Dr. Soulafa Almazrooa, Dr. Nada Binmadi, Dr. Hani Mawardi

#14 LANGERHANS CELLS IN THE EPITHELium OF UNICYSTIC AMELOBLASTOMAS
Dr. Letlhogonolo Masilo

#15 The origins of odontogenic keratocyst based on the distribution of melanocytes
Dr. Madoka Isomura, Dr. Nobuaki Sato, Dr. Ryoko Kawai, Ms. Waka Yoshida, Dr. Yoshihiko Sugita, Dr. Katsutoshi Kubo, Dr. Yoshihiro Suzumura, Prof. Hatsuhiko Maeda

#16 TSH and TSHR are not expressed in oral lichen planus lesions of patients with hypothyroidism
Dr. Mari Vehviläinen, Dr. Abdelhakim Salem, Prof. Tuula Salo, Dr. Maria Siponen

#17 Epithelioid hemangioendothelioma occurring in the parotid gland: a case report and literature review
Dr. Anne McLean-Holden, Dr. Yi-Shing Lisa Cheng, Dr. Lance Oxford, Dr. He Huang

#18 Plasmablastic lymphoma as the presenting sign of HIV infection
Dr. Victoria Woo, Mr. Christopher T. Mathew, Dr. Edward Herschaft, Dr. Christopher D. Ake, Dr. Ronald J. Knoblock

#19 A Retrospective Study of Oral Lesions Histopathologically Diagnosed at Faculty of Dentistry, Srinakharinwirot University, Thailand
Dr. Aroonwan Lam-ubol, Dr. Sorasun Rungsiyanont

#20 Gingival and Alveolar Mucosal Overgrowths in a University Biopsy Service in Saudi Arabia
Dr. Ibrahim O Bello, Dr. Ahmed Qannam

#21 Epulis Fissuratum: Comparison of Clinical Impression to Histopathologic Diagnosis
Dr. Tanya Wright, Dr. Nagamani Narayana

#22 Iron deficiency predisposes to oral mucosa alterations and Candida infection
Prof. Shin-Yu Lu

Dr. Velia Ramirez-Amador, Dr. Gabriela Anaya Saavedra, Dr. Brenda Crabtree-Ramírez, Dr. Florentino Badial Hernandez

#24 Oral Candida colonization and infection in HIV-infected patients in a referral center in Mexico City
Dr. Martha Estela García Sánchez, Dr. Velia Ramirez-Amador, Dr. Gabriela Anaya Saavedra, Dr. María Esther Irigoyen Camacho, Dr. Luis Octavio Sánchez Vargas

#25 Lymphomas with oral manifestations – 18 cases in our institution and review of literature
Dr. Chih-Huang Tseng, Dr. Yuk-Kwan Chen, Dr. Wen-chen Wang, Dr. Ching-yi Chen, Dr. Edward Chengchuan KO
#26 P120 catenin expression and its correlation with E-cadherin in salivary gland neoplasms
Dr. Ekarat Phattarataratip, Ms. Ratanatip Ratanapitak, Ms. Nicha Kositskittiwanit, Mr. Pruch Kajornkiatkul, Ms. Pataraporn Yeunyong

#27 SINONASAL SPINDLE CELL CARCINOMA ARISING FROM INVERTED PAPILLOMA IN A PATIENT WITH HISTORY OF RADIOTHERAPY FOR SINONASAL SQUAMOUS CELL CARCINOMA
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#28 Salivary Duct Carcinoma, a Case Report
Ms. Laura Riverón-Negrete, Dr. Ana Lirio Ramírez-Ávila, Dr. Roberto Onner Cruz Tapia, Dr. Javier Portilla-Robertson, Dr. Elba Leyva-Huerta, Mr. Osvaldo Soto-González

#29 Clear Cell Ameloblastic Carcinoma. A Case Report
Ms. Celina García-Ramos, Dr. Roberto Onner Cruz Tapia, Dr. Javier Portilla-Robertson

#30 Extranodal NK/T-cell lymphoma, nasal-type in Guatemala: a clinicopathologic analysis of 76 cases
Ms. Celeste Sánchez-Romero, Dr. Roman Carlos, Dr. Oslei Paes De Almeida

#31 Oral microbiota in xerostomia patients-a preliminary report
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#32 MASPIN EXPRESSION IN PLEOMOPHIC ADENOMA, POLYMORPHOUS LOW GRADE ADENOCARCINOMA AND ADENOCYSTIC ADENOCARCINOMA OF SALIVARY GLANDS SEEN AT THE LAGOS UNIVERSITY TEACHING HOSPITAL, LAGOS, NIGERIA.
Dr. Olajide Akeju, Dr. Olajumoke Effiom, Prof. Adekunbiola Banjo, Prof. Onatolu Odukoya

#33 Analysis of Salivary glutathione and selenium in high risk and oral cancer patients seen at Lagos University Teaching Hospital, Lagos, Nigeria
Dr. Remilekun Oluwakuyide, Dr. Olajumoke Effiom, Prof. Osaretin Eubehi, Prof. Onatolu Odukoya

#34 Congenital-Infantile Spindle Cell and Sclerosing Rhabdomyosarcomas: Unique Variants Defined by Molecular Features
Dr. Catherine Flaitz, Dr. John Hicks

#35 Factors influencing Odontogenic Maxillofacial Infections and the Economic Impact at a UK Hospital
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#36 EGR1 is negatively associated with HNSCC cell invasion via inhibition of MMP9 and MDM2
Prof. So-Young Choi, Prof. Su-hyung Hong, Ms. So Young Choi, Ms. Sung-min Kang

#37 Exfoliative cytology as a complementary tool for oral diagnosis: cost-effectiveness or time lost?
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#38 Diagnostic concordance among Pathologists interpreting oral mucosal biopsies from individuals affected by GVHD
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Ms. Bruna Coura, Dr. Silvia Sousa, Dr. Vanessa Bernardes, Dr. Josiane Franca, Prof. Hélder Antônio Rebelo Pontes, Dr. Danyel Perez, Dr. Ricardo Albuquerque Junior, Dr. Manoela Martins, Prof. Aline Batista, Dr. Marina Diniz, Dr. Ricardo Gomez, Dr. Carolina Gomes

CORRELATION OF HPV16 DETECTION AND P16 EXPRESSION IN ORAL SQUAMOUS CELL CARCINOMA
Dr. Smitha Thammaiah

Wnt/β-catenin signaling pathway regulates tumor-initiating cells in head and neck squamous cell carcinoma
Dr. Chia-Cheng Li, Dr. Cheng-chia Yu, Dr. Reshma Menon, Ms. Ingrid Carvo, Dr. Zhe Li

Adenoid ameloblastoma: A series of 5 tumors
Dr. Elizabeth Ann Bilodeau, Dr. Raja Seethala

Primary Intraosseous Soft Tissue Myoepithelioma of the Mandible: Case Report and Literature Review
Dr. Lama Alabdulaaly, Dr. Sook Bin Woo

Prognostic classifier for Oral Potentially Malignant Disorders: An integrated histopathological and molecular approach.
Dr. Hans Prakash SATHASIVAM, Prof. Philip Sloan, Dr. Ralf Kist, Dr. Max Robinson
Somatic driver mutations in Oral and Sinonasal Mucosal Melanoma. A Referral Centre Experience in Mexico City

Dr. Jessica Lissete Maldonado Mendoza, Dr. Velia Ramirez-Amador, Dr. Gabriela Anaya Saavedra, Dr. Erika Ruiz García, Dr. Héctor Maldonado Martínez, Dr. Edith Fernández Figueroa, Dr. Abelardo Meneses García

Application of Deep Learning Algorithms in Detection of Mitotic Events in Oral Squamous Cell Carcinoma Using Cellphone Images

Dr. Amber Kiyani, Dr. Hassan Aqeel, Mr. Asjid Tanveer, Mr. Wajahat Nawaz, Dr. Syed Ali Khurram

Stratification of Head and Neck Squamous cell carcinoma using combined analysis of Programmed death ligand 1 and Semaphorin 4D expression by the inflammatory cells in the tumor microenvironment

Dr. Rania Younis, Dr. Sonia Sanadhya, Dr. Ioana Ghita, Dr. Ingý H. Elkomary, Dr. Haiyan Chen

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Dr. Rong-Hui Xia, Dr. Chun-ye Zhang, Dr. Li-zhen Wang, Dr. Yu-hua Hu, Dr. Zhen Tian, Mr. Ting Gu, Mrs. Lei Li, Mrs. Ying Zhang, Mr. Jia-jun Qian, Prof. Jiang Li

Antioxidant rich tropical herbs to combat Areca-Nut induced OPMDs

Dr. Rasika Illeperuma, Mr. Kasun Bandara, Dr. DO KYEONG KIM, Prof. Samadarani Siriwardena, Prof. Ruwan Jayasinghe, Prof. Jin Kim, Prof. Wanninayake Tilakaratne

microRNA-222 and microRNA-203 signatures in oral squamous cell carcinoma: potential role in progression and as therapeutic targets

Dr. Madhura M G

Ladinin-1 is involved in cell motility and proliferation of oral squamous cell carcinoma cells

Dr. Tatsuya Abe, Dr. Manabu Yamazaki, Dr. Satoshi Maruyama, Prof. Yoichi Ajioka

Interleukin 1 receptor antagonist (IL-1RA) biology in oral epithelium, oral dysplasia and oral squamous cell carcinoma

Mr. Sven Niklander, Ms. Hannah Crane, Dr. Dan Lambert, Prof. Keith Hunter

Extraparenchymal extension, lymph node involvement, and a higher Ki67 index were high risk factors for worse prognosis in conventional mammary analogue secretory carcinoma

Dr. Jingjing Sun, Dr. Zhen Tian, Dr. Ronghui Xia, Dr. Li-zhen Wang, Dr. Chun-ye Zhang, Dr. Yu-hua Hu, Prof. Jiang Li

Role of matrix metalloproteinases in tumor growth and invasion; focus on Basal cell carcinoma and Squamous cell carcinoma of head and neck

Dr. rabia safdar, Prof. Nadia Naseem, Dr. Varda Jalil, Prof. Abdul Hanan Nagi

THE EXPRESSION OF MAML2 GENE REARRANGMENT IN CASES OF GLANDULAR ODONTOGENIC CYSTS AND MUCOEPIDERMOID CARCINOMAS WITH OVERLAPPING HISTOLOGIC FEATURES

Dr. Rekha Reddy, Dr. Liya Davidova, Dr. Mohammed Islam, Dr. Indraneel Bhattacharyya, Dr. Donald Cohen, Dr. Sarah Fitzpatrick

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Dr. Anupama Mukherjee, Dr. Anita Spadigam, Dr. Anita Dhupar, Dr. Karla Carvalho, Dr. Shaheen Syed
Plaque-type lichen planus or leukoplakia with lymphocytic host response?  
*Dr. Ibrahim Akeel, Dr. Sook Bin Woo*

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*Dr. Vimi Mutilak, Dr. Kristin McNamara, Dr. John Draper, Dr. John Kalmar*

Determining the inflammatory response in oral squamous cell carcinoma by saliva analysis  
*Dr. Catherine Laliberte, Ms. Denise Lopez Eymael, Dr. Grace Bradley, Dr. Marco Magalhaes*

CHRONIC ULCERATIVE STOMATITIS: A LICHENOID OR VESICULOBULLOUS DISEASE?  
*Dr. Rekha Reddy, Dr. Sarah Fitzpatrick, Dr. Liya Davidova, Dr. Indraneel Bhattacharyya, Dr. Donald Cohen, Dr. Mohammed Islam*

IMMUNOHISTOCHEMICAL ANALYSIS OF INFLAMMATORY RESPONSE IN VERRUOCOUS CARCINOMA COMPARED TO CONVENTIONAL ORAL SQUAMOUS CELL CARCINOMA  
*Dr. Liya Davidova, Dr. Rekha Reddy, Dr. Sarah Fitzpatrick, Dr. Indraneel Bhattacharyya, Dr. Donald Cohen, Dr. Mohammed Islam*

Oral Syphilis: A Report of Two Cases and a Literature Review of This Re-Emerging Entity  
*Dr. Richard J. Vargo, Dr. Elizabeth Ann Bilodeau*

ODONTOGENIC MYXOMA: A 23-YEAR RETROSPECTIVE SERIES OF 38 CASES  
*Dr. Abdulaziz Banasser, Dr. Indraneel Bhattacharyya, Dr. Sarah Fitzpatrick, Dr. Donald Cohen, Dr. Mohammed Islam*

IMMUNOHISTOCHEMICAL EXPRESSION OF EZH2 IN ATYPICAL PAPILLARY EPITHELIAL PROLIFERATIONS OF THE ORAL CAVITY: A POTENTIAL MARKER FOR MALIGNANT TRANSFORMATION  
*Dr. Faraj Alotaiby, Dr. Sarah Fitzpatrick, Dr. Mohammed Islam, Dr. Indraneel Bhattacharyya, Dr. Donald Cohen*

Inter-observer Variability among Pathologists in the Interpretation of Lesions of Proliferative Verrucous Leukoplakia Spectrum: A Collaborative Pilot Study  
*Dr. Jasbir Upadhyaya, Dr. Donald Cohen, Dr. Indraneel Bhattacharyya, Dr. Mohammed Islam, Dr. James Lewis, Dr. John Wright, Dr. Lester Thompson, Dr. Susan Muller, Dr. Elizabeth Ann Bilodeau, Dr. Jinping Lai, Dr. Marino Leon, Dr. Ricardo Padilla, Dr. Justin Bishop, Dr. Raja Seethala, Dr. Roman Carlos, Dr. Sarah Fitzpatrick*

Salivary Gland Anlage Tumor: Molecular Profiling Sheds Light on a Morphologic Question  
*Dr. Scott Peters, Dr. Andrew Turk*

Ameloblastoma Arising in Odontogenic Keratocyst: Report of Four Rare Cases, Immunohistochemical Analysis and Review of Literature  
*Dr. Moni Ahmadian, Dr. Paul Freedman, Dr. Renee Reich*

CLINICAL ORAL PATHOLOGY CONSULTS IN A US DENTAL SCHOOL: A RETROSPECTIVE ANALYSIS OF UTILIZATION AND EFFICACY  
*Dr. Liya Davidova, Dr. Rekha Reddy, Dr. Sarah Fitzpatrick, Dr. Indraneel Bhattacharyya, Dr. Donald Cohen, Dr. Mohammed Islam*
HPV DOWN-REGULATES THE STEM CELL MARKER CD44 IN VIRAL-RELATED ORAL EPITHELIAL DYSPLASIA AND HNSCC
Mr. Jordan Bolger, Dr. Prokopios Argyris, Ms. Christine Goergen, Dr. Ali Khammanivong, Dr. Mark Herzberg, Dr. Erin Dickerson, Dr. Raj Gopalakrishnan

USP6 gene rearrangement testing of gnathic aneurysmal bone cysts: a multicenter analysis of ten cases
Dr. Mark Mintline, Dr. Molly Smith, Dr. Sarah Fitzpatrick, Dr. Paras Patel, Dr. Harvey Kessler, Dr. Kristin McNamara, Dr. Elizabeth Ann Bilodeau, Dr. Raja Seethala, Dr. Donald Cohen, Dr. Julia Bridge, Dr. John Reith

Genetic Polymorphism of tumor necrosis factor alpha (TNF-α) and tumor necrosis factor beta (TNF-β) genes and risk of oral pre cancer and cancer.
Dr. Shalini Gupta, Dr. Omprakash Gupta, Dr. Shaleen Chandra

The “old sailors “ illness makes a return
Dr. Suma Sukumar, Prof. Hedley Coleman

The Role of Epigenetic and Epistatic Interactions in the Pathogenesis of Oral Submucous Fibrosis
Prof. Raghu Radhakrishnan, Dr. Mohit Sharma

Ameloblastic fibro-odontoma: A distinct entity
Dr. Molly Smith, Dr. Craig Fowler, Dr. Indraneel Bhattacharyya, Dr. Rekha Reddy, Dr. Douglas Damm

GENETIC POLYMORPHISM AND GENE EXPRESSION OF PI3K GENE IN AMELOBLASTOMA
Prof. AADITHYA B URS, Dr. Hanspal Singh, Prof. Mahesh Verma

Plasma cell gingivitis due to cosmetics related Iodopropynyl Butylcarbamate (IPBC) allergy in a teenage female patient masking as desquamative gingivitis.
Dr. Sonia Sanadhya, Dr. Ronald Brown, Dr. John Basile, Dr. Rania Younis, Dr. Roy Eskow

RAMAN SPECTRAL STUDY OF SALIVA: A NEW TOOL FOR DETECTION OF MALIGNANT AND PREMALIGNANT ORAL LESIONS
Dr. Genecy Calado, Ms. ISHA BEHL, Dr. Marina Leite Pimentel, Dr. Sheila Galvin, Dr. Stephen Flint, Prof. Hugh J Byrne, Prof. Fiona Lyng

Non-habit related Oral squamous cell carcinoma: possible etiologic factors and probable prevention in Indian scenario
Prof. Susmita Saxena, Prof. Sanjeev Kumar

Investigation of foreign materials in gingival biopsies: a clinicopathologic, energy-dispersive x-ray microanalysis, and in vitro study
Dr. Leticia Ferreira, Dr. Hsin-Hsin Peng, Dr. Darren Cox, Dr. David W. Chambers, Mrs. Avni Bhula, Dr. David Ojcius, Dr. John D. Young, Dr. Erivan Ramos-Junior, Dr. Ana Morandini

Odontogenic keratocyst - The role of PTCH1 and Hedgehog signaling in its pathogenesis
Prof. Tiejyun Li, Mr. Jianyuan Zhang
Poster Program #1
Monday, June 25, 2018
4:30pm - 6:30pm
(16:30 - 18:30)

Poster Program #2
Tuesday, June 26, 2018
6:30pm - 8:30pm
(18:30 - 20:30)
#1 Immune Checkpoints Indoleamine 2,3-Dioxygenase 1 and Programmed Death-Ligand 1 in Oral Mucosal Dysplasia

Monday, 25th June - 00:00 - Poster Session Available from 25th (16:30-18:30) - 26th (18:30-20:30) June 2018 - Bayshore Ballroom D-F - Poster - Abstract ID: 28

Ms. Meri Sieviläinen (University of Helsinki), Dr. Fabricio Passador-Santos (São Leopoldo Mandic Research Centre), Ms. Rabeia Almahmoudi (University of Helsinki), Mr. Solomon Christopher (University of Helsinki), Dr. Maria Siponen (Kuopio University Hospital), Dr. Sanna Toppila-Salmi (University of Helsinki), Prof. Tuula Salo (University of Helsinki), Dr. Ahmed Al-Samadi (University of Helsinki)

Objectives. Oral mucosal dysplasia is a potentially malignant disorder that is associated with risk of transformation to carcinoma. During malignant transformation, dysplastic cells escape from immune-mediated destruction. We hypothesized that adaptive immunity is inhibited by activation of distinct immune checkpoint molecules, such as indoleamine 2,3-dioxygenase 1 (IDO1) and programmed death-ligand 1 (PD-L1). We collected 64 oral dysplasia samples from 47 patients. Nine biopsies from alveolar mucosa during wisdom teeth extractions were used as healthy controls. Tissue samples were stained and scored for IDO1 and PD-L1. Additionally, dysplasia grades and inflammatory cell infiltration were evaluated. Nine patients were followed up to 36 months to evaluate dysplasia progression, inflammation, and immune checkpoint molecule expression.

Findings. Dysplastic epithelium had significantly lower IDO1 expression than that of healthy controls. Cells positive for PD-L1 in the lamina propria were mainly in dysplastic samples and seldom in healthy controls. Dysplasia grade associated negatively with epithelium IDO1 and positively with IDO1 and PD-L1 expression in the lamina propria. There was a positive association between dysplasia grade and level of inflammatory cell infiltration. During follow-up, dysplasia grade, inflammatory cell infiltration, and the immune checkpoint expression fluctuated over time.

Conclusions. The immune checkpoint molecules IDO1 and PD-L1 are modulated during oral epithelial dysplastic changes and their expression is associated with inflammatory cell infiltration in the lamina propria. As immune checkpoint molecule expression fluctuates over time, these molecules are not useful as biomarkers for oral mucosal dysplasia progression.
Background: Kniest syndrome (dysplasia) is a rare autosomal dominant chondrodysplasia that is characterized by distinct musculoskeletal and craniofacial irregularities. These abnormalities result from a mutation of the collagen type II gene (COL2A1) resulting in an abnormal type II collagen product. Craniofacial abnormalities seen in this syndrome include prominent eyes, flat nasal bridge, cleft palate, midface anomalies, tracheomalacia, and hearing loss. This report illustrates a case of Kniest syndrome with severe dentoskeletal malformation with cleft palate treated at Eastman Institute for Oral Health. In addition, the report also outlines clinical, histopathological and radiographic findings of the condition with a review of literature of Kniest syndrome. Method: Case study of a 16 year old male with a history of Kniest syndrome presented to the Orthodontic clinic seeking treatment for misaligned teeth. The patient showed clinical features of this syndrome which included dwarfism, severe midface hypoplasia, flattened and rounded face with prominent eyes and nasal atresia. Patient had a history of cleft palate repair. Intraoral findings included severe gingival hyperplasia, high arched palate and abnormal dentoalveolar development. Conclusion: Kniest syndrome (dysplasia) is a rare chondrodysplasia with differential diagnosis that can include Spondyloepiphysial dysplasia, Spondyloepimetaphyseal and Metatropic dwarfism. In addition to genetic testing, distinct radiographic features and histopathological studies are crucial in determining the proper diagnosis of the condition.
#3 VALIDATION OF A FOUR PROTEIN SIGNATURE FOR DETERMINING LYMPH NODE METASTASIS AND SURVIVAL IN ORAL SQUAMOUS CELL CARCINOMA IN 3 MAIN DIAGNOSTIC CENTERS IN MALAYSIA

Monday, 25th June - 00:00 - Poster Session Available from 25th (16:30-18:30) -26th (18:30-20:30) June 2018 - Bayshore Ballroom D-F - Poster - Abstract ID: 50

Dr. fairuz abdul rahman (University of Malaya), Dr. Anand Ramanathan (University of Malaya), Dr. Lau Shin Hin (Institute for Medical Research, Malaysia), Dr. George, Boey Teik Foo (Queen Elizabeth Hospital, Kota Kinabalu, Sabah), Prof. Sok Ching Cheong (Cancer Research Malaysia), Dr. Noor Akmar Nam (Universiti Sains Islam Malaysia), Prof. Rosnah Mohd Zain (MAHSA University; Oral Cancer Research and Coordinating Centre, University of Malaya)

Introduction: Despite advances in screening and detection tools, the overall accuracy for current pre-operative assessment of regional lymph node (LN) metastasis is still limited with low sensitivity (70%) having a false negative rate of 30%. Objectives: To validate the previous study (Zanaruddin et al. 2013) that has identified 4-protein signature (EGFR, HER2/neu, LAMC2 and RHOC) in primary oral squamous cell carcinoma (OSCC) that could reliably distinguishes patients with and without LN metastasis. Method: A total of 83 cases of OSCC samples, their socio-demographic and clinic-pathologic data were collected from three centers. Four proteins (EGFR, HER2/neu, LAMC2 and RHOC) expression were evaluated using immunohistochemistry based on the intensity and percentage of staining. Results: All four proteins evaluated, were found to be significantly associated with the presence of LN metastasis. EGFR, HER2/neu, LAMC2 showed high expression whereas RHOC showed low expression with LN metastasis. The cutoff point of at least four proteins with cumulative score of 3 would reflect the best sensitivity and specificity. The 4-protein signature showed sensitivity of 90.1% and specificity of 64.1% and prognostic accuracy of 77.5% in correlation with LN metastasis in general for an overall 83 OSCC samples and in particular for each set of OSCC samples from each center demonstrates the robustness and accurateness of this 4-protein signature in predicting LN metastasis. Kaplan-Meier survival curves showed significant survival probability difference between two groups in 4-protein signature for overall 83 samples. Conclusions: Four protein signature have been shown to have potential to be used as prognostic indicators of LN metastasis in OSCC. It can be an useful prognostic tool in the clinical setting to facilitate the prediction of LN metastasis. This study also concluded that the survival probability is inconclusive. However, it is found that the 4-protein signature has shown a trend for prediction of overall survival.
#4 Down-expression of tetraspanin CD9 is a sensitive marker for identifying pre-malignant changes in the oral epithelium

Prof. Marilena Vered (Tel Aviv University), Dr. Ido Georgy (Private practice), Mrs. Sara Hamer (Tel Aviv University), Prof. Amos Buchner (Tel Aviv University), Dr. Ayelet Zlotogorski-hurvitz (Tel Aviv University)

**Objectives**: Tetraspanins, cell surface proteins that mediate cell-cell and cell-extracellular matrix interactions, are capable to modify cell motility, thus being potential diagnostic markers in pre-malignant conditions. We examined the immunohistochemical expression of tetraspanins CD9, CD81 and CD63 in normal oral mucosa as well as in inflamed, dysplastic and neoplastic epithelial lesions.

**Findings**: Included were cases of normal oral mucosa (NOR, N=15), oral lichen planus (OLP, N=51), hyperkeratosis-mild dysplasia (HK, N=29), moderate-severe dysplasia (DYSP, N=22), oral squamous cell carcinoma (OSCC, N=31), and normal-looking mucosa nearby OSCC (N-OSCC, N=18). Staining, assessed as percent of stained cells multiplied by staining intensity (1=weak, 2=strong), was evaluated per epithelial thirds (basal, middle and upper) and then as total staining score (sum of all thirds). Statistical analysis was performed using One-way ANOVA. Receiver operating characteristic (ROC) curve was used for diagnostic sensitivity. Statistical significance was set at P<0.05. Expression of CD9 was highest in NOR compared to all other lesion types and higher in OLP, HK and DYSP than in N-OSCC and OSCC (p<0.001). A higher expression of CD81 in NOR, OLP and HK differentiated these lesions from DYSP, OSCC and N-OSCC (p<0.001). CD63 was usually inconclusive. CD9 was the only tetraspanin to significantly distinguish NOR from all other lesion types (area under ROC, 0.9; P < 0.001) with high sensitivity and specificity (80% for both, at a total staining score of 12.5).

**Conclusions**: CD9 could accurately discriminate between normal (high expression) and all other types of pathologies (lower expression) with high diagnostic sensitivity. In addition, expression of CD9 in neoplasia and the nearby histologically “normal-looking” epithelium was similar but significantly lower than in dysplasia and OLP. Therefore, the expression of CD9 could aid in defining the nature of equivocal histopathological changes in oral epithelial lesions.
#5 High throughput sequencing reveals circadian rhythm gene RORα is cooperatively suppressed by multiple microRNAs in oral squamous cell carcinoma

Prof. Jiali Zhang (Oral Histopathology Department, School and Hospital of Stomatology, Wuhan University, Wuhan, China), Dr. Xueqing Zheng (The State Key Laboratory Breeding Base of Basic Science of Stomatology (Hubei MOST) & Key Laboratory of Oral Biomedicine Ministry of Education, School & Hospital of Stomatology, Wuhan University, Wuhan, China), Dr. Yanan Sun (The State Key Laboratory Breeding Base of Basic Science of Stomatology (Hubei MOST) & Key Laboratory of Oral Biomedicine Ministry of Education, School & Hospital of Stomatology, Wuhan University, Wuhan, China), Dr. Yuemei Pan (The State Key Laboratory Breeding Base of Basic Science of Stomatology (Hubei MOST) & Key Laboratory of Oral Biomedicine Ministry of Education, School & Hospital of Stomatology, Wuhan University, Wuhan, China)

Objectives: To explore the differentially expressed mRNAs and miRNAs in OSCC tissues, and identify the interaction network between miRNAs and transcription factors (TFs). Among them, the regulatory network of miRNAs - circadian gene RORα on proliferation in OSCC was further elucidated.

Findings: RNA-seq and microRNA-seq analyses show that upregulation of microRNA in OSCC samples significantly contribute to the globally down-regulated transcription factors (TFs) in OSCC. Circadian rhythms genes including three members of retinoic acid receptor-related orphan receptor family (RORα, RORβ and RORγ) and CLOCK were among the down-regulated TFs. RORα was predicted to be targeted by 25 co-upregulated miRNAs, of which, miR-503-5p, miR-450b-5p, miR-27a-3p, miR-181a-5p and miR-183-5p were further testified to directly target RORα, resulting in a more stronger effect on RORα suppression by mixing together. In addition, we showed that RORα was significantly decreased in most OSCC samples (37 of 44, 84%), and significantly suppressed the proliferation of OSCC cells in vitro and in vivo. Attenuated RORα decreased p53 protein expression and suppressed p53 phosphorylation activity.

Conclusions: The abnormal miRNAs-mediated TFs network could play important role in OSCC tumorigenesis. Among those TFs, circadian gene RORα acted as a tumor suppressor in OSCC by inhibiting tumor proliferation and could be negatively regulated by miR-503-5p, miR-450b-5p, miR-27a-3p, miR-181a-5p and miR-183-5p cooperatively, which provides clues to understand the clinical link between circadian rhythms and cancer therapy.
**#6 Comparative study of Ki67 and MCM4-6 complex in ameloblastoma and unicystic ameloblastoma**

**OBJECTIVES**

The aim of the present study was to determine the patterns of immunoexpression of minichromosomal maintenance proteins (MCM) 4, 5, 6 and correlate them with the presence of Ki67, in order to evaluate their utility as possible cellular proliferation markers in ameloblastomas (AMs) and unicystic ameloblastomas (UAMs).

**FINDINGS**

Immunohistochemical and western blotting results determine that for both variants, AM and UAM, the Label index (LI) showed a major value for MCM6 protein, followed by MCM5, MCM4 and lastly by Ki67 expression (p value <0.05). The immunoexpression of Ki67 and MCM5 was exclusively nuclear in basal tumoral cells of both variants. On the other hand, MCM4 and 6 were located in the nucleus and cytoplasm of basal and columnar epithelial cells and those that resemble the stellar reticulum. There were no significant differences in the results between the AM and UAM.

**CONCLUSIONS**

Results suggest that MCM5 protein could be a good proliferation marker, with greater sensitivity in comparison with Ki67. Moreover, MCM markers could be used to predict AM and UAM cell proliferation. Further studies with the inclusion of others odontogenic tumors are necessary to confirm the real potential of MCM proteins, more specifically MCM5.
OBJETIVES: Adenomatoid odontogenic tumors (AOT) are benign tumors derived from odontogenic epithelium, and they account for 2-7% of all odontogenic tumors. Intraosseous AOTs are thought to be associated with unerupted permanent teeth, although their pathogenesis is still unclear. KRAS mutation, which is involved in the pathogenesis of some malignant tumors as driver mutation, was recently detected in AOT suggesting its association with tumorigenesis. The aim of this study was to assess the frequency of KRAS mutation and his association with the presence of the MAPK / ERK signaling pathway proteins.

FINDING: Paraffin-embedded tissue samples from 9 AOT patients (3-47 years old, mean 24.7 years) were obtained for this study. Genomic DNA was extracted from each sample, and in one case, genetic mutations in 50 cancer-associated genes were examined by next-generation sequencing. A KRAS G12D missense mutation was detected in the DNA sequence of the tumor cells, but it was not detected in that of the stroma tissue. Based on this result, hotspot mutations in the RAS family were analyzed by PCR-rSSO using the remaining 8 cases. KRAS G12V and KRAS G12R mutations were detected in 2 and 4 cases, respectively. Subsequently, in the paraffin blocks, immunohistochemistry was performed to visualize the presence of the proteins involved in the MAPK / ERK signaling pathway. All the cases were EGFR, KRAS, CRAF, BRAF positive; one case was ERK negative; and one case was MEK and ERK negative, all the other remaining cases were MEK and ERK positive.

CONCLUSIONS:
In conclusion, KRAS mutation was frequently detected in AOT, suggesting its association with tumorigenesis of AOT. However, since EGFR was positive, how the mutation affects the tumor development is still unclear.
#8 Clinicopathological significance of expression of miR-26a, miR-107, miR-125b and miR-203 in head and neck squamous cell carcinomas

Monday, 25th June - 00:00 - Poster Session Available from 25th (16:30-18:30) - 26th (18:30-20:30) June 2018 - Bayshore Ballroom D-F - Poster - Abstract ID: 72

Dr. Wilfredo Alejandro González-Arriagada (Universidad de Valparaíso), Dr. Pablo Olivero (Universidad de Valparaíso), Mrs. Belén Rodríguez (Universidad de Valparaíso), Dr. Carlo Lozano-burgos (Hospital Carlos Van Buren), Dr. Carine Ervolino De Oliveira (Universidade Federal de Alfenas), Dr. Ricardo Della Coletta (Universidade Estadual de Campinas)

OBJECTIVES: MicroRNAs play an important role in the development and progression of head and neck squamous cell carcinomas (HNSCC). In the current study, we compared the expression levels of microRNAs in primary HNSCC with and without cervical lymph node metastasis and determined their clinicopathological significance. The expression levels of miR-26a, miR-107, miR-125b and miR-203 in primary HNSCC with cervical lymph node metastasis (n=16), and their matched lymph node metastasis, and primary tumors without metastasis (n=16) were determined by quantitative RT-PCR. Furthermore, we evaluated the association of those microRNAs with clinicopathological features and survival of patients with HNSCC.

FINDINGS: miR-26a (p<0.05) and miR-125b (p<0.01) expression levels were significantly higher in primary HNSCC with lymph node metastasis than in tumors without metastasis, while that the levels of miR-203 (p<0.01) were significantly lower in the metastatic tumors. Compared with matched metastatic lymph node tissues, miR-125b (p<0.01) exhibited a significantly lower expression and miR-203 (p<0.01) demonstrated higher expression in the primary tumors. The expression of the microRNAs was associated with various HNSCC clinicopathological risk features, including miR-26a high expression and N stage (p=0.04), poor histological differentiation of tumors (p=0.005) and recurrence (p=0.007), miR-125b high expression and N stage (p=0.0005) and death (p=0.02), and low levels of miR-203 and N stage (p=0.04). Importantly, high expression of miR-26a was significantly associated with shortened disease-free survival (disease relapse) and high miR-125b levels was an independent risk factor for poor disease-specific survival patients with HNSCC.

CONCLUSION: These findings suggest that miR-26a and miR-125b may be associated with progression and metastasis of HNSCC.
#9 Influence of radiation dose in collagen IV and MMP20 immunoexpression and the tooth immediate adhesive properties

Monday, 25th June - 00:00 - Poster Session Available from 25th (16:30- 18:30) -26th (18:30-20:30) June 2018 - Bayshore Ballroom D-F - Poster - Abstract ID: 255

Dr. Wilfredo Alejandro González-Arriagada (Universidad de Valparaíso), Dr. Issis Luque-Martínez (Universidad de Valparaíso), Dr. Miguel Ángel Muñoz (Universidad de Valparaíso), Dr. Eduardo Couve (Universidad de Valparaíso)

Objectives: Radiation-related caries is an important collateral effect in patients with head and neck cancer subjected to radiotherapy, with rapidly progressive, asymptomatic and ample lesions, associated to direct and indirect effects of radiation. The present study has the aim of determine the alterations of the immunoexpression of collagen IV and MMP20 in the amelodentin junction and its relationships with odontoblasts according to the radiation dose (0, 20, 40, and 70Gy) and its influence on the immediate adhesive properties (μTBS and μSBS) of enamel and dentin. The immunoexpression was performed with immunofluorescence confocal microscopic analysis. Forty caries-free extracted third molars were divided into eight groups according to the factors: radiation dose (0, 20, 40, and 70Gy) for the experiments. Data from immunofluorescence was analyzed descriptively and adhesive properties were analyzed using two-way ANOVA and Tukeys test (α=0.05).

Findings: The alterations in the immunoexpresion of collagen IV and MMP20 is directly associated with the dose of radiation, showing increasing levels of MMP20 and decreasing levels of collagen IV in the most irradiated teeth. When radiation doses were applied between 40 to 70 Gy, the adhesive values were significantly lower for both strategies in the two tests performed.

Conclusion: High doses of radiation above 40 Gy affect the expression of collagen IV, MMP20 and immediate adhesive proprieties on dentin and enamel. The information obtained about the altered expression of collagen IV and MMP20, and the adhesive properties in dental irradiated tissue is crucial to understand the process of radiation-related caries and the restorative treatment of these patients.
Cemental tear is considered to be rare, with few case reports and no large series published. **Objective:** To investigate and characterize the disease from a review of 21 new cases. **Methods:** This was a retrospective review of consecutive cases collected from patient panels of the investigators. **Results:** Twenty-one cases were identified during a 6 year period. All lesions presented with pain. Nineteen were vertical radiolucencies along the root of a vital or endodontically treated tooth; the remaining 2 were periapical only. Radiolucencies were: D-shaped (40%); thin regular lines (25%); thick, irregular lines (15%); J-shaped (15%). All showed focal destruction of the lamina dura, with 66.7% showing extension into the medullary bone. Maxillary incisors were most often (46.2%) affected. Histopathologic diagnoses were chronic fibrosing osteomyelitis (76.2%) or intramedullary fibrous scar (23.8%), all associated with embedded cementum fragments. Five associated teeth were also examined: all showed tears beneath remaining cementum. Four cases were successfully treated with curettage; endodontic therapy was mistakenly performed in 8 cases. **Conclusions:** Cemental tears produced symptomatic, localized chronic inflammation characterized by a vertical radiolucency adjacent to a root. These lesions may not be as rare as previously thought and extraction may not be the best treatment.
#11 A Pilot Study of Select Cell Cycle Markers in Glandular Odontogenic Cysts

Monday, 25th June - 00:00 - Poster Session Available from 25th (16:30- 18:30) -26th (18:30-20:30) June 2018 -
Bayshore Ballroom D-F - Poster - Abstract ID: 77

Dr. Yingci Liu (University of Pittsburgh), Dr. Elizabeth Ann Bilodeau (University of Pittsburgh School of Dental Medicine)

Objectives: Glandular odontogenic cysts (GOCs) and dentigerous cysts (DCs) differ significantly in their biologic behavior. One third of GOCs have been reported to recur whereas recurrence is rare in DCs. Due to the apparent growth potential of GOCs, we evaluated and compared the presence of cell cycle markers such as cyclin D1, p53, p16, p27, Rb, and BCL-2.

Findings: Eight GOCs and a control group of three DCs were included in the pilot study. All GOCs possessed seven or more of the required features. Interestingly, we detected strong expression of Cyclin D1, a regulatory protein required for cell cycle progression, within the basilar and parabasilar layers of the cyst epithelium for GOCs and scattered positivity correlating with the level of inflammation in DCs. Expression of tumor suppressor proteins, p27 and p16, were notably different between the two cysts. For p16, the superficial layers were strongly and diffusely positive in GOCs while the basilar and parabasilar layers were essentially negative. DCs showed a patternless distribution of p16 staining with variable intensity throughout the epithelium. The majority GOCs exhibited full thickness expression of p27 whereas DCs demonstrated scattered and weak positivity. With p53, BCI-2, and Rb, minimal appreciable difference was noted in the staining pattern and intensity between GOCs and DCs.

Conclusions: Our results revealed differential staining patterns between DCs and GOCs for the following cell cycle markers: Cyclin D1, p16, p27. Based on our staining pattern, we also hypothesize that the proliferation potential of the basilar and parabasilar layers of the epithelium in particular contribute to the growth and high recurrence rate for GOCs. Our findings suggest that cell cycle disturbances exist in GOCs and may contribute to the aggressiveness of their biological behavior. Additional studies with an expanded cohort are required to confirm these initial findings and provide further insights.
Minimally-invasive oral exfoliated cells study for premalignant lesions using Raman microspectroscopy

Squamous cell carcinoma of the oral cavity ranks as the 15th most common cancer in the world and the 10th most frequent cancer in males. The present study was undertaken for the development of new methods for early oral cancer detection based on Raman microspectroscopy of exfoliated cells. Exfoliated oral cells were collected by brush biopsy from patients attending Dublin Dental Hospital Dysplasia Clinic (25) and from healthy volunteers (25). Samples of exfoliated cells from normal mucosa and from pre-malignant lesions were collected using an endocervical cytobrush and placed in ThinPrep vials. Slides were prepared using the Thinprep2000 processor with the aim of forming a monolayer of cells for analysis. Raman spectra were acquired from the nucleus and cytoplasm of each cell using an XploRA confocal Raman instrument (HORIBA JobinYvon). As source, a 532 nm laser was focused by a 100X objective onto the sample and the resultant Raman signals were acquired in the 400 to 1800 cm$^{-1}$ region. Glass spectral contamination was removed using extended multiplicative signal correction. Following pre-processing, spectra were subjected to principal component analysis (PCA) and principal component-linear discriminant analysis (PC-LDA). The results show that Raman spectroscopy coupled with PCA could differentiate the nucleus and cytoplasm of the cell, the PC loadings showing that the cytoplasmic regions are dominated by protein bands while the nuclear regions are dominated by DNA bands. Furthermore, patient samples were discriminated from healthy volunteers based on DNA and lipids bands in the PC loadings. Sensitivities of 91% and 97% and specificites of 98% and 89% were achieved for the cytoplasm and nucleus respectively, using PC-LDA. Thus, the findings of the study support the potential of Raman microspectroscopy for providing molecular level information from oral exfoliated cells and the future potential for screening of minimally invasive brush biopsy samples for oral pre-cancer and cancer.
#13 Hyperkeratosis of the oral mucosa related to use of Goro: A case report

Monday, 25th June - 00:00 - Poster Session Available from 25th (16:30-18:30) - 26th (18:30-20:30) June 2018 - Bayshore Ballroom D-F - Poster - Abstract ID: 81

Dr. Soulafa Almazrooa (King Abdulaziz University Faculty of Dentistry), Dr. Nada Binmadi (King Abdulaziz University Faculty of Dentistry), Dr. Hani Mawardi (King Abdulaziz University Faculty of Dentistry)

**Background:** Hyperkeratosis is a frequent finding in oral mucosa commonly associated with smokeless tobacco, trauma and sometimes idiopathic as in leukoplakia. Goro (kola nut) is a caffeine-containing nut of evergreen trees, available in various genera most commonly *Cola acuminata* and *Cola nitida*. It contains caffeine (2-4%), kolanin and theobromine in which all provide euphoric and mental stimulation properties to human subjects. Consumption of Goro is a popular habit in African communities. To the best of our knowledge, we are reporting the first case of hyperkeratosis of the oral mucosa induced by Goro.

**Case description:** A 22 year-old man attended the dental clinic at King Abdulaziz University – Faculty of Dentistry for dental consultation and treatment. Patient had no medical conditions and denied taking any medication or allergies. In addition, he had no significant family history and never smoked or consumed alcohol. However, he has been chewing Goro five times/day for around 10 years. Extraoral examination, was insignificant. Intraoral examination was significant for a smokeless tobacco keratosis-like lesion, greyish-white, velvety folded plaque on lower vestibule where he chew and pack Goro. Incisional biopsy of the lesion was obtained and showed hyperparakeratosis with otherwise normal epithelium. The connective tissue was fibrovascular with no inflammation, or hyalinization. The case was managed with patient education with no treatment. The patient was followed up for a year without any changes.

**Conclusion:** This is the first report of a hyperkeratosis of oral mucosa induced by Goro. Even with clinical presentation matching smokeless tobacco keratosis, there were some histological differences. As Goro is mainly a caffeine-containing fruit, it is reasonable to consider Goro-induced keratosis a reactive lesion with no potential for malignancy. Close follow up and habit cessation is advised pending more data. Further longitudinal studies is needed to better understand this lesion pathogenesis.
#14 LANGERHANS CELLS IN THE EPITHELUM OF UNICYSTIC AMELOBLASTOMAS

Monday, 25th June - 00:00 - Poster Session Available from 25th (16:30- 18:30) - 26th (18:30-20:30) June 2018 - Bayshore Ballroom D-F - Poster - Abstract ID: 82

Dr. letlhogonolo Masilo (Sefako Makgatho Health Sciences University)

**BACKGROUND AND OBJECTIVES:** Langerhans cells (LC’s) are specialized dendritic cells known to colonize epithelial lined surfaces. Few studies relating to the distribution of LC’s in odontogenic tumors and especially ameloblastomas are available and the influence of inflammation on the presence of these cells in odontogenic tumors is unclear. This study investigate the number of LC’s in a series of unicystic ameloblastoma using two immunohistochemical stains, Langerin and S100. The association between the presence of LC’s and the degree of inflammation was also investigated.

**METHODS:** Formalin fixed, paraffin imbedded tissue blocks of thirty cases of unicystic ameloblastoma were retrieved from the archives of the department of Oral Pathology. A 4µm tissue sections in each case was stained with S100 and Langerin antibodies respectively. The average number of LC’s/1mm of cyst wall were calculated from 10mm of cyst or the entire epithelial lining if less was available. The nature and density of inflammation was scored and compared to the number of LC’s present.

**RESULTS:** LC’s were detected in 21 (70%) and 15 (50%) unicystic ameloblastomas stained with Langerin and S100 antibodies respectively. A statistically significant difference was noted in the number of LC’s on Langerin (mean = 0.66/mm) compared to S100 (mean = 0.31/mm) (P=0.014). 26/30 cases (86.67%) were associated with inflammation distributed either diffusely (60.00%) or focally (26.67%) in the wall. The degree or type of inflammation did not have any influence on the presence or numbers of LC.

**CONCLUSION:** LC’s are present in the epithelial lining of the majority of unicystic ameloblastomas irrespective of the type or degree of inflammation present in the wall. Their presence may be due to their epithelial tropism or as part of the normal anti-tumour immuno-surveillance. The exact role of LC’s and what attracts them should be investigated on molecular level.
#15 The origins of odontogenic keratocyst based on the distribution of melanocytes

Monday, 25th June - 00:00 - Poster Session Available from 25th (16:30-18:30) - 26th (18:30-20:30) June 2018 - Bayshore Ballroom D-F - Poster - Abstract ID: 85

**Dr. Madoka Isomura** (Aichi Gakuin University), **Dr. Nobuaki Sato** (Aichi Gakuin University), **Dr. Ryoko Kawai** (Aichi Gakuin University), **Ms. Waka Yoshida** (Aichi Gakuin University), **Dr. Yoshihiko Sugita** (Aichi Gakuin University), **Dr. Katsutoshi Kubo** (Aichi Gakuin University), **Dr. Yoshihiro Suzumura** (Aichi Gakuin University), **Prof. Hatsuhiko Maeda** (Aichi Gakuin University)

**Objectives**
Melanocytes are pigmented-producing cells and derived from the neural crest. Melanin pigmentation is widely distributed in the skin and often in oral mucosa, but normally not existing in bone tissue. However, melanin pigmentation is detected on rare occasions with odontogenic lesions in the jaw bones, especially odontogenic keratocysts (OKC). Moreover, development of the tooth germ is originated from the neural crest, but elimination or expression of neural crest cells with odontogenic lesions is not obvious. The present study aimed to consider the origins of OKC based on the distribution of melanocytes in OKC.

**Findings**
One hundred and ten OKC were used. Eighty-eight cases showed sporadic type (SPO), and 22 cases involved basal cell nevus syndrome (BCNS). All samples were divided into 54 cases of juvenile group (0-29 years old) and 56 cases of advanced group (30-70 years old). Melanocytes were detected using Melan-A and HMB45 immunohistochemical stainings, and melanin pigmentation was detected using Schmorl's method. The positive rate of Schmorl's reaction, Melan-A and HMB45 staining were significantly higher in juvenile group than advanced group. These rates were also higher in BCNS than SPO.

**Conclusions**
Compare to juvenile and advanced groups, Melan-A and HMB45 positive rates were high in juvenile group. It is evident from these findings that the origin of OKC in juvenile group was different from advanced one. It means that the cyst epithelium in juvenile group originated from neural crest cell with melanocytes, and advanced one arose from odontogenic epithelium without melanocyte, for examples epithelial rest of Malassez.
#16 TSH and TSHR are not expressed in oral lichen planus lesions of patients with hypothyroidism

Objectives
An association between hypothyroidism (HT) and oral lichen planus (OLP) has been reported. However, the mechanisms that could explain this association have not been clarified. This study aimed to evaluate the immunohistochemical expression of thyroid-stimulating hormone (TSH) and thyroid-stimulating hormone receptor (TSHR) in healthy oral mucosa and in OLP lesions of individuals with and without HT.

Findings
TSH and TSHR stainings were completely negative in all of the studied specimens.

Conclusions
These results suggest that TSH and TSHR are not involved in the pathogenetic mechanism that could explain the association between OLP and hypothyroidism.
Epithelioid hemangioendothelioma (EH) is an intermediate grade vascular malignancy. EH often exhibits aggressive biologic behavior, frequently metastasizes to regional lymph nodes and rarely, to distant sites. EH most commonly occurs in deep soft tissue, viscera, and bone. Several cases of EH have been reported in the head and neck region; however, development of EH within the parotid gland is extremely rare. To our knowledge, only four cases of EH in the parotid have been reported in the English literature. We present a case of EH of the left parotid gland in a 45-year-old Caucasian woman. The patient had a history of a painless swelling on the left side of her face for several years and imaging studies indicated a neoplasm originated from the left parotid gland. A percutaneous biopsy demonstrated a concern for sarcoma. Therefore, the patient underwent a left parotidectomy with facial nerve preservation and left neck dissection. Histologic examination revealed a well-circumscribed proliferation of epithelioid tumor cells in a hyalinized stroma. Intracytoplasmic vacuoles were noted in some cells. Lymphovascular invasion was present, and a small metastatic tumor focus was identified in one regional lymph node in the ipsilateral neck. Immunohistochemical studies were performed. CD31 and Fli-1 were diffusely positive in tumor cells, while they were negative for AE1/AE3, S-100, SMA, and p63. The Ki-67 proliferative index was estimated at 2%. A diagnosis of EH was established based on histological and immunohistochemical findings. No recurrence of the patient's disease has been noted in the 6 months following her surgery.
Plasmablastic lymphoma (PBL) is an aggressive lymphoma that can present both diagnostic and therapeutic challenges. Currently considered a variant of diffuse large B-cell lymphoma by the WHO, it demonstrates overlapping phenotypic features with plasma cell myeloma and other neoplasms exhibiting plasmablastic morphology. The majority of cases arise in immunocompromised patients and a predilection for oral involvement is seen. The underlying etiology is poorly understood, although roles for the MYC oncogene and Epstein-Barr virus are likely. Our patient was a 33-year-old male who presented for evaluation of a left maxillary gingival mass. He reported a one-month history of increasing pain and mobility of the adjacent teeth. Radiographic examination revealed an ill-defined radiolucency located apical to the left lateral incisor and extending to the midline. On questioning, the patient disclosed that he had undergone a routine physical examination one month prior with no abnormal findings. A biopsy was performed which showed sheets of large atypical cells interspersed with tingible body macrophages in a starry sky pattern. The tumor cells were positive for CD10, CD38, CD138, MUM-1, and HLA-DR, and negative for B-cell markers. Kappa and Lambda were negative and Ki-67 expression of >90% was noted. In situ hybridization for EBER was positive and genomic studies confirmed MYC gene rearrangement associated with an additional copy of IgH. A final diagnosis of plasmablastic lymphoma was rendered. Over the course of his oncologic work-up, it was discovered that he was HIV-positive. Despite multiple cycles of chemotherapy, the patient developed pelvic involvement six months later and died one year after his initial diagnosis. PBL is a rare lymphoma that pursues an aggressive clinical course characterized by frequent relapses and high rates of disease progression. No universal treatment protocol exists, although more intensive chemotherapy is currently favored. Bortezomib-based regimens show promise in both frontline and relapsed settings.
#19 A Retrospective Study of Oral Lesions Histopathologically Diagnosed at Faculty of Dentistry, Srinakharinwirot University, Thailand

Incidence of oral and maxillofacial lesions is useful for making differential diagnosis. However, epidemiological studies of oral lesions in Thailand are limited. Most of the studies were from other countries, where nationality, genetic background, environment and life style are different from Thai people. **Objective:** This study aimed to evaluate incidence of oral lesions histopathologically diagnosed at Faculty of Dentistry, Srinakharinwirot University, Thailand. **Materials and Methods:** The data was collected retrospectively from histopathology reports. Demographic data including age, sex of patients and types and locations of lesions were recorded. The data were analyzed by descriptive statistics. The results were then compared with other studies in Thailand and other countries. **Findings:** A total of 701 cases were analyzed. The specimens were from female (61.4%) more than male (38.4%). Mean age of the patients was 40 years old. The lesions were predominantly found in mandible (24.4%) and buccal mucosa (17.3%) for hard and soft tissue, respectively. The six most common lesions were lichen planus (12.1%), radicular cyst (8.8%), dentigerous cyst (7.6%), fibroma (7.6%), mucocele (5.4%) and pyogenic granuloma (4.9%). The most common location, sex predilection and incidence of the six lesions mentioned above were similar to other studies, except for the higher incidence of lichen planus in our study. **Conclusions:** Nationality, genetic background, environment and life style may influence the occurrence of oral and maxillofacial lesions.
#20 Gingival and Alveolar Mucosal Overgrowths in a University Biopsy Service in Saudi Arabia

Monday, 25th June - 00:00 - Poster Session Available from 25th (16:30-18:30) - 26th (18:30-20:30) June 2018 - Bayshore Ballroom D-F - Poster - Abstract ID: 99

Dr. Ibrahim O Bello (College of Dentistry, King Saud University, Riyadh), Dr. Ahmed Qannam (College of Dentistry, King Saud University, Riyadh)

Objectives
Majority of the lesions of the gingiva and alveolar mucosa are inflammatory in origin and usually their management is under the domain of the periodontist. Focal tissue overgrowths in these sites are associated with a variety of lesions (wide clinical differential diagnoses) and often require biopsy and microscopy for definitive diagnosis. This study aimed to review the gingival and alveolar mucosal biopsies seen at the Oral Histopathology Laboratory, College of Dentistry, King Saud University, Riyadh, Saudi Arabia over a 33-year period.

Findings
In all, 624 patients were found with a mean age of 35 years (range: 1 week – 91 years), peak incidence in the second to sixth decade (highest peak was third decade), male to female ratio of 1.4:1, and a slightly higher prevalence in the mandible. Majority of the lesions comprised reactive/hyperplastic lesions (88% of all lesions) followed by malignant lesions (10%) and benign tumors constituting only 2% of total lesions. A total of 24 distinct histological entities encompassing all the three groups were diagnosed. The most frequent histologically diagnosed lesions were pyogenic granuloma (236 cases; 38% of all cases), fibroma (208 cases; 33%), peripheral ossifying fibroma (56 cases; 9%), squamous cell carcinoma (44 cases; 7%), peripheral giant cell granuloma (38 cases; 6%), and neurofibroma and non-Hodgkin lymphoma (both 6 cases, 1%) respectively.

Conclusion
Like in most previous reports, reactive hyperplastic lesions are the most prevalent lesions seen as focal overgrowths in gingival and alveolar mucosa. Carcinoma at these sites may be an understated but clinically and epidemiologically significant problem in Saudi Arabia.
#21 Epulis Fissuratum: Comparison of Clinical Impression to Histopathologic Diagnosis

Objective: This study evaluated the percentage of cases correctly identified as epulis fissuratum based on the clinical impression and histopathologic diagnosis and evaluated the percentage of cases identified as a malignancy by the histopathologic diagnosis with a clinical impression of epulis fissuratum. Findings: A search in the database systems at the biopsy services of University of Nebraska Medical Center College of Dentistry and Tufts University School of Dental Medicine for the clinical impression term epulis/epulis fissuratum from January 1, 2012 until July 1, 2017 was performed which identified 187 cases. The Fisher's exact test measured the similarity between dental practitioners' clinical impression of epulis fissuratum and histopathologic findings. Sensitivity, specificity, positive predictive value (PPV), and negative predictive value (NPV) of the dental practitioners' clinical impression about the malignancy of epulis fissuratum were calculated. P value < 0.05 was considered statistically significant. From the 187 cases, there was a female predilection (67%), more than half of the cases (55%) were in the maxillary region (palate, vestibule), and patients wearing ill-fitting dentures were identified at sixty percent. Seven cases (3%) were identified as malignant by the histopathologic diagnosis which included squamous cell carcinoma and melanoma, but malignancy was not suspected in two of the seven cases. Epulis fissuratum was listed as the only clinical impression. More than half of the cases (54%) were correctly identified as epulis fissuratum based on the clinical impression and histopathologic diagnosis. Conclusion: Based on the collected data, dental practitioners should remove and submit excised tissue for microscopic analysis to rule out malignancy in suspected cases of epulis fissuratum.
#22 Iron deficiency predisposes to oral mucosa alterations and Candida infection

**Prof. Shin-Yu Lu (Oral Pathology and Family Dentistry Section, Department of Dentistry, Kaohsiung Chang Gung Memorial Hospital and Chang Gung University College of Medicine, Kaohsiung, Taiwan)**

**Objectives.** Iron deficiency (ID) is the most common nutritional deficiency, but its diagnosis is not always easy. We investigate patients with oral mucosa alterations as the initial manifestation of iron deficiency (ID) or iron deficiency anemia (IDA).

**Materials and methods.** Sixty-four patients (50 IDA and 14 ID) with a wide range of sore mouth were diagnosed and treated. The iron studies and anemia classification based on the mean and heterogeneity of red cell size were assessed.

**Results.** ID predisposed 64 patients to a high incidence of *Candida* infection (81%) and showed a variety of oral manifestations including angular cheilitis (63%), atrophic glossitis (59%), pseudomembranous candidosis (44%), erythematous candidosis (41%), median rhomboid glossitis (5%), chronic mucocutaneous candidosis (5%), papillary hyperplastic candidosis (3%) and cheilocandidosis (3%). Others included pale oral mucosa (31%), burning mouth (28%) and recurrent oral ulcers (6%). The values of hemoglobin in 64 ID patients varied from normal to life-threatening levels but none had developed advanced systemic symptoms except fatigue. All had low serum iron and ferritin; however, 14 (22%) patients were nonanemic and 19 (30%) patients remained normocytic. All oral changes can be successfully meliorated by iron therapy plus antifungals when candidosis existed. A colorectal cancer in two patients was diagnosed and treated.

**Conclusions.** Our findings demonstrate that oral mucosa alterations accompanying oral candidosis are a sensitive indicator of ID. ID is the prime promoting factor in the development of oral mucosa alterations; anemia is merely a late manifestation of ID. It is essential to investigate the origin of ID, because it can be the initial sign of a serious disease, particularly malignancy.
Objectives. To evaluate the clinical spectrum of oral lesions (HIV-OLs) in HIV-infected patients attending three referral centers in Mexico City over 17 years.

Findings. All HIV-infected adult patients had an oral examination either before or immediately after receiving combined antiretroviral therapy (cART), performed by specialists in oral pathology and oral medicine who used current clinical diagnostic criteria for HIV-OLs. Three periods were defined according to the evolving pattern of antiretroviral use in our country (2000-2005, 2006-2011, 2012-2017). For the statistical analysis, Mantel-Haenszel chi-square and Kruskal-Wallis test were applied, with an alpha value set at 0.05.

In this 17-year study, 5,186 HIV-infected patients were included (90.7% male; median age 33 years-old). The use of cART increased systematically during the course of the 3-study periods (36.9 to 60%; p<0.001). Simultaneously, there was a significant increase in the percentage of patients with CD4+ counts >500 cells/mm$^3$ (10.9-25.6%; p<0.001) and with an undetectable viral load (28.2-55.3%; p<0.001).

A progressive decrease of HIV-OLs prevalence was observed during the study periods (50.3-39.3%; p<0.001), mainly oral candidosis (OC) (31.8-20.3%; p<0.001); in contrast, HPV-OLs increased by almost 5-fold during the study periods (1.2-4.9%; p<0.001); a slight rise in oral secondary syphilis was noted (0.1-1.0%; p<0.001). During follow-up, 2 cases of potentially malignant disorders and 4 of oral cancer were diagnosed.

In the group who were taking cART, through the 3-study periods, a significant trend to lower OC (24-15.1%, p<0.001), hairy leukoplakia (12-7%, p<0.001), and Kaposi's sarcoma (2.4-1.4%, p=0.017) prevalence was observed, but a significant trend to higher HPV-OLs (1.4-6.3%, p<0.001) and syphilis (0.1-1.1%, p=0.028) prevalence was registered.

Conclusions. The clinical spectrum of HIV-OLs has changed in recent years, associated with an augmented cART use, with a decrease of the most described OLs, and HPV-OL upsurge. The apparent increase of malignant lesions warrants attention for its early diagnosis.
#24 Oral Candida colonization and infection in HIV-infected patients in a referral center in Mexico City

Monday, 25th June - 00:00 - Poster Session Available from 25th (16:30- 18:30) -26th (18:30-20:30) June 2018 - Bayshore Ballroom D-F - Poster - Abstract ID: 70

Dr. Martha Estela García Sánchez (Universidad Autónoma Metropolitana Xochimilco), Dr. Velia Ramirez-Amador (Universidad Autónoma Metropolitana Xochimilco), Dr. Gabriela Anaya Saavedra (Universidad Autónoma Metropolitana Xochimilco), Dr. María Esther Irigoyen Camacho (Universidad Autónoma Metropolitana Xochimilco), Dr. Luis Octavio Sánchez Vargas (Universidad Autónoma de San Luis Potosí)

Objective: To determine the species-specific virulence profile of Candida species isolated from the buccal mucosa of patients with HIV/AIDS and its association with clinical, laboratory and fluconazole resistance characteristics.

Findings: Cross-sectional, observational and analytical study. Saliva samples were obtained by swab and mouthwash of 118 HIV/AIDS adult patients and 74 individuals without HIV (comparative group). Ninety one percent (108) HIV/AIDS individuals were male, with a median age of 39.5 (Q₁-Q₃: 34-37) years, similar to the comparative group (median 35.5, Q₁-Q₃: 24-47, p=0.08). Sixty-two (53.4%) of HIV patients were in AIDS category, 91 (76%), used HAART, with a median use of 1,117 (Q₁-Q₃: 515-2,054) days. The median CD4+ lymphocyte count was 406 (Q₁-Q₃: 198-614) cells/mm³, 81(70.4%) subjects had undetectable viral load. The prevalence of oral candidosis (OC) was (9, 7.6%). Approximately one third were colonized (38, 32.2%). The most frequent species was C. albicans (86%), followed by C. glabrata. Similar findings were found in the comparative group: 5 (6.8%) OC patients, 19 (26.4%) colonized and a frequency of C. albicans of 84.2% (16). All HIV/AIDS patients with OC, had a count >400 colony forming units (CFU), contrasting the comparative group, where only 60% of OC individuals had ≥400 CFU. There was a frequency of resistance to fluconazole in 39.5% of HIV/AIDS patients, with a greater proportion in the colonized (41.2%) compared to the infected (33.3%).

Conclusion: Despite the decrease in the frequency of HIV-related oral lesions in the post-HAART era, OC continues to be a common infection. A high prevalence of colonization was found in both HIV and non-HIV participants, but CFU count was higher in the HIV patients. A high frequency of resistance to fluconazole was observed in the colonized with a high proportion of species non-albicans. Clinicians should consider the elevated resistance to antifungals for the treatment of OC.
#25 Lymphomas with oral manifestations – 18 cases in our institution and review of literature

Dr. Chih-Huang Tseng (Kaohsiung Medical University Hospital), Dr. Yuk-Kwan Chen (Kaohsiung Medical University), Dr. Wen-chen Wang (Kaohsiung Medical University), Dr. Ching-yi Chen (Kaohsiung Medical University), Dr. Edward Chengchuan KO (Kaohsiung Medical University)

Lymphomas are the heterogeneous group of malignant diseases characterized by proliferation of malignant lymphoid cells or their precursors. Lymphomas are the ninth most common cancer worldwide and constitute 3.2% of malignant tumor. Lymphomas are generally classified to two main categories: Hodgkin’s lymphomas (HL) and the non-Hodgkin lymphomas (NHL), and about 90% are NHL. Non-Hodgkin lymphoma represents 4.3% of all new cancer cases in the U.S. and the ninth most common cancer in male patient of Taiwan. Lymphomas may arise in lymph nodes or any organ with only 3% of them occurs in oral cavity. However, lymphomas represent the third most common group of malignant lesions in the oral cavity, following squamous cell carcinoma and salivary gland neoplasms. Here, we reviewed clinical features, radiologic appearance and diagnosis of 1035 cases of lymphomas with oral manifestations (18 cases in our institution and 1017 cases retrieved from literatures). We found that oral lymphomas affect patients aged 4-96 years (average, 55.1 years), occurring about 1.3 times as often in males than in females. The most common sites of involvement included tonsil, maxilla, mandible, palate, tongue, gingiva and buccal mucosa. The most frequent symptoms are swelling, pain, ulceration and paresthesia. Tooth displacement and hypermobility were also frequently seen when the alveolar bone were involved. The radiologic finding was non-specific as an osteolytic lesion. Thickening of periodontal ligament, loss of lamina dura and tooth displacement were also mentioned in some cases with invasion of jaw bones. The most common diagnosis was diffuse large B-cell lymphoma, which accounting for 30% of all cases. The oral lesions of lymphoma are often a component of more widely disseminated disease. An early detection can result in a higher cure rates and better long-term survival for the patients.
#26 P120 catenin expression and its correlation with E-cadherin in salivary gland neoplasms

Monday, 25th June - 00:00 - Poster Session Available from 25th (16:30-18:30) - 26th (18:30-20:30) June 2018 - Bayshore Ballroom D-F - Poster - Abstract ID: 110

Dr. Ekarat Phattarataratip (Chulalongkorn University), Ms. Ratanatip Ratanapitak (Chulalongkorn University), Ms. Nicha Kositkittiwanit (Chulalongkorn University), Mr. Pruch Kajornkiatkul (Chulalongkorn University), Ms. Pataraporn Yeunyong (Chulalongkorn University)

P120 catenin loss or altered localization has been associated with E-cadherin inactivation and poor patient prognosis in several cancers. **Objectives:** The purposes of this study were to investigate the expression of P120 catenin in salivary gland neoplasms in correlation with E-cadherin, and examine the relationships between levels of expression and pathologic characteristics. **Materials and Methods:** Fifty-two cases of salivary gland neoplasms, including 25 mucoepidermoid carcinomas (MEC), 13 adenoid cystic carcinomas (ACC), 12 pleomorphic adenomas (PA) and 2 polymorphous adenocarcinoma (PAC) were investigated for P120 catenin and E-cadherin expression immunohistochemically. The immunoreactivity was categorized as low expression or high expression group, based on whether the positive staining was below or higher than 10% of the neoplastic cells, respectively. **Findings:** Overall, the expression of both proteins was common in salivary gland neoplasms. P120 catenin primarily localized to the membrane of neoplastic cells in most cases. A significant correlation between levels of expression of both proteins was noted in MECs with no relationship with pathologic characteristics. In ACCs and PA, ductal cells showed positive immunoreactivity, whereas myoepithelial cells variably expressed both proteins. Overexpression of P120 catenin was detected in solid subtype of ACCs. **Conclusion:** The cadherin-catenin complex is maintained in neoplasms of salivary gland. The differential expression of both P120 catenin and E-cadherin in this group of neoplasms appears to represent the heterogeneous population of neoplastic cells present in each tumor type.
Carcinosarcoma or carcinoma with spindle cell/sarcomatoid features of the nasal cavity and paranasal sinuses is an exceedingly rare malignancy. We report a case of carcinosarcoma with synchronous inverted papilloma developing in the left nasal cavity and maxillary sinus, in a 72-year-old male with a history of radiation therapy for sinonasal squamous cell carcinoma, 30 years ago. The patient's chief complaint was left nasal obstruction. He also reported purulent nasal drainage, impaired sense of smell and occasional epistaxis. CT imaging showed lobular growth of soft tissue narrowing nasopharyngeal airway with extensive palatal erosion. Endoscopic sinonasal surgery was performed to remove the sinonasal mass. Grossly, the tumor had a white fleshy appearance with tumor necrosis. Microscopically, the tumor was composed of pleomorphic epithelial and spindle cells with frequent mitoses and tumor necrosis. Residual inverted papilloma (IP) with high-grade dysplasia, and foci of keratinizing squamous cell carcinoma (SCC) component (2%) was present at the edge of the main tumor. A transition of SCC to spindle cell carcinoma was present confirmed by focal p63 positivity in both components. The pleomorphic sarcomatoid tumor was positive for vimentin and negative for P40, CK5/6, AE1/AE3, p16, S-100, CD34, CD31, ERG1, SMA, desmin, Sox10, and myogenin with Ki67 highlighting 70% of tumor cells. A final diagnosis of sinonasal sarcomatoid carcinoma associated with residual transformation from IP to SCC was rendered. Due to rarity of such a case, the prognosis and response of treatment is uncertain. So far, no effective targeted therapy has been reported. The patient is currently being treated with aggressive chemotherapy. To the best of our knowledge, this is only the second case of sinonasal carcinosarcoma arising from inverted papilloma with high-grade dysplasia and transition to sarcomatoid SCC. Perhaps the previous radiation therapy played a role in the development of the sarcomatoid variant of SCC.
#28 Salivary Duct Carcinoma, a Case Report

Monday, 25th June - 00:00 - Poster Session Available from 25th (16:30-18:30) - 26th (18:30-20:30) June 2018 - Bayshore Ballroom D-F - Poster - Abstract ID: 114

Objetive: We report a case of salivary duct carcinoma outside age of presentation and with a rare location.

Case report: A 31-year-old male patient who arrived to Hospital Juárez de México, complaining of an 8 month tissue increase in the submental región, right neck and right face paresthesia. CT scan showed a submandibular tumor that infiltrated the floor of the mouth and base of the ipsilateral tongue with multiple right neck adenopathies levels IB, II, III and IV. Histologically, the lesión displayed cellular and nuclear pleomorfic epitelial cells, with abundant eosinofílico citoplasm, focal central necrosis, cribriform architectural pattern reminiscent of the image of “Roman bridges”. An inmunohistochemical profile was performed: androgen receptors (+), GATA-3 (+), cytokeratin 7 (+) and p-63 (-). A diagnosis of salivary duct carcinoma was emited.

Discussion: Salivary duct carcinoma is an aggressive malignant epithelial neoplasm, which may occur de novo or as a component of a carcinoma ex-pleomorphic adenoma. It constitutes only 3-6% of all salivary gland neoplasms. With a male predilection, affecting individuals between the 6th and 7th decades of life. Microscopically, it is characterized by cellular and nuclear pleomorphism, atypical mitoses, and a cribriform pattern with dilated ducts. Conclusion: Salivary duct carcinoma is an aggressive and rare salivary gland neoplasm, we present this case which differs in age and location usually reported.
Objective: To report a case of ameloblastic carcinoma with onset in the lower jaw, showing histological traits as well as immunological profile with molecular markers expression and tumor proliferation.  

Ameloblastic carcinoma (AC) is a malignant epithelial odontogenic tumor combining ameloblastoma’s histological features with malignant cytological traits.  

We hereby present the case report of a 62 year old female who was referred to the Oral Medicine Clinic, Faculty of Dentistry, National Autonomous University of Mexico (UNAM): The patient exhibited a swollen area in the anterior section of the lower jaw with destruction of cortical bone and displacement of anterior teeth; lesion was a nodular and ulcerated mass. Radiographic imaging revealed a poorly circumscribed radiolucent lesion in the anterior section of the mandible. Histological examination of a biopsy specimen revealed a lesion with proliferation of polygonal and cylindrical cells arranged in an hypercellular solid mass, with presence of abundant mitotic figures as well as some areas with necrosis. Some hyalinization areas in connective tissue were found along with islands of abundant glycogen-rich cells, positive to PAS. Neoplastic cells were nuclear for beta-catenin amelogenin and 40% for ki67  

Discussion: AC is an aggressive, malignant neoplasm with onset in the jaws, it can arise de novo or be secondary to the malignant transformation of a pre-existing ameloblastoma. Presence of clear cells is extremely rare; immunohistochemical analysis confirmed presence of glycogen. Metaplasia of clear cells in this tumor has not been reported as prognostic factor, nevertheless, it is and indicator of the lesion’s morphological diversity.  

Conclusion: Reports of ameloblastic carcinoma with clear cells are rare, nevertheless, long-term follow-up of ameloblastoma is of the utmost importance bearing in mind that these are aggressive tumors with high recurrence to malignify.
Objective: To describe the clinical, pathological and immunohistochemical features of extranodal natural killer/T-cell lymphoma, nasal type (ENKTL-NT) affecting Guatemalan patients.

Study design: Cases diagnosed as ENKTL-NT from 1985 to 2016 were retrieved from the files of the pathology laboratory at Centro Clínico de Cabeza y Cuello (Guatemala). Clinical data provided by clinicians or gathered directly from medical charts when available, microscopic features, and results of immunohistochemistry (IHC) and ISH-EBV were reviewed and recorded.

Results: Seventy-six cases were identified. Males were more commonly affected (65.7%) than females (34.3%), with a mean age of 34.3 ranging from 7 to 71 years. Most of the patients were of Mayan descent and low socioeconomic status. ENKTL-NT presented as an aggressive necrotizing midfacial process with rapid progression, affecting sinonasal, palatal and nasopharyngeal structures. Other features observed were: initial signs of edema and inflammation, rapidly progressing to ulceration or perforation of the hard palate, necrosis of nasal skin and mucosa, midface deformity, and in advanced stages, palpebral edema. Three patients presented lethal hemagophagocytic syndrome. Oral mucosa biopsies were more representative and adequate for IHC and ISH than the ones from nasal skin. Microscopically, lesions showed a diffuse atypical lymphoid infiltrate with angiocentric and angiodestructive pattern, with extensive necrosis and superimposed subacute inflammation. The neoplastic cells varied in size and sometimes were anaplastic. The ISH and IHC profile of these cases was: EBV+, LCA+, CD20-, CD3+, CD45RO+, CD30 variable, CD4+, CD8+, Granzyme-A+, Perforin+, CD56 + (except for 2 cases). The Ki-67 index was ≥ 80%. When clinical follow-up was obtained, only 30% survived and two patients presented a recurrence at 2 and 10 years respectively.

Conclusion: ENKTL-NT is an aggressive malignant EBV related lymphoma, with highly distinctive clinical, histopathological and immunohistochemical features.
Objectives:
Xerostomia, dry mouth, is a very common symptom caused by many types of medications as well as Sjogren’s syndrome. The estimated prevalence ranges from 10% to 50% of general population. Saliva composing of 98% of water and the remaining electrolytes, mucin, antibacterial substances and enzymes, which controls the growth of oral microorganisms and maintains a balanced oral microflora. Oral cavity provides a multivariant environment to habitate over 700 bacteria and fungi. Besides causing caries and periodontitis, many systemic diseases have been correlated to oral microbes, including cancers, HIV, DM and pericarditis. We hypothesized that lacking saliva will alter the composition of oral microbiota.

Findings:
To study the changes of oral microbiota, ten xerostomia patients, who were not in any active treatments, and 4 healthy normal volunteers were recruited. Gingival plaques were collected following the standard protocol. Gingival plaques were collected, placed in PowerBead Tube (Qiagen) and stored in -80°C until further analysis. Microbiota were detected using bacterial 16S ribosomal RNA and analyzed based on the levels of Phylum and Class. At phylum level, the mean presence of Bacteroidetes in xerostomia and normal subjects were 16.2±1.0% and 28.3±1.7%, respectively (p=0.03, t-test). Mean presence of Firmicutes phylum in xerostomia and normal subjects were 15.1±1.5% and 3.2±0.8%, respectively (p=0.03, t-test). In addition, mean presence of Firmicutes bacilli class in xerostomia and normal subjects were 6.3±0.7% and 1.1±0.5%, respectively (p=0.05, t-test).

Conclusions:
Significant differences in oral microbiota were observed between xerostomia and normal subjects. More samples are needed to verify the current results and to apply the oral microbiota in the diagnosis of xerostomia.
#32 MASPIN EXPRESSION IN PLEOMOPHIC ADENOMA, POLYMORPHOUS LOW GRADE ADENOCARCINOMA AND ADENOCYSTIC ADENOCARCINOMA OF SALIVARY GLANDS SEEN AT THE LAGOS UNIVERSITY TEACHING HOSPITAL, LAGOS, NIGERIA.

Monday, 25th June - 00:00 - Poster Session Available from 25th (16:30- 18:30) -26th (18:30-20:30) June 2018 - Bayshore Ballroom D-F - Poster - Abstract ID: 124

Dr. Olajide Akeju (Lagos University Teaching Hospital), Dr. Olajumoke Effiom (University of Lagos), Prof. Adekunbiola Banjo (University of Lagos), Prof. Onatolu Odukoya (University of Lagos)

Objectives

- To immunostain with Maspin antibody, formalin fixed, paraffin embedded tissues of 41 samples of Pleomorphic Salivary Adenoma [PSA], 10 samples of Polymorphous Low-Grade Adenocarcinoma [PLGA] and 34 samples of Adenoid Cystic Carcinoma [AdCC].
- To quantitatively assess Maspin expression in each of the three (3) Salivary Gland Tumours (SGTs) by combining immunostaining intensity scores with scores of proportion of positively stained cells (Total mean scores) in each, using the method described by Reiner et al. 1990.
- To analyze data using Chi square, Fisher's Exact tests and analysis of variance to compare total mean scores of maspin expression among the three (3) SGTs, the statistical significance level being set at p <0.05.

Findings: PSA had the greatest proportion of Maspin immunopositivity (73.2%), followed by PLGA (40.0%) and AdCC (35.2%). Mean total Maspin score of PSA (3.5±2.4) was statistically significantly higher than that of PLGA (1.2±1.8) [p=0.005] and that of AdCC (1.0±1.5) [p<0.0001].

Conclusion: In this study, there was decreasing expression of Maspin from PSA to PLGA to AdCC, which is consistent with established literature. The present finding is suggested that Maspin expression could be a useful adjunct diagnostic tool to discriminate between PSA, PLGA and AdCC.
#33 Analysis of Salivary glutathione and selenium in high risk and oral cancer patients seen at Lagos University Teaching Hospital, Lagos, Nigeria

Monday, 25th June - 00:00 - Poster Session Available from 25th (16:30- 18:30) -26th (18:30-20:30) June 2018 - Bayshore Ballroom D-F - Poster - Abstract ID: 125

Dr. Remilekun Oluwakuyide (Lagos University Teaching Hospital), Dr. Olajumoke Effiom (University of Lagos), Prof. Osaretin Ebuehi (University of Lagos), Prof. Onatolu Odukoya (University of Lagos)

Objectives

1. To select three study groups consisting of 20 oral squamous cell carcinoma subjects (Group 1), 20 high risk for oral squamous cell carcinoma subjects (Group 2) and 20 healthy controls (Group 3).

2. To collect saliva samples from each subject and analyze for salivary concentration level of glutathione using enzymatic recycling assay and salivary selenium concentration level using atomic absorption spectrophotometry.

3. To analyze data on salivary glutathione and selenium levels in each group and compare findings within and between groups using statistical method of Analysis of Variance (ANOVA)

Findings

The mean salivary glutathione concentration in healthy control group (5.618±0.5213µM) was higher than the high risk group (5.273± 0.2340µM) and oral cancer group (5.047± 0.5115µM). The difference between groups was statistically significant (p = 0.001). However, the salivary selenium was higher in the oral cancer group (0.0167±0.0083 mg/dl) compared to the high risk (0.0148± 0.0071mg/dl) and healthy control (0.0138± 0.0093 mg/dl) but not statistically significant (p= 0.5414).

Conclusion

Salivary glutathione level could be a predictor of risk of oral cancer and could therefore serve as a non invasive modality in the early detection of oral cancer.
#34 Congenital-Infantile Spindle Cell and Sclerosing Rhabdomyosarcomas: Unique Variants Defined by Molecular Features

**Objectives:** Congenital-infantile spindle cell (SpRMS) and sclerosing (ScRMS) rhabdomyosarcomas with tumor-defining molecular features in the head and neck region will be described. These tumors may be confused with more commonly occurring spindle cell tumors (myofibroma, infantile fibrosarcoma) in infants. NCOA2 and VGLL2 rearrangements, and MyoD1 mutations are characteristically identified in SpRMS and ScRMS. NCOA2 and VGLL2 rearrangements are more common in SpRMS, while MyoD1 mutations are more common with ScRMS. NCOA2 or VGLL2 RMS tend to have favorable outcomes, but MyoD1 mutation RMS may have aggressive disease with dismal outcome.

**Findings:** 5 neonates and infants were diagnosed with head and neck SpRMS (n=3, 2 males, 1 female, ages 2 weeks to 6 months, 2 maxillary sinus, 1 neck) and ScRMS (n=2, 2 males, ages 5 weeks and 8 months, 1 perinasal, 1 mandible). SpRMS were characterized by malignant spindle cells that were compactly apposed, and closely resembled infantile fibrosarcoma. ScRMS were composed of small round cells in a prominent sclerotic matrix. Both SpRMS and ScRMS lacked rhabdomyoblastic differentiation on H&E staining. Immunostaining with myogenic antibodies (Desmin, Myogenin, MyoD1) identified rhabdomyoblastic origin. Electron microscopy (N=4) showed rudimentary myofilaments in 3 cases and absence of myogenic differentiation in 2 SpRMS cases. Cytogenetic and molecular analyses identified NCOA2 rearrangements in 2 SpRMS and MyoD1 mutations in 1 SpRMS and 2 ScRMS. SpRMS were negative for ETV6 rearrangements associated with infantile fibrosarcoma. MyoD1 mutation RMS demonstrated chemoresistance and progressive disease; while NCOA2 RMS responded favorably to oncologic management.

**Conclusions:** SpRMS and ScRMS occurring in neonates and infants require molecular characterization for diagnosis, initiating appropriate oncologic and surgical management, and predicting outcome. SpRMS may mimic infantile fibrosarcoma closely, and it is recommended that spindle cell tumors in neonates and infants be assessed for myogenic differentiation.
#35 Factors influencing Odontogenic Maxillofacial Infections and the Economic Impact at a UK Hospital

Monday, 25th June - 00:00 - Poster Session Available from 25th (16:30- 18:30) -26th (18:30-20:30) June 2018 - Bayshore Ballroom D-F - Poster - Abstract ID: 129

Dr. Karan Nadig (Royal Surrey County Hospital, England), Mr. Nigel Taylor (Royal Surrey County Hospital, England)

Objectives: To describe the presentation, management, and demographics of 100 consecutive patients with odontogenic infection managed at the Royal Surrey County Hospital, UK. To identify factors influencing Length of Stay (LOS) with the resulting economic impact.

Findings:
Male: female ratio was 54:46 with a mean age of 36 years and mean LOS of 2.38 nights. 29% had not received treatment prior to admission. Age, White cell count, male gender, and multiple space infection were associated with a significantly greater LOS.

The most commonly involved fascial spaces were the submandibular (39%) and buccal (39%) spaces. 10% of patients experienced complications as a result of infection. Diabetes, smoking and treatment prior to admission were found not to significantly affect LOS.

A total of 238 nights in hospital were spent by these patients in this study. Assuming an average cost of £400 ($ 560) per night, and OR cost of £1200/hour this cost the national health system an estimated £133,600 ($186,600) for an often preventable disease.

Conclusions:
Severe odontogenic infection are preventable by regular dental attendance, and represent a significant morbidity and economic cost to patients and limited health resources that are under financial constraints.

Aggressive management of odontogenic infections should be considered for older, male patients with multiple space involvement and a high White Cell Count.
Objectives: The effect of early growth response-1 (EGR1) on cancer invasion remains controversial depending on the cancer type. EGR1 is known to slow the progression of cancer by inhibiting the expression of MMP2. However, the effect of EGR1 on MMP9, which is important for HNSCC invasion, is disputed. Our aim is to clarify the tumor suppressor role of EGR1 in downregulating MMP9. We also consider MDM2, an enhancer of MMP9 expression.

Findings: EGR1 mRNA and protein expression were compared in normal and HNSCC tissues using The Cancer Genome Atlas (TCGA) dataset analysis as well as immunohistochemistry (IHC). In vitro cell invasion was performed by two-dimension (2-D) and three-dimension (3-D) spheroids Matrigel invasion assay. TCGA data showed significantly higher EGR1 mRNA levels in nonmetastatic HNSCC tissues than in metastatic tissues. IHC analysis showed significantly higher levels of nuclear EGR1 expression in primary tumor tissues than in paired metastatic lymph node tissues. Transient EGR1 overexpression inhibited the Matrigel invasion of HNSCC cells, as well as decreasing mRNA of MMP9 and MDM2. Consistent with these observations, TCGA data analysis found significantly fewer metastatic patients among a subgroup of a large population presenting higher EGR1 expressions with lower MMP9 and/or MDM2.

Conclusions: Our data suggests that EGR1 might be a potential candidate to attenuate HNSCC metastasis.
#37 Exfoliative cytology as a complementary tool for oral diagnosis: cost-effectiveness or time lost?

Monday, 25th June - 00:00 - Poster Session Available from 25th (16:30- 18:30) - 26th (18:30-20:30) June 2018 - Bayshore Ballroom D-F - Poster - Abstract ID: 137

Prof. Fabio Coracin (Nove de Julho University - UNINOVE), Mr. Alvaro Tolentino Mendes (Nove de Julho University - UNINOVE), Mrs. Hean Gi Kean (University of Sao Paulo - USP), Prof. Suzana Cantanhede Orsini Machado de Sousa (University of Sao Paulo - USP)

**Objective:** to analyze the cytological diagnosis and compare with the clinical provisional diagnosis to determine the sensitivity and specificity of exfoliative cytology in oral lesions. **Findings:** we retrieved 1,000 consecutive diagnosis from the cytology diagnosis files of the Oral Pathology Service at the University of São Paulo, comprising 621 females patients and 379 males patients with a median age of 53yo (range: 3-91). Regarding race, 676 patients were caucasians and 181 blacks. The most frequent sites where material was collected were tongue (n=267), palate (n=261), buccal mucosa (n=149) and gingiva (n=55). The most frequent clinical suspicion was a search for fungus (n=330) and candidiasis (n=276). Concerning the final cytological diagnosis, 25/330 cases aiming for fungus search came out as candidiasis. In those 276 cases that had candidiasis as clinical hypothesis, only 66 resulted positive for the fungus. In the 20 samples where herpes simplex was the clinical suspicion, the cytological diagnosis of herpes was confirmed in 5 cases (all classified as class II of Papanicolaou), for the remaining 15 cases only a Papanicolaou class was attributed, being 4 cases class I and 10 class II and 1 case could not be analyzed. In 15 cases there was a suspicion of squamous cell carcinoma, and of these, 4/15 were classified as class V and 2 as class 4. The remaining were 6 class II and 3 class III. Other diagnosis did not show a pattern of cytological characteristics matching the clinical suspicion. **Conclusions:** we conclude that exfoliative cytology is mostly not helpful for diagnosis in Oral Pathology, and, biopsy remains the gold standard, unless the patient refuses a biopsy.
#38 Diagnostic concordance among Pathologists interpreting oral mucosal biopsies from individuals affected by GVHD

Objective: the objective of this study was to compare the final diagnosis agreement between 4 pathologists when they follow the Horn criteria and the NIH criteria for analysis of oral mucosa and minor salivary glands biopsies possible affected by GVHD. Findings: 41 slides of oral mucosa and minor salivary glands obtained from individuals with GVHD were analyzed by 4 oral pathologists. Following the Horn criteria based on minor salivary gland and oral mucosa independently, all pathologists gave the same final diagnosis in 11 out of 41 cases, 3 of them agreed in 12 cases and 2 in 18 cases. Following NIH Consensus based on specific criteria in both epithelium and salivary glands, 4 pathologists gave the same final diagnosis in 9 out of 41 cases, 3 agreed in 24 cases and 2 in 7 cases. One case received 4 different diagnoses. To verify the agreement inter-observer in both oral cGVHD classifications, Kappa test showed to Horn classification k=0.22 and to NIH consensus k=0.35. Conclusions: the concordance of the final diagnosis of oral mucosa biopsies of hematopoietic stem cell transplantation patients suspected of GVHD was very low when the pathologists followed both the Horn criteria and NIH consensus.
A 60–year-old male presented for evaluation of “gum” lesions noted by an oral surgeon. The patient had been treated with chlorhexidine rinse, but the lesions had persisted. The medical history was significant for diabetes mellitus type 2, well-controlled HIV infection, and cutaneous psoriasis. On examination, multiple red macules were noted on the palate. Exfoliative cytology was performed and the patient treated empirically for erythematous candidiasis. On return for re-evaluation, the oral lesions had become widespread. The patient reported that he had discontinued apremilast for insurance reasons, and his cutaneous lesions had also worsened. Exfoliative cytology was negative for Candida organisms. A biopsy of the palatal lesions was recommended and a tentative diagnosis of oral psoriasis rendered. Microscopic examination revealed hyperparakeratosis and psoriasiform mucositis. Since the oral lesions were asymptomatic, the patient was reassured and advised to return for evaluation one month after resumption of psoriasis medication. Clinical assessment is ongoing.
#40 USE OF FLUORESCEIN DYE IN DETECTION OF ORAL DYSPLASIA AND ORAL CANCER

Dr. Deepika Mishra (All India Institute of Medical Sciences, New Delhi), Prof. OP Kharbanda (All India Institute of Medical Sciences, New Delhi), Prof. Anurag Srivastava (All India Institute of Medical Sciences, New Delhi), Dr. Darakhshan Qaiser (All India Institute of Medical Sciences, New Delhi), Dr. Rahul Yadav (All India Institute of Medical Sciences, Delhi), Dr. Krushna Bhatt (All India Institute of Medical Sciences, New Delhi), Dr. Anubhuti Sood (All India Institute of Medical Sciences, New Delhi)

Objectives: Photodetection has played role in detection and localization of various tumors of the body like ovarian cancer, breast cancer etc. but there is paucity of information regarding its use to identify oral cancer and dysplasia. Thus, we hypothesized that fluorescence dye can be helpful in detecting early potentially malignant disorders (OPMD) and oral squamous cell carcinoma (OSCC) after topical application.

Findings: We included 83 individuals of Indian origin which comprised 33 OPMD, 30 OSCC and 20 controls in the study. After obtaining ethical clearance from institutional review board, all patients recruited in study were examined by the investigators regarding the lesion location and extent. After application of Fluorescein dye (0.25 ml of 20 % Fluorescein diluted in 4 ml of saline), the mouth was examined by the blue light to see the fluorescence and incisional biopsy was taken from the respective lesion and evaluated histologically. Moderate to intense fluorescein staining was seen in 83% histopathologically confirmed cases of Squamous cell carcinoma (25/30 cases) and 90% of dysplasia (9/10 cases) and 61% of hyperkeratosis (8/13 cases). Mild or no fluorescein staining was seen in 50% of mild dysplasia (3/6), 50% of OSMF (4/8), 67% of OLP (2/3) and 38% of hyperkeratosis (5/13) cases. No fluorescein staining was seen in 100% of control group. Test was found to be highly significant in diagnosing dysplasia and carcinoma compared to controls (p<0.01). The test showed sensitivity of 63%, specificity of 85%, positive predictive value of 82% and negative predictive value of 68%.

Conclusions: We concluded that fluorescein dye staining is a simple, non-invasive test of the oral mucosa, which can help the experienced clinician to find oral precursor malignant lesions. It is a cost-effective measure and can be used for mass screening programs. It might help to identify most appropriate site of biopsy.
#41 Incidence Rates of Oral and Oropharyngeal Cancer in South Africa 1988-2013

Prof. Johannes Hille (University of the Western Cape/NHLS), Dr. Daniel Shepherd (University of the Western Cape/NHLS)

In South Africa, the four different population groups (White, Black, Coloured/Mixed Race and Asian) have very different incidence rates of oral cancers. The possible impact of HR-HPV infection on the incidence of oropharyngeal cancer in this country has not been assessed.

Objectives: To describe and compare the trends in age standardised incidence rates (ASIR) of oral and oropharyngeal cancer in South Africa from 1988 to 2013.

Methods: The ASIRs of these cancers were calculated from the incidence rates published by the National Cancer Registry (SA-NCR), a pathology-based registry.

Findings: The average ASIR (/100,000/year) of oral cavity cancer for all males was 5.9 and for all females 1.74; the highest affected were the males of mixed race (8.47) and white males (6.19) and the Asian females (4.61). The latter population group is known for a high consumption of Areca nut. The average ASIR of pharyngeal cancer for all males was 2.61 and for all females 0.71; The highest incidence of pharyngeal cancer was noted in the males of mixed race (3.86) and white males (2.73). As South Africa is not known for a high incidence of nasopharyngeal cancer, these rates would more or less apply to oropharyngeal cancers. The trends of oral cavity and oropharyngeal cancer ASIRs over the period 1988-2013 show a slight downward trend except for white and mixed-race females. The incidence trends in pharyngeal cancer also show a decline over that period.

Conclusion: The intensification of the anti-tobacco legislation and campaigns in South Africa might have contributed to the slightly declining incidences of oral and pharyngeal cancer. Contrary to data reported in the United States and Europe, there is no indication of a rise in HR-HPV driven oropharyngeal cancers over the period 1998-2013 which could indicate that South Africa is lagging behind in the HR-HPV related carcinoma epidemic.
#42 Systemic drug-induced oral hyperpigmentation: systematic review

Monday, 25th June - 00:00 - Poster Session Available from 25th (16:30- 18:30) -26th (18:30-20:30) June 2018 -
Bayshore Ballroom D-F - Poster - Abstract ID: 147

Dr. Nada Binmadi (King Abdulaziz University, Faculty of Dentistry), Dr. Maram Bawazir (King Abdulaziz University, Faculty of Dentistry), Dr. Soulafe Almazrooa (King Abdulaziz University, Faculty of Dentistry)

Background and Objective: Oral hyperpigmentation was associated with many systemic therapeutic drugs. The mechanism of tissue pigmentation by drugs usage is quite variable and non-specific. However, resolution of the discoloration was proven to occur after the suspected drug withdrawal in majority of cases. Most of the published reports on a causal relation evidence between medicinal drugs and oral hyperpigmentation are based on individual case studies or repeated observations. Evidence-based literature is rarely found to prove this causal relation. The aim of this systematic review of literature is to provide a causal relation evidence between medicinal drugs and their adverse reaction presented as oral/mucosal pigmentation.

Study Designs: A systematic review and analysis of literature was conducted using PubMed, ScienceDirect, Scopus and ProQuest. Original articles, written in English and published till December 2017, were included in the analysis.

Findings: A total of 206 articles were found of which, 49 observational studies were eligible for inclusion in the analysis. In these studies; antimalarial medications, chemotherapeutic medications, and antibiotics were significantly associated with oral hyperpigmentation.

Conclusion: Medication use was significantly associated with oral/mucosal hyperpigmentation in older adults. The risk of oral pigmentation was greatest for antimalarial medication used for immune-mediated diseases and certain chemotherapeutic agents. Future research should develop a risk score for medication-induced oral pigmentation to assure the patient during prescription and management of these medications.
Sickle cell disease causes vascular microinfarcts that lead to multi-organs alterations including dental involvements. Teeth, oral structures, and maxillofacial bones are affected. Dental alterations of oral and maxillofacial bones are of anatomical, radiographical, and structural significance. Due to compensatory hematopoiesis, hemolysis, and vaso-occlusive events in the maxilla and mandible, bony changes are noticed radiographically in SCD patients. Seven oral radiographic features were reported in the literature among SCD patients: large trabecular spaces, increased medullary spaces, thinning of the inferior mandibular border (osteoporosis), interproximal alveolar bone staircase pattern, thickening of lamina dura, resorption in alveolar bone, and radiopacities/osteosclerosis. Mandibular Hypovascularity can induce osteomyelitis and osteonecrosis in SCD patients. Mandibular osteomyelitis can be followed by osteosclerosis (radiopacities) if proper healing is achieved. In this study, we obtained multiple radiographs of 35 SCD patients to 1) determine the common radiographic features seen in SCD patients and 2) assess the seven radiographic features reported in the literature. Results: Some SCD patients demonstrated more than one radiographic feature, while other SCD patients manifest no radiographic findings. The most common feature was the staircase pattern and the least common was osteoporosis. A detailed table of the number of SCD patients presented with notable radiographic features is presented in this poster, in addition to a comparison between the common and uncommon features. Conclusion: not all SCD patients demonstrate oral radiographic findings, and among the oral radiographic findings reported in the literature, some features are more common than others. Hopefully, 50 or more SCD patients will be included in the study for further evaluation. Furthermore, an equal number of radiographs of competent patients will be examined randomly from Kuwait University’s bank of radiographs to serve as a control group. Therefore, we will be able to determine if the reported oral radiographic features are suggestive of SCD or not.
Objective: Immunohistochemistry (IHC) is a widely used diagnostic technique in the Oral and Maxillofacial Pathology. Various variables affect results of the IHC technique. Therefore, standardization and optimization of the IHC technique are essential in generating reliable and reproducible results. The aim of this study was to determine the optimal conditions for IHC staining of multiple antibodies with minimal background.

Findings: In our study, we noticed that 2% hydrogen peroxide (H2O2) is most effective to block endogenous peroxidase activity. Formalin-fixed, Paraffin-embedded tissues from mice and human biopsies were subjected to IHC with three different monoclonal chimeric antibodies. Various combinations of antibody concentrations and incubation time were investigated. Two secondary antibody kits namely Vectastain Universal ABC-AP KIT (PK-6200) and Alkaline Phosphatase Universal (AK-5200) as well as two chromogen systems namely ImmPACT DAB EqV (Chromogen and peroxide) and Alkaline Phosphatase substrates were used. The optimal concentration of individual antibodies varied greatly (From 1 to 20 µg/ml) based on their affinity to the primary antigen. While the manufacturer instructions recommend 30 minutes incubation for all primary antibodies, we observed overnight incubation at 4°C obtained best results. The optimal counterstain with peroxidase (brown) substrate was Hematoxylin and Alkaline Phosphatase (blue) substrate was Nuclear Fast Red. Digital imaging parameters such as white balance, exposure time and file format were optimized. Evaluation of the IHC results was performed using the light microscope and digital imaging.

Conclusion: Overall, our results confirm careful validation of individual IHC technique is critical in obtaining consistent and reproducible results. Factors such as endogenous peroxidase blocking, antibody concentration and incubation time, chromogen system and counterstains are important parameters that should be optimized for individual studies.
Expression of the cancer stem cell marker ALDH1 is increased in the budding area of oral squamous cell carcinoma

Objectives: This study aimed to evaluate the expression of the cancer stem cell marker ALDH1 and its association with tumor budding, a morphological marker of cancer invasion, in oral squamous cell carcinoma (OSCC).

Findings: 163 OSCC samples were obtained by incisional biopsies. Immunohistochemistry was performed to detect positive cells for ALDH1 (cancer stem cell marker) and for AE1/AE3 (multi-cytokeratin to identify OSCC cells in tumor budding evaluation). A positive expression of ALDH1 was observed in 47.24% of the samples. In the tumor budding evaluation, samples were classified as low- or high-intensity tumor budding. Association between the ALDH1 expression and tumor budding was assessed using the chi-square test. However, no association was observed (p>0.05). In samples with high-intensity tumor budding, differences in the ALDH1 expression between the budding area and the area outside the budding were evaluated using the McNemar test. The ALDH1 expression was higher in the budding area than in the area outside the budding (p<0.05).

Conclusion: The findings reinforce the idea that cells at the tumor budding area show phenotypic characteristics of cancer stem cells. The debate concerning the model of oral carcinogenesis by cancer stem cells was also strengthen. Supported by FAPEMIG (APQ-01806/14 and PPM-00653-16).
Mesenchymal chondrosarcoma (MCS) is a rare subtype of chondrosarcoma accounting for less than 2% of all chondrosarcomas, first described by Lichtenstein and Bernstein in 1959. The majority develop as intraosseous lesions, and the jawbones are among the most common primary sites. The peak incidence is between ages 10-30. In this report, we present a case of MCS diagnosed in the maxilla and review the literature for previously reported cases.

A 20-year-old female presented to oral and maxillofacial surgery with a five-month history of sinus congestion. A panoramic radiograph demonstrated a diffuse radiopacity of the right maxillary sinus and a CT scan revealed extension of the lesion to the orbit. A biopsy exhibited a proliferation of cells with basophilic cytoplasm varying in appearance from round to spindled. Numerous atypical mitotic figures were noted and foci of chondroid material were scattered throughout the lesion. Immunohistochemical studies revealed diffuse reactivity of the cellular proliferation with CD99 and positivity of S-100 within the cartilaginous tissue. These findings were consistent with a diagnosis of mesenchymal chondrosarcoma and genetic studies confirmed HEY1-NCOA2 fusion to support the diagnosis. The patient was referred to a sarcoma center for further management. The literature was reviewed for previous cases of MCS of the maxilla. Including the current case, there are 41 cases with a male:female ratio of 1:1.4. The age at diagnosis ranged from 9-83 years with a mean age of 30 years and median age of 26 years.

MCS is a rare high-grade malignancy with a ten-year survival of 10-54%. While some studies have suggested that MCS of the jawbones may have an improved prognosis compared to those originating in other sites, others have disputed that finding. Familiarity with the radiographic and histopathologic features of MCS may aid in the diagnosis of this rare sarcoma.
#47 Pheophorbide a-mediated photodynamic therapy induced endoplasmic reticulum stress, leading to induction of apoptosis in human oral squamous carcinoma cells

Photodynamic therapy (PDT) has been developed as an therapeutic alternative for malignant tumors that uses a photosensitizer. Our group recently synthesized a photosensitizer Pheophorbide a (Pa) from chlorophyll-a. However, the molecular mechanisms by which it causes anti-cancer activity in oral squamous cell carcinoma (OSCC) are not well understood. Here, we showed that Pa-PDT inhibited effectively the proliferation of FaDu cells. Flow cytometry and western blot showed that Pa-PDT induced intrinsic apoptosis cell death pathways in FaDu cells. Next, we checked Pa-PDT induced ER stress in FaDu cells that it was observed as demonstrated by accumulation of the ER stress marker. Pa-PDT also induced autophagy in FaDu cells was evidenced by the increased levels of the autophagic protein marker expression. Inhibition of ER stress pathway using 4-phenylbutyric acid (PBA) 1mM decreased CHOP, with induced inhibition of cell deaths. Also, the inhibition of ER stress enhanced Pa-PDT mediated autophagy. This result suggest that Pa-PDT induced ER stress trigger apoptosis and inhibition of ER stress decreased Pa-PDT mediated cytotoxicity through an increase of autophagy. This study was supported by Basic Science Research Program through the National Research Foundation of Korea (NRF) funded by the Ministry of Education, Science and Technology (No. NRF-2016R1D1A1B01006388).
#48 Salivary gland sonoelastography: to do or not to do?

Monday, 25th June - 00:00 - Poster Session Available from 25th (16:30- 18:30) -26th (18:30-20:30) June 2018 - Bayshore Ballroom D-F - Poster - Abstract ID: 157

Dr. Irit Allon (Barzilai University Medical Center), Dr. Daniel London (Barzilai University Medical Center), Dr. Olga Resnikov (Barzilai University Medical Center), Dr. Michael Abba (Barzilai University Medical Center), Dr. Anna Pikovsky (Barzilai University Medical Center), Prof. Oded Nahlieli (Barzilai University Medical Center)

Background: Sonoelastography (SEG) is a non-invasive, relatively new imaging modality that maps the elastic properties through stiffness of soft tissue. Pathological conditions such as inflammation and neoplasia can change tissue elasticity; as a result, when used in the major salivary glands, this non-invasive modality may provide information that could be useful for diagnosis.

Objective: Two preliminary studies are presented; both assess the diagnostic utility of SEG: the first in primary Sjogren’s syndrome (pSS) and the second concerns major salivary gland tumors.

Methods and materials: The first study included fifteen patients with pSS that underwent SEG of the major salivary glands before starting pilocarpine treatment versus diffused sialadenitis and normal glands. The second study included nineteen benign and malignant tumors, just before ultrasound-guided needle aspiration for cytology and excisional biopsy. Quantitative indices of the shear elastic modulus were compared with cytological and histopathological results. Elastography was scored on color-scaled elastograms.

Results: Mean elasticity/stiffness values for pSS were not significantly different from those of diffused sialadenitis and normal salivary gland tissue. As for salivary gland tumors, scores showed clustering according to pathological condition. For example, pleomorphic adenomas were firmer than Warthin’s and adenoid cystic carcinoma was firmer than polymorphus adenocarcinoma.

Conclusions: SEG did not show a diagnostic advantage in regard to the assessment of pSS. Nevertheless, it might serve as a tool in the evaluation of benign and malignant major salivary glands tumors. Our studies should be continued to confirm these preliminary observations.
#49 Metastasis around dental implants masquerading as Peri-implantitis - a wolf in sheep’s clothing

Monday, 25th June - 00:00 - Poster Session Available from 25th (16:30- 18:30) -26th (18:30-20:30) June 2018 - Bayshore Ballroom D-F - Poster - Abstract ID: 269

Dr. Irit Allon (Barzilai University Medical Center), Dr. Liat Hecht-Nakar (Barzilai University Medical Center), Prof. Abraham Hirshberg (Tel), Dr. Alejandro Livoff (Barzilai University Medical Center)

Background: Placement of dental implants is a common procedure with a high success rate. A minority of the cases fail, however, a manifestation termed peri-implantitis, which is considered clinically obvious, hence often not biopsied.

Case report: In this report, a case of metastatic lung adenocarcinoma mimicking peri-implantitis adjacent two dental implants is presented. The lesion occurred eight months after the surgical implantation procedure and by that time, the underlying malignancy was unknown to the patient. During the surgical procedure itself, and even in the follow up meetings, there was no apparent clinical or radiographic sign of a metastatic disease, but during an eight months follow up session, the soft tissue around the implants was firmly swelled and mildly erythematous, and the x ray imaging revealed a nonspecific ill-defined radiolucency of the alveolar bone. The tissue was excised, adjacent bone was curated and the tissue was submitted to histopathological analysis. The pathological picture presented a malignant tumor composed of epithelial islands embedded within a fibrous stroma. The epithelial islands presented atypical features and an immunohistochemical phenotype of lung adenocarcinoma that included positive pan keratin, thyroid transcription factor-1 and napsin-A and negative thyroglobulin and prostatic specific antigen. Concurrently, the patient was diagnosed with a lung adenocarcinoma and started systemic treatment.

Conclusion: This case of metastatic disease masquerading as peri-implantitis reflects the importance of submitting any tissue to histopathological assessment.

Monday, 25th June - 00:00 - Poster Session Available from 25th (16:30-18:30) - 26th (18:30-20:30) June 2018 - Bayshore Ballroom D-F - Poster - Abstract ID: 158

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Oral cancer may be preceded by Potentially malignant lesions such as leukoplakia, erythroplakia, stomatitis nicotina, oral submucous fibrosis (OSMF) and erosive lichen planus (LP). Oral Epithelial dysplasia (OED) is an important predictor of malignant potential. According to WHO 2017, the three tiered grading reliability can be improved by Binary grading system of high & low risk. So the aim of this retrospective study was verify the applicability of the binary grading system for OED in our institution.

**Objective:** Comparison of the Binary grading system with WHO three tiered grading system in Oral Epithelial Dysplasia.

**Findings:** 116 cases reported as OED from the period 2008 to 2017, were reevaluated and graded according to WHO 2005 & the Binary system. 81.03% of cases were clinically diagnosed as oral leukoplakia, 10.34% as oral LP and 8.62% as OSMF. The frequency of distribution of cases according to WHO grading system were mild (19), moderate (55) and severe (42), whereas according to binary system 85 cases are high risk and 31 cases low risk. On comparison, all 42 cases of severe dysplasia were graded as high risk. Out of 55 cases of moderate dysplasia, 41 were graded as high risk and 14 as low risk. Among 19 cases of mild dysplasia, 2 cases were designated as high risk and 17 cases as low risk. Out of 116 cases, 11 (9.48%) cases were of recurrence as OED. 9 cases (10.58%) out of 85 high risk cases showed recurrence in comparison to two (2.35%) out of 31 low risk cases. Analysis of Binary system in relation to clinical features is also attempted.

**Conclusion:** In the present analysis, though majority of the high risk cases occurred on buccal mucosa, recurrence was more on tongue. The binary system helped in defining the prognostic group by providing the histologic criteria.
#51 FREQUENT COEXISTENCE OF GLI1 OVEREXPRESSION AND BRAF(V600E) MUTATION IN AMELOBLASTOMAS

**Objective:** Recent studies show SMO mutations play a role in the pathogenesis in ameloblastomas and may co-existence with FGFR2, RAS and occasionally BRAF mutations. In our previous study, no SMO mutations were identified in ameloblastomas in Taiwan. To understand whether sonic hedgehog (SHH) pathway through other mechanisms is present in ameloblastomas in Taiwan and how frequent sonic hedgehog (SHH) pathway coexistence with BRAF mutation, we aimed to examine the expression of Gli1, the key transcription factor in SHH pathway, in ameloblastomas.

**Methods:** Thirty formalin fixed paraffin embedded ameloblastoma tissue sections were used for macro-dissection of tumor component and DNA and RNA extraction. Sanger sequencing was performed to detect the BRAF(V600E) and SMO(L412F and W535L) mutations. Real-time RT-PCR was performed to investigate the expression of Gli1. Four radicular cysts and one calcifying odontogenic cyst were used as controls. The relationship between Gli1 expression in ameloblastomas and clinicopathological parameters were also evaluated.

**Results:** Among 30 ameloblastoma cases, twenty-six cases harbored BRAF(V600E) mutation and none had SMO mutations. Either BRAF(V600) nor SMO mutations were identified in controls. The expression of Gli1 was significantly higher in ameloblastomas than controls (p<0.01), especially in follicular type ameloblastomas with acanthomatous changes. Multicystic/Solid ameloblastomas showed higher Gli1 expression than unicystic ameloblastomas (p<0.05). The expression of Gli1 was higher in patients >50 year-old than <50 year-old (p<0.05). We observed a trend that higher Gli1 expression in BRAF wild type than BRAF mutant cases (P=0.24), however, analysis of a larger cohort is needed to substantiate this finding. No statistical significance was identified between Gli1 expression level with gender, root resorption, bone perforation, and recurrence.

**Conclusion:** Frequent coexistence of Gli1 overexpression and BRAF(V600E) mutation in ameloblastomas was noted. This finding suggested that inhibition of both SHH pathway and BRAF-MAPK pathway might be required for future target therapy in ameloblastomas.
Cancer associated fibroblasts (CAFs) influence tissue invasion on salivary gland mucoepidermoid carcinoma (MEC) cells.

Objectives: MEC is the most common salivary gland malignancy. Although prognosis is mostly based on TNM status, histologic grade is also used as a parameter to determine treatment. CAFs have been reported to influence worse behavior in several malignancies including head and neck squamous cell carcinoma. We noticed the presence of CAF-like cells, displaying immunohistochemical positivity for alpha smooth muscle actin, in some MECs with bad outcome and we hypothesize that CAFs may influence MEC aggressiveness. Therefore, we investigated tissue invasion using the organotypic 3D human leiomyoma model and cell migration using the Incucyte® system with a gel derived from human leiomyomas (myogel). MEC cell lines HMC2 and UTMUC1, derived from high grade tumors, were cultivated alone or co-cultured with CAFs in order to evaluate if CAFs would influence MEC cells invasion and migration. Cells were cultivated on top of human leiomyoma discs for 14 days to allow invasion. Discs were fixed in 10% buffered formalin, processed and 3 micrometer tissue slices were prepared and submitted to immunohistochemical reaction with a pan-cytokeratin antibody (clone AE1/AE3). The number of invasive cells was determined by counting invasive cells under light microscope. Invasion was studied using a wound scratch assay coupled with a live camera and data obtained was analyzed using software provided by the manufacturer.

Findings: Both MEC cell lines (HMC2 and UTMUC1) displayed a significant increase in tissue invasion when co-cultured with CAFs compared to when they were cultured alone. Only HMC2 cell line presented a significant increase in migration when co-cultured with CAFs.

Conclusion: CAFs significantly increase MEC cell lines invasion and migration. The presence of CAFs deserves further investigation in MEC tumor samples and it may correlate with tumor behavior and clinical outcome.
Multiple synchronous or metachronous salivary gland tumors, benign or malignant, are rare yet more likely to occur in the major salivary glands compared to involvement of the minor salivary glands. In this poster we present three new cases of synchronous oral salivary gland tumors in minor salivary glands and review the previously reported cases.

All three patients were female. Two of the patients aged 55 and 85, presented with submucosal nodules of the upper lip and left buccal mucosa, respectively. Histopathologically, both cases exhibited two separate encapsulated tumors identified as pleomorphic adenoma and canalicular adenoma presenting as a single nodule in the first case, but as two separated nodules in the second. The third patient was a 46-year old who presented with a grayish-blue, non-ulcerated, and painful nodule on the left soft palate. Histopathologic examination showed a nodule composed of two adjacent, yet separate tumors diagnosed as polymorphous adenocarcinoma demonstrating significant perineural invasion, and low-grade mucoepidermoid carcinoma.

**Conclusion:** Intraoral multiple synchronous salivary gland tumors are rare and unusual, with only a few cases reported in the literature. The diagnosis of such tumors would be significant from treatment, management, and prognostic standpoints. Cytogenetic studies might be useful in further clarification of these entities.
#54 Disseminated metastatic melanoma of unknown origin first diagnosed in the oral cavity with near resolution after immunotherapy and subsequent immune-related sequelae

Herein, we report an atypical clinicopathological presentation of amelanotic melanoma first diagnosed in the oral cavity of a 68-year-old man. The tumor was immunopositive for HMB45 and S-100, and weakly positive to Melan A. PET (positron emission tomography) and CT (computed tomography) scans demonstrated widespread organ and bone metastases, obviating surgical intervention. Standard immunotherapy was instituted with ipilimumab and nivolumab. At 3-weeks, near resolution of the oral lesion was evident and repeat imaging showed resolution of the left lung lesions and marked reductions in size of other affected sites. The patient subsequently experienced and recovered from multiple immune-related adverse events, including autoimmune carditis, which was managed with steroid administration. Following subsequent immunoregimens and 4 months since the initial diagnosis, the patient succumbed to sudden apparent cardiac arrest. Historically, surgery, chemotherapy, and radiotherapy to manage mucosal melanoma have yielded poor long-term outcomes, necessitating alternative efforts to improve patient care. Immunotherapy is an emerging modality for management of late-stage melanoma and has shown promising results to extend overall survival.
**Does the germline deficiency in Toll-Like Receptor (TLR)2 affect the 4-Nitroquinolone N-oxide (4-NQO)-induced carcinogenesis in the upper aerodigestive tract?**

**TLR2 is implicated in the development and/or progression of several cancer types. We showed recently that activated TLR2 in human TLR2-high oral squamous carcinoma cells (OSCC) directly promote their growth and survival via the extracellular regulated kinases (ERK)1/2 signaling, among other functions (Palani et al, Oncotarget 2018;9:6814-29). However, most of the mechanisms of TLR2 function in squamous carcinogenesis remain unknown.**

**Objectives & Approach:** To develop protocols and cell lines for targeted studies of squamous carcinogenesis in upper aerodigestive tract (UADT), we used an established (Protocol #1) and a modified (Protocol #2) 4-NQO carcinogenesis models in wild-type, TLR2-/- and TLR4-/- mice. Protocol #1 included carcinogen alone x 10 weeks, followed by 10% ethanol for 26 wks total. Protocol #2 included carcinogen and 5% ethanol x 19 weeks total. The study was approved by AU IACUC. Results: Both protocols produced epithelial dysplasia and SCC in the oral and esophageal mucosae. In Protocol #1, fewer SCC developed in the absence of TLR2 than in the WT hosts (p=0.03). In contrast, Protocol #2 produced somewhat fewer SCC in WT hosts than in either TLR2-/- or TLR4-/- hosts (difference not significant). Moreover, there was marked intraepithelial exocytosis of leukocytes throughout the UADT in Protocol #2, irrespective of TLR expression. This contrasted with minimal exocytosis induced by Protocol #1. The characterization of the mucosal inflammation is ongoing. In addition, two OSCC cell lines were established for use in orthotopic models. Conclusions: 1) The two protocols induced UADT SCC, but differed in the levels of mucosal inflammation. 2) TLR2 may have contributed to carcinogenesis in Protocol #1, but not in Protocol #2. 3) The specific roles of TLR in mucosal squamous carcinogenesis may depend upon additional factors, such as inflammation.
#56 Epstein-Barr- virus (EBV)-negative plasmablastic lymphoma: a case report

Monday, 25th June - 00:00 - Poster Session Available from 25th (16:30- 18:30) -26th (18:30-20:30) June 2018 - Bayshore Ballroom D-F - Poster - Abstract ID: 171

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Plasmablastic lymphoma is an aggressive neoplasm with poor response to therapeutic management. It is commonly associated with HIV infection and it is strongly associated with Epstein-Barr virus (EBV) in most of the cases, although negative cases to EBV can be occasionally identified. The aim of this report is to describe an original case of a 52-year old male patient referred to our department due to maxillary swelling causing facial asymmetry of the right side. His medical history was positive for HIV infection. The extraoral examination revealed hemifacial edema on the right side, involving the middle and lower thirds of the face, while intraoral exam showed an ulcerated swelling extending through the hard and soft palate on the right side, involving the buccal vestibule. CT scan revealed the presence of a hypodense image destroying the maxilla, involving the maxillary sinus, floor of the orbit and the nasal cavity. Incisional biopsy was done revealing a sheet-like proliferation of atypical large cells with plasmablastic appearance. Individually, these cells had eosinophilic cytoplasm with high nuclear-to-cytoplasmic ratio. Centrally and eccentrically cellular nuclei, with vesicular chromatin and evident nucleoli, with a starry-sky appearance were found. Immunohistochemistry was positive for CD138, EMA and MUM1, negative for CD20 and LCA, demonstrating monoclonality to lambda light chain. EBER was negative and final diagnosis was rendered as EBV-negative plasmablastic lymphoma. Unfortunately, the patient died two months after diagnosis.
#57 Oral Iatrogenic Kaposi’s Sarcoma: Case Report

Monday, 25th June - 00:00 - Poster Session Available from 25th (16:30- 18:30) -26th (18:30-20:30) June 2018 -
Bayshore Ballroom D-F - Poster - Abstract ID: 172

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This study presents a case of a 29-years old male patient with immunosuppression-associated Kaposi’s Sarcoma (KS) caused by the medicines for the leprosy treatment. The patient was presented to the stomatology service of the Hospital Metropolitano Odilon Behrens, Brazil, with a tumoral growth in the rights side of the lip commissure, with no history of local trauma. He was previously diagnosed with borderline leprosy, cataract and glaucoma and was under regular use of 100mg prednisone for 1 year and 6 months for treatment of leprosy complication. At the clinical examination it was possible to observe an erythematous tumoral growth in the lip commissure, right side, with necrosis on the surface measuring approximately 12mm. In view of the diagnostic hypothesis of non-neoplastic proliferative lesion and neoplasia of mesenchymal origin, an incisional biopsy of the lesion was performed. Microscopic findings and immunohistochemical examination of the lesion led to a final diagnosis of KS. The patient was submitted to the rapid serology test for human immunodeficiency virus (HIV), which proved to be negative, a result confirmed by the fourth-generation test. The patient was referred for surgical evaluation of the lesions and for reevaluation of the systemic steroid dosage. Faced with the infeasibility of reducing corticoid dosage, the patient underwent surgical excision of the lesions and was free of recurrence of the disease for 2 years. So, this case shows the importance of including KS in the differential diagnosis of oral cavity lesions in patients who use chronic immunosuppressant drugs.
#58 Symmetrical palatal fibromatosis (SPF) – 5 new cases and a logical diagnostic name for a rare lesion with a dozen different names

**Objective.** To present 5 new cases of a lesion reported fewer than 20 times in the literature, under a dozen different names, and to recommend the most appropriate name. **Methods.** 5 new SPF cases are clinically and microscopically characterized, with a literature review. **Findings.** 5 cases (3F & 2M) presented in patients 20-39 years of age. All presented as bilateral, symmetrical, asymptomatic, sessile, moderately firm or soft (n = 2) masses of the lateral posterior hard palate; 2 were isolated to the tuberosities. All masses were normal in color, with smooth, nonulcerated surfaces and occasional broad surface nodularity. One case had bilateral secondary, anterior extensions. Underlying bone was radiographically normal, and adjacent teeth were asymptomatic. All masses seemed to originate from tissues over the palatal bone, only secondarily extending to gingivae and/or crestal tuberosity bone, i.e. this does not appear to be a gingival entity, as previously thought. Cases had been present 2-15 years, with no familial or environmental etiologies identified. Histopathologically, masses were comprised of dense, avascular fibrous connective tissue with scattered thick bands of collagen and occasional slight surface nodularity. Surface epithelium showed regions with long, pointed and/or thin rete processes, and subepithelial stroma contained scattered large, angular fibroblasts, sometimes with multiple nuclei, sometimes with a “smudged” appearance, consistent with those in giant cell fibroma; melanin granules were not present. Conservative surgical excision affected cure in all cases. **Conclusion.** The present investigators propose SPF as the most accurate name for this chronic, presumably rare and certainly unique entity. It fits the definition of fibromatosis more than reactive fibrous hyperplasia, and the presence of giant fibroblasts in the stroma is a unique, possibly required, histopathologic feature. Conservative surgical excision is the recommended treatment, with no recurrences reported to date.
Objectives: Recent progress in malignant tumors has revealed cancer stem cells (CSC) can be the key contributors in tumor ignition, progression, and chemoradiotherapy recurrence. CD133 is a prognostic marker of survival in squamous cell carcinoma (SCC) including OSCC. CD133 can physically associate as a ternary complex with HDAC6 and the central molecule of the canonical Wnt signaling pathway, β-catenin. This association stabilizes β-catenin and leads to activation of β-catenin signaling targets in colon and ovarian cancer cell lines. Therefore, given that CD133 marks progenitor cells and strongly related with β-catenin activation, targeting β-catenin may be a means to treat multiple cancer types in CD133+ CSC-like cells. In this study, we confirmed that β-catenin was also overexpressed in KB\textsuperscript{CD133+} cells which acquired CSC-like characteristics than KB cells. Therefore we hypothesized a natural extract capable of inhibiting the activity of β-catenin can effectively inhibit the cancer progression of OSCC which acquired CSC-like characteristics.

Findings: We measured β-catenin activity of 54 plant extracts to select new candidates with β-catenin inhibitory effect. We have found 5 candidates showed significant inhibited β-catenin activities and \textit{Raphanus sativus} L. seed (RSLS) extracts effectively induces cell apoptosis in KB as well as KB\textsuperscript{CD133+} cells. We also investigated that RSLS has strong inhibit nuclear localization of β-catenin, EMT via Axin/GSK-3β/β-catenin pathway.

Conclusions: We propose that RSLS can be used as a new alternative chemotherapeutic for the treatment of intractable recurrent oral cancer.
#60 Osteosarcoma of the jaws during pregnancy: case report and review of the literature

Monday, 25th June - 00:00 - Poster Session Available from 25th (16:30-18:30) - 26th (18:30-20:30) June 2018 - Bayshore Ballroom D-F - Poster - Abstract ID: 182

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Osteosarcoma of jaw bones represents less than 1% of all head and neck malignancies. Malignancy in pregnant women is also an uncommon event, and occurs in a ratio of one case per 1000 deliveries. The aim of this study is to report a rare case of maxillary osteosarcoma in a pregnant woman, and to review the previous cases published in English literature. A 29-year old woman, in the 33rd week of gestation, presented with a 2.5 cm reddish, multilobulated and ulcerated nodule in posterior maxilla with 1 month of evolution. Computerized tomography showed an expansive tumor destroying the alveolar bone around the molars and invading the maxillary sinus. The material of the first incisional biopsy was not enough to conclude the diagnosis. Before a second biopsy was done, the patient delivered normally a healthy boy. Histologically, the tumor was composed by round cells with prominent cytoplasm and pleomorphic nuclei, sometimes multinucleated. Areas with spindle and epithelioid cells were also found, among osteoid or chondroid matrix. The lesion was extremely vascularized, with mixomatous and telangiectatic regions. The final diagnosis was conventional osteosarcoma, and the lesion was surgically removed, with clear margins. A microsurgical flap was used for reconstruction and the patient received adjuvant radiation and chemotherapy. She has been followed up for one year, with no signs of metastasis or recurrence. The influence of pregnancy on the initiation, promotion and development of sarcomas is not well established. To the best of our knowledge, no more than 10 cases of jaw osteosarcoma in pregnant women have been reported up to now. The coexistence of malignancy and pregnancy is very uncommon, and sometimes a challenge for medical professionals, especially regarding the diagnosis, the use of ancillary examinations and the treatment.
#61 Serotonin and Serotonin derivatives: New application for various skin disorders

Monday, 25th June - 00:00 - Poster Session Available from 25th (16:30- 18:30) -26th (18:30-20:30) June 2018 - Bayshore Ballroom D-F - Poster - Abstract ID: 183

_Prof. Byunggook Kim (Chonnam National University), Dr. Hye-Eun Kim (Chonnam National University), Ms. Hyejoung Cho (Chonnam National University), Prof. Okjoon Kim (Chonnam National University)_

**Objectives:** In the human body, serotonin is well known as a neurotransmitter that regulates mood, appetite and sleep. However, more than 90% of the serotonin in a human body is generated in gastrointestinal, stored in platelets, circulating whole body except brain, and contributes to various physiological function. Plants also produce serotonin, and this phyto-serotonin is known to be involved in plant growth, flowering, mature and senescence. The most difference between phyto-serotonin and human serotonin is phyto-serotonin turns to various serotonin derivatives to store in flowers and fruits during mature and senescence. Serotonin derivatives were dramatically increased against pathogen attack. There are 4 types of major serotonin derivates. Among these 4 compounds, Caffeoylserotonin (CaS), Feruloylserotonin (FS) and Coumaroylserotonin (CS) are major components which mainly found from some plant extracts. Almost all human diseases are accompanie/d by ROS generation, so we investigated the antioxidant ability of serotonin derivates to make sure that they have a potential as therapeutic reagent.

**Findings:** As a result, serotonin and serotonin derivates were found to have up to 16 fold higher antioxidant levels than Trolox which is the standard material of the antioxidant assay. In addition, CaS and 5-HT have been shown to inhibit protein damage and DNA damage either. Serotonin derivatives promote cell proliferation and migration and inhibit melanogenesis and cell apoptosis. Interestingly, 5-HT regulated cell proliferation and cell migration only through ERK/AP-1/MMP9 pathway while additional Akt/NF-κB/MMP9 pathway was involved in effects of CaS.

**Conclusions:** These results suggest that CaS can enhance keratinocyte proliferation and migration. Overall, serotonin derivatives might have potential as reagents beneficial for wound closing, cell regeneration and anti-melanogenesis.
Objectives: Oral tongue squamous cell carcinoma (OTSCC) is an aggressive cancer with poor survival and increasing incidence. Matrix metalloproteinase-8 (MMP-8), unlike most MMPs, provides protective effects in various human cancers including OTSCC. Yet, the mechanism behind these effects remain unclear. Knowledge of the molecular basis of disease progression is crucial for developing novel treatments. Thus our study aimed to identify novel candidate substrates of MMP-8 to examine the mechanisms behind its tumor-suppressive actions in OTSCC.

Findings: We have previously generated stably MMP-8 overexpressing oral squamous cell carcinoma cell line (HSC-3 MMP-8+ cells) and showed that overexpression of MMP-8 significantly decreased the cell migration and invasion. However, the molecular mechanisms hampering the motility of these cells remained unrevealed. The current study aimed to unravel these mechanisms by subjecting the secretomes of MMP-8+ and control HSC-3 cells to Terminal Amine Isotopic Labeling of Substrates (TAILS) analysis to find novel candidate substrates for MMP-8. The analysis revealed cleaved proteins, including dysadherin, 60S ribosomal protein L13, kallikrein-5, lipolysis-stimulated lipoprotein receptor, matrix-remodeling-associated protein 7, POTE ankyrin domain family member E, stathmin 1 and tubulin alpha-1C chain, which were enriched in MMP-8+ secretomes. Dysadherin is known to promote metastasis of various cancers and decrease cell adhesion. MMP-8+ cells showed decreased levels of dysadherin, suggesting a cleavage by MMP-8 from the cell membrane. Moreover, the adhesion of MMP-8+ cells was enhanced which might affect the migration.

Conclusions: Several novel candidate substrates of MMP-8 were revealed by TAILS analysis. The potential substrates, including dysadherin, may play crucial role in the changed behavior of MMP-8+ cells and needs to be further explored for their potential role in OTSCC. The cleavage of tumor-promoting dysadherin from the cell membrane might be one of the mechanisms by which MMP-8 increases tumor cell adhesion and thereby suppresses migration.
Introduction: Median maxillary anterior alveolar cleft (MAAC) is a defect presenting in 1% of the population. MAAC was first reported by Gier and Fast in 1967. A study of 66 human fetuses done by Stout and Collet in 1969 found evidence of two cystic lesions associated with MAAC. These cysts were named median alveolar cyst (MAC). To the best of our knowledge, we are reporting for the first time a bona fide example of MAAC-MAC in a human being. Case report: A healthy 14-year-old Saudi female with an anterior maxillary diastema was referred to the orthodontics clinic for consultation. Clinical examination revealed a double frenum connecting the maxillary lip and alveolar vestibule. A panoramic film and a cone beam CT revealed a radiolucency between the maxillary central incisors extending from the alveolar crest to the incisive foramen area. The labial cortical plate was missing while the palatal was intact. The radiologist interpretation was "enlarged nasopalatine canal". No other physical or dental abnormalities were evident. Upon surgical exploration, no labial maxillary osseous plate was found however, soft tissue was present and excised. Microscopic examination of the excised tissue revealed a cystic process lined by acanthotic nonkeratinizing stratified squamous epithelium with intracellular edema. In addition, sebaceous glands, islands of squamous epithelium with keratin pearl formation and lymphoid infiltrates were seen within the cystic wall. A retrospective review of the imaging studies coupled to the microscopic findings resulted in diagnosis of median alveolar cyst associated with a median maxillary anterior cleft. Conclusion: We report a rare case of MAAC with MAC showing a sebaceous component. It is thought that MAC most likely originates from epithelial invaginations derived from the anterior intermaxillary suture. However, the mechanism involved in the formation of these two conditions remains to be elucidated.
#64 Identification of November alterations in ameloblastoma and ameloblastic carcinoma from Nigeria

Mr. Sven Niklander (University of Sheffield), Dr. Akinyele Adisa (University of Ibadan), Dr. Paul Heath (University of Sheffield), Prof. Keith Hunter (University of Sheffield)

**Background and Objectives.** Ameloblastoma is a benign odontogenic neoplasm, characterized by local invasiveness, facial deformity, tooth displacement, a high rate of recurrence, and malignant transformation. It accounts for 63% of odontogenic tumour in Nigeria. Recently, studies in the genomic landscape of ameloblastoma have identified a number of consistent alterations that may be useful for therapeutic intervention. To date, no whole genome survey of ameloblastoma and ameloblastic carcinoma has been published. **Methods:** DNA was extracted from RNALater stored tissue using the DNeasy Tissue Kit (QIAGEN), from a cohort of ten ameloblastoma and three ameloblastic carcinoma from UCH, Ibadan, Nigeria. Whole genome analysis was performed using the Oncoscan FFPE Assay Kit (Affymetrix). Data was analysed using Nexus Express for Oncoscan 17.0 and Somatic Mutation Viewer 1.0.1. **Findings:** Ameloblastoma (n=10) showed a mean genome change of 9.7%, with a mean of 88.7 copy number (CN) aberrations and 7.5% of loss of heterozygosity (LOH), whereas the ameloblastic carcinomas (n=3) had a mean genome change of 6.8% with a mean of 87.3 copy number (CN) aberrations and 3.6% of loss of heterozygosity (LOH). All tumours (benign and malignant) showed CN gain at 8q23.3, affecting the CSMD3 gene. Other commonly affected regions included LOH at 1p34.2-p34.1 and 2q11.2, among others. Ameloblastoma and ameloblastic carcinomas shared somatic mutations in BRAFV600E, EGFR, KRAS and PTEN genes. One ameloblastoma showed a mutation in TP53 and two (66.7%) ameloblastic carcinomas showed a mutation in the PIK3CA gene, which was not observed in the ameloblastoma cohort. **Conclusions:** Ameloblastoma and ameloblastic carcinoma do not show extensive genome changes indicative of genomic instability. We have identified novel areas of CN gain and LOH that require further investigation. The mutational profile of these lesions is similar to that reported in the literature. Funding: Pathological Society of Great Britain.
The Importance of Immunohistochemistry and molecular studies for Diagnosing Ewing’s Sarcoma of the Mandible: A Case Report.

Introduction: Ewing's sarcoma (ES) is a malignant small round cell neoplasm primarily affects the bone. It was first described by James Ewing in 1921. ES accounts for 6-10% of all primary malignant bone tumors. It is most commonly found in children between 10-15 years of age. 1% to 2% of cases of ES affect the craniofacial bones. Only a few cases have been reported in the mandible. Here we report a case of EW in the mandible and the use of immunohistochemistry and molecular studies to confirm its diagnosis.

Clinical presentation: A 16 year old female patient was seen at the Department of Oral and Maxillofacial Surgery in King Fahad Medical City. Extra-oral examination revealed diffuse painless swelling on left side of the mandible with reduced mouth opening. Intraorally, an ulcerated large mass was present. CBCT revealed ill-defined radiolucency involving the posterior part of the mandible extending to the ramus. MRI showed a destructive mass in the left mandible with a soft tissue component occupying the left masticator space. PET/CT showed a FDG avid left cervical large mass. An incisional biopsy was taken. Microscopically, the specimen revealed the presence of islands and sheets of monotonous malignant cells infiltrating the bone. The nuclei of the malignant cells were round to oval in shape with fine dispersed chromatin and one or two indistinct nucleoli. The neoplastic cells were positive for CD99 and Fli1 and negative for SATB2. Chromosomal translocation t (11:22) involving the EWS and FLI-1 gene was identified using FISH. Patient was treated with chemotherapy.

Conclusion: We reported a case of a malignant tumor with an immunoprofile of Ewing Sarcoma that was confirmed with the identification of chromosomal translocation by molecular study.
#66 Condylar hyperplasia: radiological, histological and immunohistochemical comparative analysis

Monday, 25th June - 00:00 - Poster Session Available from 25th (16:30-18:30) - 26th (18:30-20:30) June 2018 - Bayshore Ballroom D-F - Poster - Abstract ID: 197

Prof. Fabio Pires (State University of Rio de Janeiro), Ms. Natália Carneiro (State University of Rio de Janeiro), Prof. Teresa Cristina Santos (State University of Rio de Janeiro), Prof. Luciana Armada (Estácio de Sá University)

Objectives: the aim of this study was to analyze the radiological parameters and histological features and to evaluate the immunoexpression of bone-related proteins in condylar hyperplasia, comparing to age and gender of the affected patients. Forty specimens derived from the surgical treatment of condylar hyperplasia were selected and clinical data were retrieved from the patient files. Radiological information was obtained from panoramic radiographs comparing the affected to non-affected sides. All cases were histologically reviewed and immunoreactions against TRAP, PTHrp, podoplanin and RANK were performed in all cases by the immunoperoxydase technique. Data were descriptively and statistically analyzed comparing both gender and age of the patients with radiological, histological and immunohistochemical features. Findings: radiological parameters did not correlate with age and gender of the patients; proportion of bone tissue:bone marrow and fibrous:cartilage layers showed no differences when comparing age of the affected patients, but gender of the patients correlated with the latter. There were no differences on TRAP, PTHrp, podoplanin and RANK expression according with gender and age of the affected patients. Conclusions: there were no differences on radiological parameters, proportion of bone tissue:bone marrow and fibrous:cartilage layers and expression of bone-related proteins according with age and gender of patients affected by condylar hyperplasia. Females presented a higher proportion of fibrous:cartilage layers than males. Funding: this work was supported by FAPERJ, Rio de Janeiro, Brazil.
#67 Bilateral Orthokeratinized Odontogenic Cysts of the Mandible. Case Report and Review of the Literature.

Monday, 25th June - 00:00 - Poster Session Available from 25th (16:30-18:30) -26th (18:30-20:30) June 2018 - Bayshore Ballroom D-F - Poster - Abstract ID: 198

Dr. Adwaa Alhumaidan (University at Buffalo, The State University of New York.), Dr. Akber Ali (University at Buffalo, The State University of New York.), Dr. Sanil Nigalye (University at Buffalo, The State University of New York.), Dr. Jose Luis Tapia (University at Buffalo, The State University of New York.), Dr. Alfredo Aguirre (BD)

**Introduction**: First described by Wright in 1981, orthokeratinized odontogenic cyst (OOC) represents a developmental condition derived from epithelial dental lamina rests. Radiographically, OOC appears as a unilocular radiolucency associated with an impacted mandibular third molar. Occasional examples of bilateral/multicentric OOCs have been reported in the literature. Here, we present the clinical, radiographic and microscopic features of a patient with bilateral mandibular OOCs. **Case report**: A healthy 19-year-old male presented with asymptomatic unilocular radiolucencies associated with left and right impacted mandibular 3rd molars. Both molars were extracted and the associated lesions enucleated. Microscopic examination of both specimens showed identical microscopic features consisting of cystic cavities lined by orthokeratinized stratified squamous epithelium with hypergranulosis. A diagnosis of bilateral OOCs was rendered. No recurrence was evident after 4-months. **Discussion**: Six cases (including ours) of bilateral/multicentric OOCs have been documented in the English and Spanish literature. An analysis of the published demographics of this condition showed that most bilateral/multicentric OOCs have a striking predilection for young adult males (age range: 19-41 years; mean age: 27.3 years) with only one case presenting in a female. Bilateral OOCs are almost exclusively associated with impacted mandibular third molars. However, one report documented OOCs in all quadrants. The follow-up period for these cases ranged from 4 months-13 years with no recurrence stated. **Conclusion**: Bilateral OOCs are uncommon and appear to have an excellent prognosis with no recurrence expected. However, more reports with long-term follow-up are needed to draw meaningful conclusions about their biological behavior.
Cowden’s syndrome (CS), also known as multiple hamartoma syndrome, is a rare genodermatosis of autosomal dominant inheritance and variable phenotype. Its origin is a PTEN (phosphatase and tensin homologue) gene mutation, resulting in the development of multiple hamartomatous lesions and an increased risk of malignancy. Clinically, it is characterized by multiple mucocutaneous lesions, including oral and labial papillomatous papules. Oral manifestations in CS are frequent and usually precede the establishment of malignant tumours. Their correct diagnosis may improve early recognition of this entity, leading to an appropriate genetic counselling and close surveillance for the early detection of malignant processes associated with SC.

We report a case of a 58-year-old male patient who was referred to the Oral Pathology Department of Andrés Bello University, Viña del Mar, Chile, with a presumptive diagnosis of “multiple papules” in the oral cavity. Extraoral examination revealed macrocephaly, facial trichilemomas and acral keratosis. Upon intraoral examination, multiple papillomatous lesions were observed. A biopsy of the oral lesions was taken, which revealed fibro-epithelial hyperplasia. Endoscopy of the upper digestive tract showed acanthosis of the oesophagus and multiple polyps on the antrum of the stomach and duodenum. Thyroid ultrasound showed uninodular goitre. The patient was diagnosed with Cowden’s syndrome and has been followed up closely by a multidisciplinary team in order to diagnose any development of malignant tumours.
Peripheral nerves are target for local invasion and spreading in pancreatic, gastric, prostate, and head and neck cancers. Adenoid cystic carcinoma (ACC) accounts less than 10% of salivary gland neoplasms with dual cell population, typically exhibiting three architectural patterns. Distant metastasis and neural involvement are common clinical features. Objectives: To report two rare cases of ACC arising from parotid gland and extending into mandible through mandibular foramen. Results: A 50-year-old woman and 49-year-old man presented with pain and paresthesia in the left face. A swelling was observed and computed tomography detected osteolytic lesion with irregular margins involving complete body and ramus in the left side of the mandible. Clinical diagnosis was established of osteomyelitis and sarcoma. Microscopically, both tumors presented as solid masses with few ductiform structures. Tumor cells had basaloid appearance with large pleomorphic and prominent nuclei or densely hyperchromatic with scant cytoplasm. Frequent mitotic figures and comedolike necrosis were seen. Tumor infiltration was detected in the perineural region of the inferior alveolar nerve and within bone medula. In one case, tumor cells has spread to the dental pulp. Immunohistochemically, tumor cells in one case were positive for CK7, 34BE1, CD117, Ki67 (>5 in 10hpf) and negative for p63 and CK5/6. Conclusion: Two rare cases of mandibular extension of a parotid gland ACC through the mandibular foramen is presented. Computed tomography and magnetic resonance confirmed primary ACC in the parotid gland, suggesting access of tumor cells through mandibular canal. Meticulous clinical and radiographic analysis were essential to detect primary tumor for an appropriate therapy.
#70 Differential mast cell population in subtypes and metastatic oral squamous cell carcinoma

Monday, 25th June - 00:00 - Poster Session Available from 25th (16:30-18:30) - 26th (18:30-20:30) June 2018 - Bayshore Ballroom D-F - Poster - Abstract ID: 256

Prof. Eneida Vencio (Federal University of Goiás), Ms. Thaís Santos (Federal University of Goiás), Mr. Jonathan Lima (Federal University of Goiás), Dr. Airton Fraga Junior (Araujo Jorge Cancer Hospital)

Tumor microenvironment is a dynamic network, orchestrated by neoplastic, non-neoplastic cellular, and non-cellular components in tumorigenesis, cancer progression, and metastasis. Mast cells (MCs) can modulate tumor cell activity during angiogenesis and extracellular matrix degradation in breast and lung cancers. MCs are distinguished according neutral proteases like tryptase (MC₅), tryptase/chymase (MC₅C), and chymase only (MCₐ). Its role in oral cancer remain controversial. Oral squamous cell carcinoma (OSCC) represents 90% of cases of head and neck cancer with considerable mortality and morbidity. Objectives: To identify MC population in two topographic regions among OSCC subtypes. Material and methods: Immunohistochemical study of mast cell tryptase and mast cell chymase was performed in 54 cases of OSCC. Positive cells were counted in 10 consecutive fields at 400X magnification in peritumoral and intratumoral regions. Negative control was considered at the surgical margin histologically negative. Results: Overall MC density increased 6.3 times in OSCC. MC₅C density was significantly higher than MC₅ (p<0.001) mainly in the peritumoral region. High density of MC₅C was associated with smokers (p<0.046) and metastatic tumors (p<0.048). Interestingly, mast cell phenotype of degranulation was registered only in chymase-positive MCs. MC₅ density was low in the periphery of basaloid SCC and higher in less differentiated tumors. Conclusion: MC population is highly increased in OSCC predominantly with MC₅C. High density of chymase-positivity cells suggests a subset of MC chymase only in OSCC and its expression may be related to tobacco consumption, metastasis, local invasion, and differentiation.
Secreted proteins are involved in several physiological mechanisms. In solid tumors, it can be used as diagnostic and prognostic tools. Human anterior gradient 2 (AGR2) and CD10 are proteins secreted in body fluids in prostate cancer. The main of this study was to evaluate expression of the secreted proteins AGR2 and CD10 in adenoid cystic carcinoma (ACC) of the salivary gland. A total of 20 cases of ACC of the salivary glands were examined by immunohistochemistry method. Female was more affected (70%) with age varying from 10 to 79. Tumor sizes ranged from 1.3 to 9 (mean 2.7 cm), located mostly in minor salivary glands and submandibular gland. Eleven cases showed neural invasion. AGR2 was typically cytoplasmic and focally expressed in 75% of cases. Its expression was observed in all solid subtype, followed by tubular (88.8%) and cribriform (55.5%). Interestingly, half of ACC exhibited AGR2 expression in the extracellular space or inside ductiform structures. Clinically, neural invasion, nodal involvement, and systemic metastasis were associated to AGR2 expression. The surface protein CD10 was also focally expressed mainly in ductal structures in solid and tubular subtypes. Interestingly, its expression was restricted only to stroma in cribriform subtype. This secreted protein was also found freely inside ductiform structures. Furthermore, peripheral nerves involved in the tumor significantly expressed CD10 (p = 0.029) in the tubular subtype. Conclusion: Neural invasion may involve participation of CD10 in ACC of the salivary gland. Further studies should confirm if extracellular AGR2 and CD10 represent potential biomarkers for salivary detection as diagnostic and prognostic tools in the clinic.
#72 Metastatic neuroendocrine prostate cancer, an aggressive prostate malignancy: a report of two cases with oral manifestations.

Monday, 25th June - 00:00 - Poster Session Available from 25th (16:30- 18:30) -26th (18:30-20:30) June 2018 - Bayshore Ballroom D-F - Poster - Abstract ID: 205

Dr. Stephen Roth (Zucker School of Medicine at Hofstra/Northwell), Dr. Jela Bandovic (Stony Brook University School of Medicine), Dr. Salvatore Ruggiero (New York Center for Orthognathic and Maxillofacial Surgery, Stony Brook School of Dental Medicine, Zucker School of Medicine at Hofstra/Northwell), Dr. John Fantasia (Zucker School of Medicine at Hofstra/Northwell)

Objectives: Neuroendocrine prostate cancer (NEPC) is a lethal prostate malignancy with a median survival of less than 1 year from time of detection. NEPC can occur de novo or more commonly as a treatment emergent phenomenon (t-NEPC). t-NEPC occurs in a subset of patients with metastatic-castration resistant prostate cancer. Two cases of t-NEPC with oral manifestations are presented highlighting the pathologic features and the varied clinical context in which these lesions presented.

Patients and Methods: Case 1) A 79 year-old man with a history of prostate adenocarcinoma undergoing hormone treatment presented with a fungating mass of the right maxilla and palate, clinically suspicious for squamous cell carcinoma. Biopsy revealed a high grade neuroendocrine carcinoma. Case 2) A 76 year-old man with a history of metastatic prostate adenocarcinoma receiving zoledronic acid and denosumab treatment for bony metastases, presented with mandibular fracture. A segmental resection without reconstruction with debridement was performed with a clinical diagnosis of medication-related osteonecrosis of the jaw (MRONJ). The pathology revealed a high grade neuroendocrine cell tumor. Both cases were positive for neuroendocrine markers chromogranin, synaptophysin, and CD56, and stained negative for prostate specific antigen (PSA) and prostate specific acid phosphatase (PSAP). Both tumors demonstrated a proliferative index (Ki-67) of 60-70%. An extended panel of immunostains appeared to eliminate other entities from consideration.

Conclusions: Awareness of t-NECP is of importance to correctly diagnosis the entity, recognizing that tumor markers such as PSA and PSAP are negative, and standard serum markers for prostate carcinoma may be stable or show no increase with progression of disease. Neuroendocrine carcinoma in the setting of medication related osteonecrosis of the jaw in a patient with prostate carcinoma needs to be included in the differential diagnosis.
Objectives. Oral squamous cell carcinoma (OSCC) is the sixth most common cancer worldwide. Traditionally, cancer cell lines cultured in 2D are used to predict the efficacy of new anti-cancer compounds. However, this method has low predicting value for efficacy since more than 80% of the cancer drugs, which have promising effect in pre-clinical studies, fail in Phase II clinical trials. Our group has developed human matrix based product, Myogel, which is extracted from leiomyoma tissue. Our hypothesis is that Myogel represents better the in vivo condition compared with the 2D plastic wells, or even wells coated with mouse derived Matrigel®.

We selected 12 OSCC cell lines and 19 anti-cancer compounds, targeting mTOR and epidermal growth factor receptor (EGFR) signalling pathways. The High Throughput Drug Screening method with five different conditions were used: cells in 2D plastic wells; on top and within Matrigel® or Myogel. Additionally, the morphology of OSCC cells and EGRF location were studied using immunofluorescence staining and confocal microscope.

Findings. Cancer cells on top and within Myogel were less responsive to EGFR inhibitors compared to cells cultured in 2D plastic or Matrigel®. However, in case of mTOR inhibitors, similar efficacy of the drugs in all conditions was seen. The morphology of the carcinoma cells differed depending on the matrix. Within Matrigel, the cells formed isolated round-shaped organoids, whereas the cells within Myogel were stellate-shaped. Immunofluorescent staining revealed that in 2D and Matrigel, EGFR was located primarily on the cell membranes, while in Myogel, the staining was mainly in the cytoplasm.

Conclusions. Carcinoma cells showed different behaviours and responses to anti-cancer compounds depending on the testing conditions. Comparison between clinical data and our in vitro results are still needed to reveal the most reliable condition for cancer drug testing.
#74 Oral Manifestations aid in the diagnosis of Cowden Syndrome: Role of an Oral Diagnostician

Monday, 25th June - 00:00 - Poster Session Available from 25th (16:30-18:30) - 26th (18:30-20:30) June 2018 - Bayshore Ballroom D-F - Poster - Abstract ID: 208

Dr. Pallavi Parashar (University of Alberta), Ms. Michelle Springer (University of Colorado Medical Oncology), Dr. Elizabeth Towne (University of Colorado School of Dental Medicine)

Cowden Syndrome, also referred to as Multiple Hamartoma Syndrome or PTEN Hamartoma Tumor syndrome (PHTS), is an autosomal dominant disorder with a broad clinical spectrum and wide degree of penetrance. This rare disorder causes an increased predisposition to the development of numerous malignancies, and benign hamartomas and neoplasms. The oral manifestations have also been well documented and are present in nearly all affected individuals by the third decade of life.

Objective: To describe the role of an Oral Diagnostician in the preliminary diagnosis of Cowden Syndrome. We report a case of a patient who presented with pathognomonic oral signs of Cowden Syndrome. Upon further review of her medical and family history, she was referred to her family physician and genetic counselor where the diagnosis of Cowden syndrome was confirmed through genetic testing.

Findings: A 31 year old female presented to the dental clinic at University of Colorado for a routine dental evaluation. The patient was noted to have multifocal papules affecting the gingiva, tongue and buccal mucosa, and multiple papular skin lesions. She reported a history of a thyroid tumor and a family history of breast and uterine cancer. Based on the review of the medical history, family history and oral mucosal findings, a diagnosis of Cowden syndrome was considered. The patient was referred to her family physician and genetic counselor where the diagnosis of Cowden syndrome was confirmed through genetic testing (PTEN mutation). Additional clinical findings included macrocephaly, trichilemommas and thyroid goiter.

Conclusion: The NCCN guidelines list multifocal or extensive oral papules as one of the major criteria in the diagnosis of Cowden Syndrome. The Oral Diagnostician can play a crucial role in the diagnosis. Early diagnosis of patients affected with Cowden syndrome can facilitate early screening, detection and management of benign and malignant neoplasms.
#75 A unique presentation of metastatic disease in a patient with an occult history of breast carcinoma.

Monday, 25th June - 00:00 - Poster Session Available from 25th (16:30- 18:30) -26th (18:30-20:30) June 2018 - Bayshore Ballroom D-F - Poster - Abstract ID: 210

**Dr. Sarah Aguirre (The Ohio State University), Dr. Kristin McNamara (Ohio State University), Dr. John Kalmar (The Ohio State University)**

Metastatic disease to the oral cavity is relatively rare and constitutes approximately 1% of all oral cavity malignancies. Skeletal involvement predominates over soft tissue presentations and the posterior region of the mandible is frequently affected. Pain, swelling and sensory alterations have been reported and may mimic periodontal or peri-apical disease or osteomyelitis. We present a case of a 63-year-old female with a complaint of progressive dysthesia for three months. Panoral and 3D imaging revealed widening of the PDL and loss of lamina dura affecting most of the mandibular teeth, which all tested vital. The patient's medical history was significant for osteoporosis, but there was no history of anti-resorptive drug use. Upon examination, a gingival alveolar swelling was noted. Biopsy revealed high-grade adenocarcinoma, with immunohistochemical features most consistent with a breast primary. Subsequently, it was learned that the patient had a history of breast cancer, treated by total mastectomy of the left breast over three years previously with no previous evidence of metastases. The rarity of metastatic lesions to the jaw makes diagnosis particularly challenging. This case emphasizes the importance of assembling a thorough medical history as part of a complete patient work-up, especially in the presence of atypical symptoms or radiographic findings.
#76 The transition of tissue inhibitor of metalloproteinase-4 to -1 expression modulates YAP/TAZ mediated aggressive phenotype in Liposarcoma

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OBJECTIVES: Liposarcoma (LS) is the most common soft-tissue sarcoma. The histological spectrum has a well-differentiated-liposarcoma (WDLS) and a more aggressive dedifferentiated-liposarcoma (DDLs). Advanced therapeutic strategies based on molecular mechanism are urgently needed, especially for DDLs. Previously, we reported that TIMP-1 (a member of tissue-inhibitor-of-metalloproteinase), with its receptor CD63 activates yes-associated protein (YAP) and transcriptional co-activator with PDZ binding motif (TAZ) to promote cancer cell proliferation. Aberrant YAP/TAZ activation in LS is reported, however, contribution of TIMP-1-YAP/TAZ axis in LS remains unclear. Intriguingly, TIMP-4 is known to share CD63 as TIMP-1, but its role in LS remains unknown. Here we clarified the expression and function of TIMP-1 and -4 through YAP/TAZ regulation in LS.

MATERIALS & METHODS: Cell lines of WDLS (94T778) and DDLs (SW872) were used for in vitro experiments such as Western blotting, RT-PCR, cell-proliferation, migration and apoptosis assay.

RESULTS: Database analysis showed high TIMP-1 expression in DDLs patients correlating with poor prognosis, while high TIMP-4 expression in WDLS patients with better prognosis. TIMP-1 knockdown in DDLs cells inactivated YAP/TAZ and suppressed cell-growth, migration, which was rescued by constitutively active form of YAPSSA. On the other hand, cell-growth and migration were significantly increased in TIMP-1 over expressing WDLS cells, which was suppressed by verteporfin (a YAP/TAZ inhibitor). TIMP-4 knockdown in WDLS activated YAP/TAZ, promoted cell-proliferation and migration, which was inhibited by verteporfin treatment or YAP/TAZ knockdown. Recombinant TIMP-4 showed opposite results in DDLs cells significantly. TIMP-4 CD63 binding inactivated YAP/TAZ in WDLS.

CONCLUSION: The switching of TIMP-4 to -1 expression during transition from a WDLS to a DDLs led to activation of YAP/TAZ and promoted cell-proliferation, migration, inducing poor prognosis. TIMP-1 and -4 as novel YAP/TAZ regulators may warrant future possibilities of targeting key molecules in development of diagnostic and therapeutic novelties in treating LS.

KEYWORDS: TIMP-1, TIMP-4, YAP/TAZ, liposarcoma, targeted therapy
#77 Areca nut extract enhanced M2-like macrophage polarization and fibroblast activation

Monday, 25th June - 00:00 - Poster Session Available from 25th (16:30-18:30) - 26th (18:30-20:30) June 2018 - Bayshore Ballroom D-F - Poster - Abstract ID: 219

Dr. Lien-Yu Chang (National Yang-Ming University, Institute of Oral Biology, Department of Dentistry; Taipei Veterans Geneal Hospital, Department of Stomatology), Mr. Po-Ju Hsiao (National Yang-Ming University, Institute of Oral Biology), Ms. Chih-Yun Lu (National Yang-Ming University, Institute of Oral Biology), Dr. Yi-Chun Lin (Taipei Veterans Geneal Hospital, Department of Stomatology; National Yang-Ming University, Institute of Oral Biology), Prof. Shan-Ling Hung (National Yang-Ming University, Institute of Oral Biology), Prof. Yu-Lin Lai (Taipei Veterans Geneal Hospital, Department of Stomatology; National Yang-Ming University, Department of Dentistry)

Objectives
Areca nut chewing habit is popular in Taiwan and is closely related to oral squamous cell carcinoma (OSCC). Both activated fibroblasts expressing alpha-smooth muscle actin (α-SMA) and tumor-associated macrophages showing M2 polarization in stroma are supposed to be crucial in tumor progression. The purpose of the study was to examine the profile of stromal fibroblasts and macrophages in areca-associated oral cancer tissues, the in vitro effects of areca nut extract (ANE) and two common oral insults, nicotine (NT) and lipopolysaccharides (LPS), on primary oral fibroblasts and human macrophages were also investigated. The study was approved by institutional Review Board of Taipei Veterans General Hospital, Taipei, Taiwan. Oral tissues were obtained with informed consent from patients undergoing routine surgical treatment.

Findings
Tissue sections showed that compared to the tumor-adjacent normal tissues (ANT), OSCC revealed a higher expression of pan-macrophage marker CD68, M2 markers CD163 and arginase-1 and activated fibroblast marker α-SMA, but not M1 marker CD86. In in vitro cell experiments, all of ANE, NT and/or LPS treatments could increase α-SMA expression and collagen production by oral fibroblasts. But only ANE treatment group, not NT or LPS group, enhanced the expression of M2 marker arginase-1 by macrophages. Furthermore, conditioned media acquired from macrophages (CM-Mac) of ANE treatment group increased the collagen production and IL-6 secretion by fibroblasts. CM-Mac of LPS treatment group also increased IL-6 secretion. Taken together, fibroblasts could be activated by ANE, NT and LPS, but only ANE could enhance macrophage M2-like polarization which in turn further increased fibroblast protein production.

Conclusions
Areca nut might compromise oral health by the setup of tumor-promoting microenvironment with local immune dysregulation via the enrichment of activated fibroblasts and M2-like macrophages.
Objective: SRY related HMG box gene 2 (SOX2) is a transcription factor expressed in embryonic and adult stem cells. SOX2 positive dental epithelial stem cells have been shown to give rise to all dental epithelial cell lineages. Increased SOX2 expressing cells has been reported in ameloblastic carcinomas than ameloblastomas, which might indicate SOX2 contributes to the pathogenesis of ameloblastic neoplasms. Recent and our previous studies have shown high frequency of BRAF(V600E) mutation in ameloblastomas. Interestingly, recent studies have reported that BRAF mutation is associated with the expression of SOX2 in colorectal cancers. Here, we investigated if SOX2-positive cell component is expanded in BRAF(V600E) mutated than wild type ameloblastomas.

Methods: Fifty-five formalin fixed paraffin embedded ameloblastoma tissue sections were used for macro-dissection of tumor component, DNA extraction and SOX2 immunohistochemistry. Sanger sequencing was further performed to detect the BRAF(V600E) mutation. The correlation between SOX2 positive cell numbers and BRAF status in ameloblastomas was evaluated by T-test.

Results: Among 55 ameloblastoma cases, forty-eight cases harbored BRAF(V600E) mutation. SOX2 positive cells were found in all cases regardless of BRAF status with average 22.3% SOX2 positive cells in ameloblastomas. BRAF(V600E) mutated ameloblastoma cases showed significantly more Sox2-positive cells (24.5%) than in wild type (6.6%) (p<0.05).

Conclusion: SOX2 positive cells were found in all ameloblastomas and BRAF(V600E) mutated ameloblastomas showed significantly more SOX2-positive cells. The results suggested BRAF(V600E) mutation may contribute to the expansion of SOX2 positive cell compartment.
#79 CHONDROMYXOID FIBROMA OF THE MAXILLA: CASE REPORT

Monday, 25th June - 00:00 - Poster Session Available from 25th (16:30-18:30) - 26th (18:30-20:30) June 2018 - Bayshore Ballroom D-F - Poster - Abstract ID: 221

Dr. Gilberto Uribe Ayala (Universidad Latina de América), Dr. Jhonatan Lopez (Private practice), Dr. Herminia Del Socorro Arvelo Saavedra (Private practice), Dr. Pablo Edgar Edgar (Ángeles Hospital Morelia)

Objectives: Chondromyxoid fibroma (CMF) is a rare benign cartilaginous bone tumor with a characteristic lobular architecture and chondromyxoid background, this tumor account for 5% of all maxillofacial bone tumors. Clinical presentation: we present a CMF of the left maxilla in a 15 years old female, presented with a bone swelling in the molar area, No systemic disease, other than hypothyroidism, were know. Tomographic evaluation exhibit a bone formatting lesion on the left maxilla, incisional biopsy was performed and processed histologically. Histopathological diagnosis: Fibro-osseous lesion not otherwise specified. Intervention: the patient was subjected to a left maxillectomy. A final diagnosis of CMF was emitted. Outcome: the patient is treated by a Maxillofacial Prosthetics and close clinical follow up by the Oral and Maxillofacial Surgeon, the patient is 6 months free of disease. Conclusions: Lesion was identified as Fibro-osseous lesion not otherwise specified by the incisional biopsy; it exhibited lobular architecture and chondromyxoid background, after the tumor resection the histopathological features were confirmed in the entire tumor, this case in particular exhibit extensive chondroid areas give the possibility of another diagnosis like: chondrosarcoma, chondroid osteosarcoma, chondroblastoma or chondroma.
#80 Benign Alveolar Ridge Keratosis: Clinicopathological Study of 174 Cases and P53 Expression Pattern

Monday, 25th June - 00:00 - Poster Session Available from 25th (16:30-18:30) - 26th (18:30-20:30) June 2018 - Bayshore Ballroom D-F - Poster - Abstract ID: 223

Dr. Asma Almazyad (Harvard School of Dental Medicine), Dr. Chia-Cheng Li (Harvard School of Dental Medicine), Dr. Vikki Noonan (Boston University Henry Goldman School of Dental Medicine), Dr. Sook Bin Woo (Harvard School of Dental Medicine)

Objectives: Benign alveolar ridge keratosis (BARK) is a benign hyperkeratosis that occurs as a poorly demarcated white papule or plaque on the retromolar area or edentulous alveolar ridge mucosa caused by trauma. Histopathologic features are identical to cutaneous lichen simplex chronicus, a condition that results from chronic habitual skin scratching/picking. P53 protein is a tumor suppressor protein that plays a critical role in DNA repair. P53 protein has been shown to be present within 5-25% of the basal cell nuclei in normal oral mucosa and reactive lesions. The objective of this study is to report on the histopathologic features of BARK and to explore P53 expression pattern.

Study Design: Cases of BARK were identified from the biopsy service of the Harvard School of Dental Medicine from January, 2016 to December, 2017. Randomly selected cases were studied for the presence of P53.

Results: There were 174 cases comprising 119 males and 55 females (2.2:1; M:F) with a median age of 57 years (range 15-86). The majority were in the sixth (31.0%) and seventh (29.3%) decades. There were 112 (64.4%) cases on the retromolar pad and 62 (35.6%) on the edentulous alveolar mucosa; 27 (15.5%) cases were bilateral. Histopathologically, the oral mucosa showed hyperkeratosis often with wedge-shaped hypergranulosis and occasional focal parakeratosis. The epithelium exhibited mild to moderate acanthosis and slight surface undulations or papillomatosis, with tapered rete ridges, often confluent at the tips. The study for P53 performed in 11 cases showed less than 25% nuclear positivity.

Conclusion: BARK is a distinct benign clinicopathologic entity caused by friction that is the intraoral counterpart of cutaneous lichen simplex chronicus with which it shares similar histopathologic features. It is not a mere hyperkeratosis which would relegate it to the clinical entity of leukoplakia, and which is a potentially malignant condition.
#81 Unusual Dental Follicular Hamartoma associated with a dentigerous cyst with focal parakeratosis: a case report and review of the literature

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INTRODUCTION: Dental follicular hamartoma with central odontogenic fibroma-like features is a rare condition that has been reported primarily in black African teenagers and young adults and is characterized by involvement of multiple teeth that either show amelogenesis imperfecta or enamel dysplasia, hypodontia, open-bite malocclusion, and gingival overgrowth.

CASE REPORT: We report a case of an unusual dental follicular hamartoma associated with a dentigerous cyst in the left mandible of a 23-year-old male who was otherwise healthy. The patient presented to his oral surgeon with pain in the left mandible. Clinical examination revealed soft tissue swelling and suppuration associated with the distal aspect of tooth #18. A panoramic radiograph revealed a 3.3 cm x 2.3 cm unilocular radiolucency associated with impacted tooth #17 that extended from the superior aspect of the crown to the mandibular notch. This lesion had been present at least four years prior when it measured 2.6 cm x 2.0 cm. Tooth #17 was extracted and the bulk of the lesion was curetted. The biopsy revealed a cellular proliferation of spindled fibroblast-like cells in a delicately and densely collagenous matrix. Scattered throughout were clustered basophilic spherical calcifications associated with condensations of spindled cells, rarely associated with odontogenic rests. A dentigerous cyst was also present. Following this, the residual lesion was curetted and revealed only an inflamed dentigerous cyst. The differential diagnoses for this condition include regional odontodysplasia or unusual hyperplastic dental follicle with dystrophic calcifications.

CONCLUSION: We review the past and current literature on dental follicular hamartoma. To the best of our knowledge, our case report represents only the 9th documented case of dental follicular hamartoma and the first not to be associated with any dental-related dysplasia and other dental abnormalities.
#82 A 10-year retrospective case-control analysis of medication-related osteonecrosis of the jaw at a major tertiary care dental institution

Monday, 25th June - 00:00 - Poster Session Available from 25th (16:30- 18:30) -26th (18:30-20:30) June 2018 -
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The connection between antiresorptive medications, like bisphosphonates and denosumab, and osteonecrosis of the jaw has been well studied in the literature. A 10-year retrospective case-control analysis of the patient population at the University of Southern California, Herman Ostrow School of Dentistry, found a robust population of patients of record with a history of bisphosphonate or denosumab use and a significant subset of those patients had medication-related osteonecrosis of the jaw (MRONJ). This study explores the demographic and clinical factors associated with risk for MRONJ in patients taking antiresorptive medications. Multivariate analysis indicated that patients at greatest risk were over 60 years of age, female sex, Asian race, had cancer as a comorbidity, had a history of tooth extraction, and also patients on long-term antiresorptive pharmacotherapy. The findings of this study should help guide clinicians to identify patients at high risk for MRONJ, and thus patients that would benefit from risk reduction and prevention protocols.
#83 Differential expression of PD1 and PDL1 in oral potentially malignant lesions and oral squamous cell carcinoma: a pilot study

Monday, 25th June - 00:00 - Poster Session Available from 25th (16:30-18:30) -26th (18:30-20:30) June 2018 - Bayshore Ballroom D-F - Poster - Abstract ID: 233

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Background
Programmed cell death protein 1 (PD-1, CD279) is a 50-55 kDa type I transmembrane receptor expressed by activated T and B cells, as well as subset of monocytes and dendritic cells (DCs). PD-1 and its ligands (PDL1, PDL2) are part of “checkpoint” immune recognition and peripheral tolerance system that emerged as a critical signaling pathway in cancer. PDL1 is expressed in various types of cancers and activation of PD1-PDL1 inhibits T-cell mediated cancer surveillance. Here we describe a quantitative, reproducible 2-color fluorescence-based protocol to determine the differential expression of PD1/PDL1 in oral biopsy specimens.

Methods
Histopathological samples with a diagnosis of hyperkeratosis (HK), OMPL (mild, moderate, severe dysplasia) and squamous cell carcinoma (OSCC) were selected from the archives of the Toronto Oral Pathology service, University of Toronto. FFPE sections were stained with monoclonal antibodies for PD1 and PDL1 (Abcam) and Alexa Fluor-labelled secondary antibodies allowing visualization of both proteins in the same section using a spinning disk confocal microscope (Quorum). PDL1 staining was assessed in basal/spinous layers of the epithelium while PD1 staining was assessed in inflammatory cells in tumor stroma/lamina propria. The mean fluorescent intensity (MFI) was quantified and normalized against background signal.

Results
Our results show a significant increase in PD1 expression in inflammatory cells in dysplasia and OSCC compared to hyperkeratosis. PDL1 expression in epithelial cells was significantly increased in OSCC but not in dysplasia or HK. The results suggest that PD1 increase in inflammatory cells precedes malignant transformation while PDL1 overexpression in epithelial cells only occurs after malignant transformation.

Conclusion
We developed a new quantitative method to study PD1/PDL1 expression in FFPE oral biopsy samples. The expression of PD1 and PDL1 may be used as predictive markers of transformation and the data may be used to develop early intervention in OPML using PD1 inhibitors.
Ataxia-telangiectasia-mutated protein expression as a prognostic marker in adenoid cystic carcinoma of salivary glands

Adenoid cystic carcinoma (ACC) is one of the high grade malignant tumors in salivary glands, prognostically characterized by multiple recurrences and late distant metastasis. Recently, Myb-NFIB fusion or rearrangements of Myb have been detected as a hallmark of ACC. However, no biological marker estimating the outcome of ACC has been proven yet. Purpose of this study was to investigate whether the protein expression of ATM gene is related to patients’ survival in ACC. Experimental Design: This study consists of 48 surgical samples for detecting expression of ATM and its downstream p53. Kaplan-Meier plots were used to evaluate the relationship between the protein expression ratios of ATM, p53 and its ATM-mediated phosphorylation and the overall survival rate of patients with ACC. Results: Low expression of ATM in cancer cells correlated with poor survival rate (p = 0.037). However, low expression of ATM in stromal fibroblasts was not significantly associated with patient outcome. Moreover, this study evaluated ATM expression stratified by p53 and its ATM-mediated phosphorylation status. ATM loss was associated with a significantly decreased overall survival in patients simultaneously showing overexpression of p53 (p = 0.01) and low expression of p53 phospho S15 (p = 0.05). These data supported that loss of ATM and its functional status in p53 pathway is an important factor associated with poor outcome of patients in ACC of salivary glands.
#85 Destructive lesion of the anterior mandible: a unique presentation of leprosy

Monday, 25th June - 00:00 - Poster Session Available from 25th (16:30- 18:30) -26th (18:30-20:30) June 2018 - Bayshore Ballroom D-F - Poster - Abstract ID: 243

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Leprosy is a chronic disease caused by infection with *Mycobacterium leprae*. The disease has an incubation period spanning 1-20 years with an average duration of 5 years. According to the CDC, 150-200 people in the US and 250,000 people worldwide become infected with leprosy yearly. From 2006-2015, Southeast Asia reported the highest number of new cases per year. Here we report an unusual case of intraosseous leprosy of the mandible from a 31-year-old Indian-American female. The woman presented to her oral surgeon with a destructive lesion of the anterior mandible and had associated loose teeth. She reported both prior and recent trips to India. Clinical impression at the time of surgery was a central giant cell granuloma or ameloblastoma. Histopathologic examination revealed granulomatous inflammation composed of histiocytes admixed with lymphocytes, plasma cells, and neutrophils. Discrete granulomas composed of epithelioid histiocytes and multinucleated giant cells were noted. Due to the histologic findings, GMS, PAS, and AFB Ziehl-Nielsen stains were ordered and all were reported as negative. AFB Fite stains demonstrated rare positivity. The case was diagnosed as chronic granulomatous inflammatory reaction with focal Fite stain positivity, suggestive of leprosy. While the histology is suggestive of tuberculoid leprosy, correlation with systemic evaluation and lepromin skin test were recommended. The utility of the lepromin test is to better classify the type of leprosy the patient has with positive results indicating either tuberculoid or borderline leprosy and a negative reaction supporting a diagnosis of lepromatous leprosy. Few extragnathic bony cases and intraoral cases have been reported in the English literature since 1965. This case report illustrates both an unusual and interesting case of gnathic leprosy, as well as the need to recognize that with the ease of travel, lesions that are historically seen in countries other than the United states, can be seen here.
#86 Oral ulcerations as the first indication of folate deficiency secondary to methotrexate therapy

Methotrexate is a commonly used drug for the treatment of psoriasis, arthritis, and many forms of cancer. Methotrexate inhibits cancer cells from multiplying and reduces inflammation in both psoriasis and rheumatoid arthritis. In cancer, methotrexate inhibits cells access to folate causing folate deficiencies in patients taking the drug. While the mechanism of action of methotrexate in psoriasis and rheumatoid arthritis is unknown, use in these conditions can also result in folate deficiency. We report a patient who was admitted to the hospital with painful oral and esophageal ulcers which ultimately was attributed to folate deficiency in the setting of methotrexate use. The patient was a 63-year-old male with RA who presented to the ED with a 3-week history of mouth and throat pain upon swallowing. He was unable to eat and reported a 12-pound weight loss. Intraoral exam revealed areas of erythema with diffuse ulcerations on the upper and lower left labial mucosa, soft palate and anterior maxillary gingiva. A CT scan of the head, neck, and brain, and upper EGD were all within normal limits. The presentation was consistent with vesiculobullous disease and we recommended ruling out a drug induced etiology. Upon evaluation of the patient’s laboratory values, we found he had megaloblastic macrocytic anemia (red cell diameter 11.5-14.5), which is consistent with folate deficiency. The patient’s folate level was measured at 6ng/ml. The normal reference range is 7.3-20 ng/ml. 6 is considered quite low. The patient was administered folic acid and methotrexate was discontinued temporarily. The patient’s oral lesions resolved, and the patient was discharged. This case illustrates the importance of collaboration between the primary team and the oral healthcare professional as well as the recognition that while methotrexate can cause oral ulcers, in the setting of folate deficiency the severity of oral ulcers may be exacerbated.
Dermoid cysts are uncommon soft tissue lesions considered developmental in origin that may occur in many body sites but predominate in the ovary and scrotal regions. Their etiology is unclear; however, one theory suggests that they may be caused by entrapment of germinal epithelium with potential to differentiate along ectodermal, mesodermal and endodermal lines. Seven percent of dermoid cysts can be found in the head and neck regions. This represents less than 0.01% of all intraoral cysts. Most intraoral dermoid cysts are found as midline masses in the floor of the mouth followed by the submandibular and sublingual region. Dermoid cysts of the jawbones are exceedingly uncommon. To date, only 20 cases have been documented in the English language literature. A small number of extragnathic bony lesions have also been reported. The histologic classification of gnathic dermoid cysts in the current literature is confusing with lesions being described as orthokeratinizing cysts exhibiting sebaceous differentiation, odontogenic keratocysts with sebaceous differentiation, variants of dentigerous cysts and dermoid cysts. Here, we attempt to clarify the literature as well as report an additional case of a gnathic dermoid cyst in a 40-year-old female who presented with a well-defined radiolucency of her left mandible extending from her premolars to the molar region.
#88 Benign Fibrous Histiocytoma of the jawbones. Report of 2 cases with review of the histologic and immunohistochemical features distinguishing it from other spindle cell tumors of the jawbones.

Benign fibrous histiocytomas of soft tissue are composed of spindled fibroblasts arranged in a storiform pattern admixed with secondary elements including histiocytes, foam cells, and inflammatory cells. These tumors occur equally in males and females and most often arise in the dermis and subcutaneous tissues. Benign fibrous histiocytomas of bone comprise approximately 1% of all benign bone tumors. When they do occur in bone they most often affect the long bones with the femur and tibia being preferred sites. Other sites include the pelvic bones, particularly the ilium. Benign fibrous histiocytoma of the jawbones is an exceedingly rare tumor. As of 2016 there have been only 13 cases reported of this unusual tumor arising in the jawbones. We report two new cases of this tumor arising in the mandible, describe its histologic features and immunohistochemical characteristics, and review the literature. Both of our cases presented in young males as expansile lesions of the mandible with associated well defined radiolucencies and perforation of the cortical plates. Both tumors demonstrated spindle cells arranged in a storiform pattern. Case 1 had a more collagenized stroma and demonstrated an abundance of secondary elements while Case 2 exhibited a myxoid background, prominent perivascular hyalinization and scattered secondary elements. Immunohistochemical studies revealed Factor XIIIa and CD68 positivity in both tumors. Case 2 also demonstrated positivity for CD10. S100 and SMA were negative in both lesions. The recognition of the appropriate histologic and immunologic features of this common soft tissue tumor will aid in its diagnosis in an uncommon location.
Adenoid ameloblastoma with dentinoid (AAD) has been considered a very rare variant of ameloblastoma showing histopathologic features similar to adenomatoid odontogenic tumor (AOT) along with apparent dentinoid formation. Since the first use of this term by Brannon in 1994, however, there has been no official recognition of this entity as shown in both the 3rd and 4th edition of WHO classification of odontogenic tumors in 2005 and 2017. Because less than 20 cases of AAD have been reported to date, clinical behavior and optimal treatment modalities of AAD are still uncertain. Here we present an additional case of AAD with recurrence 10 years after the initial treatment. A 39-year-old male was referred to department of oral and maxillofacial surgery, complaining of pain and mobility of teeth in the right posterior maxilla. Panoramic radiograph revealed a unilocular radiolucency with relatively well-defined borders extending from the second premolar to the second molar. Root resorptions of the affected teeth were found. Mass excision was performed and the diagnosis of epithelial odontogenic ghost cell tumor was made. Ten years later, he presented with the recurrent lesion at the same area. CT view showed destructive enhancing mass suspicious for malignancy at the right posterior maxilla. Radically resected mass was diagnosed as adenoid ameloblastoma with dentinoid/osteodentin as it showed lots of duct-like structures with ameloblastoma-like features along with numerous dentinoid formation, but there were no ghost cells.
Candidiasis is a common infection in humans and one of the more common oral alterations in the pediatric population. The incidence of candidiasis in this population is highest in neonates, with 8.7% experiencing the infection. Children up to 12 months of age experience candidiasis at a frequency of 2-5%, while the pediatric population in general has an incidence of 0.8-3.7%. The most easily recognizable form is pseudomembranous candidiasis, which presents as non-adherent, white, plaque-like lesions. Erythematous candidiasis has a variety of presentations; lesions are typically asymptomatic and chronic. Treatment options vary based on the child's preference of medication type (oral suspension, lozenges, or tablet). We present a case of cheilocandidiasis in a 20 month old patient and review the best practices for treatment and follow-up when candidiasis is encountered in a pediatric patient.
Plexiform schwannoma represents an unusual schwannoma variant, characterized by multinodular growth grossly and/or microscopically. A review of the English language literature reveals only 30 previously reported cases involving the oral/pharyngeal region, and herein we present 4 additional cases. Among these 34 cases, the average age at diagnosis was 27 years (range 5 to 58 years), with a female-to-male ratio of 1.3:1. The most frequently involved sites were the lips (n=11) and tongue (n=11). Lesion duration prior to presentation was reported in 15 cases and ranged from 6 weeks to 26 years. The average lesion size was 2.1 cm (range 0.4 to 8.5 cm). Three tumors were described as “large” or “giant,” including one extending from the sublingual region to the mediastinum. The typical clinical presentation was a solitary/localized, painless, and slowly enlarging swelling. However, 5 patients exhibited other clinical findings (e.g., pain/discomfort, sore throat, dysphagia, dyspnea). Three cases arose in association with neurofibromatosis 2 (NF2). Other neural tumor types (e.g., conventional schwannoma, meningioma) and/or >1 plexiform schwannoma were found in 5 patients (3 with NF2 and 2 who did not fulfill diagnostic criteria for NF2). Microscopic examination typically showed a proliferation of multiple well-circumscribed tumor nodules, each surrounded by a thin capsule. Antoni A and B patterns were evident in varying proportions. Infrequent histopathologic findings included ancient change (n=1) and induction of adjacent surface epithelium/odontogenic epithelial rests (n=1). Immunohistochemical findings included reactivity for S-100 protein among the tumor cells (15/15 cases), reactivity for EMA among capsular perineural cells (3/4 cases), and no reactivity for NFP among the tumor cells (6/6 cases). Most patients (n=22) were treated by excision or enucleation. Among the 14 cases for which follow-up information was provided, 3 recurred. Unlike plexiform neurofibromas, plexiform schwannomas exhibit only a weak association with neurofibromatosis and have no known malignant potential.
#92 Head and Neck Rhabdomyosarcoma (RMS) in Childhood.

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Objectives: To report 4 pediatric RMS in Guatemala [age range 8-13 years] exhibiting aggressive clinical behavior. Findings: 2 cases involved sinonasal & paranasal sinuses; one the anterior mandibular facial area & another affecting paraorbital and mid facial region, with previous additional history of radiation therapy & R. ocular exenteration at 2 years of age for retinoblastoma. Rapid, massive growth with nasal obstruction was observed in all 3 cases, leading to gross. R. ocular displacement and facial deformity was noted in one case, while facial and mandibular swelling was reported in another. The period of tumor growth ranged from 2 -6 months. 3/4 patients were treated with Rad. & chemoth. & 1 patient (post radiation) also underwent surgical intervention as chemoth. & Rad. showed no response. Follow-up period ranged from 2 months to 3 years, where 2 patients were alive & disease free while the other 2 expired of wide spread disease, including CNS invasion & both patients within that cohort had evidence of regional lymph node metastasis and one of the 2 also exhibited CNS involvement. Histomorphologic subtypes included 3 embryonal and 1 post radiation subtypes. All cases reacted positively with IHC to desmin & myogenin. Ki67 labeling was 75% to 90 % in 3 cases and was not performed in the 4th. One of the cases which encompassed small round cell morphology also reacted positively with CD99, albeit with co-expression of desmin and myogenin. Conclusions: Our cases highlight the aggressive nature of RMS, with distant metastasis in 3 cases and high Ki-67 labeling. Positive expression of CD99 should not deter from the diagnosis of RMS provided co-expression of myogenin and desmin is confirmed. Considering its aggressiveness and failure to respond to any form of current treatment, post-radiation RMS should be classified as an unspecific variant of RMS.
#93 Red light irradiation regulates ROS scavenging and anti-inflammation through SPHK1/NF-κB pathway in HaCaT cells

**Ms. QIAOCHU SUN (Chonnam National University), Prof. Young Kim (Chonnam National University), Prof. Okjoon Kim (Chonnam National University)**

**Objectives:** Oxidative stress is a well-accepted pathogenesis of several human diseases, which is an increased amount of the oxidants exceeding the capacity of antioxidant defense system. Light-emitting diode irradiation (LEDI) represents an efficient strategy to counteract this condition. The purpose of the present study was to evaluate the ROS scavenging and anti-inflammatory mechanism of LEDI.

**Findings:** cDNA microarray, semi quantitative PCR (semi-qPCR), western blotting and small-interfering RNA (siRNA) transfection were processed on PMA induced oxidative stress and inflammation in HaCaT cells. In this study, 625 nm LEDI showed the effect of ROS scavenging and anti-inflammation. One of the most important genes which identified by microarray analysis was sphingosine kinase-1 (SPHK1), which is a key enzyme in sphingolipid metabolism. SPHK1 knockdown drastically reduced the viability of ROS scavenging in the presence of PMA-stimulated HaCaT cells. Furthermore, results with cyclooxygenase-2 (COX-2) and prostaglandin E$_2$ (PGE$_2$) further indicated the importance of the SPHK1 in anti-inflammatory process in HaCaT cells.

**Conclusions:** The results obtained in this work highlight the possible role of SPHK1 in ROS scavenging and anti-inflammation in PMA-stimulated HaCaT cells, investigating for the first time the possibility its involved molecular mechanisms. And SPHK1 can be used as a therapeutic target in LEDI treatments for treating skin disorders through ROS scavenging and/or anti-inflammation.
Dr. Syed Ali Khurram (School of Clinical Dentistry, University of Sheffield), Dr. Adam Jones (Cardiff and Vale NHS Trust), Dr. David Hughes (Sheffield Teaching Hospitals NHS Foundation Trust), Prof. Lynda Wyld (The Medical School, University of Sheffield), Dr. Nikhil Kotnis (Sheffield Teaching Hospitals NHS Foundation Trust), Dr. Malee Fernando (Sheffield Teaching Hospitals NHS Foundation Trust)

Objectives
Head and neck (H&N) sarcomas are rare mesenchymal lesions accounting for 5-15% of all sarcomas with a poor prognosis. Their management can be challenging due to the complex anatomy, difficulty in surgical removal and heterogeneity within and between lesions. The aim of this study was to determine the range and demographics of all histologically confirmed H&N sarcomas over a 10-year period seen at a regional specialist sarcoma centre. Information about grade, margin clearance, treatment modality, metastasis and recurrence was analysed and correlated to survival.

Findings
87 sarcomas were identified using the local database with a male prevalence (67%) and a mean age of 43 years. The most common diagnoses were angiosarcoma, pleomorphic sarcoma NOS (14.9%), chondrosarcoma (10.34%) and rhabdomyosarcoma (9.2%). The most commonly involved sites were scalp (26.44%), neck (12.64%), buccal mucosa and temporal fossa (9.2%). The majority of the lesions were Trojani grade 3 (44%). A large proportion of the sarcomas were smaller than 5 cm (70%). 97% of cases were treated with curative intent with surgery the first intervention in 77% cases and chemoradiotherapy in the remaining 23%. When surgery was employed, excision was undertaken for 90% of cases and debulking for the remaining 10%. 47% cases developed a recurrence which was predominantly locoregional (68%) and related to margin involvement (p<0.005). Overall and disease-specific survival was significantly related to gender, grade, metastasis and treatment modality (p<0.05).

Conclusions
Head and neck sarcomas are rare and complex lesions requiring multidisciplinary management. Our survival rates are similar to those reported in literature with grade and metastasis being the most important predictors of survival. National and international databases are required for multicentre registration and better identification of prognostic factors.
#95 An atypical simple bone cyst in the inferior alveolar canal: a case report

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Dr. MD Shahidul Ahsan (University of Iowa College of Dentistry), Prof. Nidhi Handoo (University of Iowa College of Dentistry), Prof. Saulo Sousa Melo (University of Iowa College of Dentistry), Prof. Sherry Timmons (University of Iowa College of Dentistry), Dr. Felipe Nor (University of Iowa College of Dentistry), Dr. Joshua Orgill (University of Iowa College of Dentistry), Dr. Scott Steward-Tharp (University of Iowa College of Dentistry), Prof. John Hellstein (University of Iowa College of Dentistry)

Objective: The simple bone cyst is a benign intraosseous pseudocystic lesion without any epithelial lining. As most of simple bone cysts are asymptomatic, they are commonly first noticed as incidental radiographic findings. In the jaws, they are predominant in the mandibular premolar and molar region of young adults. We present a case of simple bone cyst of the mandible with atypical association with the inferior alveolar canal. Clinical presentation: A 52-year-old female patient presented with a well-defined, finely corticated, unilocular, radiolucent lesion of unknown duration in the right ramus of the mandible, with no relevant past medical history. A benign odontogenic lesion was considered. However, given that the CBCT findings indicated the inferior alveolar canal as a possible epicenter, the differential diagnosis also included neural tumors and vascular anomalies. Incisional biopsy was performed, but no epithelial lining was noted. Microscopically, the specimen consists of variably dense fibrocollagenous connective tissue with small blood vessels and nerve bundles. S100 and CD31 immunohistochemistry showed expected positivity for nerve and vascular tissues. A microscopic diagnosis of simple bone cyst associated with the inferior alveolar canal was rendered. Conclusion: This case represents an unusual simple bone cyst. Radiographically, the lesion appears to be associated with inferior alveolar canal. Even though simple bone cysts in the posterior mandible are not common, it is very unlikely to involve/arise from the inferior alveolar canal.
Objective: Report a case of regional odontodysplasia in the maxilla of a pediatric patient and the immunohistochemical expression of different types of collagen. Regional odontodysplasia is a rare developmental anomaly, involving the ectoderm and ectomesenchyme of the temporally and permanent teeth. It tends to be localized in only one arch of the jaws.

Case report: A 8-year-old female patient, with no significant hereditary or pathological history. On examination dental agenesis C, D, E is observed. Radiographically revealed 6, 7 and 8 with radiopaque contour and loss of the delimitation between enamel-dentin complex, giving an appearance of ghost teeth. Surgical treatment was performed. Microscopic examination follicular tissue contains scattered collection of enameled conglomates and islands of odontogenic epithelium. Immunohistochemical expression of different types of collagens was heterogeneous in the dentin (col. 1,2,3,4,5,6,10 and 11). These results are consistent with an abnormal dentin development.

Conclusion: Regional odontodysplasia is an alteration that develops at a very early age, so the interdisciplinary management and the choice of treatment are fundamental since the treatment must be specific for each patient.
#97 Palate Epithetiod hemangi endothelioma, case report.

Monday, 25th June - 00:00 - Poster Session Available from 25th (16:30-18:30) - 26th (18:30-20:30) June 2018 - Bayshore Ballroom D-F - Poster - Abstract ID: 272

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**Introduction:** Epithelioid hemangioendothelioma (EHE) is considered as a borderline vascular neoplasm between hemangioma and angiosarcoma. It represents less than 1% of all vascular tumors and was described in 1975 by Dail and Liebow, but the term EHE was introduced in 1982 by Weiss and Enzinger. EHE is characterized by a proliferation of epithelioid endothelial neoplastic cells. This lesion is rare reported in oral cavity. Clinically, it presents as gingival swelling.

**Case Report:** 59 years old male presents with asymptomatic left palatal swelling of 3 years of evolution, the lesion was previously diagnosis as granular cell tumor by a hospital Pathologist. Excisional biopsy was done. Microscopically are epithelioid hyperchromatic cells with vacuolated cytoplasm and lumen formation, arranged in nests and closely associated with blood vessel. Neoplastic cells were positive for the CD31, CD34, D2-40, FVIII and INI1; Ki67<2% and negative for CKAE/CKAE3, S-100, langerina, vimentin, EMA, SMA and FLI1 markers. Tissue electron microscopy was performed and the diagnosis of epithelioid hemangioendothelioma was done.

**Discussion:** The EHE is an uncommon vascular neoplasm with less of 50 cases reported in oral cavity in the English literature. The most common location is gingiva, in middle age patients. Histologically, the presence of vacuolated cells may cause confusion in the diagnosis and therefore the use of other tools such as immunohistochemistry is important for the appropriate diagnosis of this lesion and correct treatment.

**Conclusion:** EHE can turn into malignancy and metastasize to regional lymph nodes, therefore wide margins surgical excision and long term follow up of the patient is highly recommended because the 10-15% rate of recurrence, the survival rate is 76% true 5 years of follow-up.
Adenomatoid odontogenic tumor (AOT) is a rare benign odontogenic tumor. AOT represents 3-7% of all odontogenic tumors. First described by Steensland in 1905 and later by Philipsen and Bin in 1969, AOT is an encapsulated tumor composed by odontogenic epithelium with duct-like structures. Radiographically, it commonly appears as a peri-coronal unilocular radiolucency associated with an impacted tooth, more often the maxillary canine. Frequently, the lesion shows focal calcifications. Most cases are discovered in the second decade of life. Some authors have considered AOT as a hamartoma rather than a neoplastic process. A peripheral variant has been described. Here, we report three cases of AOT to illustrated the benign course of this tumor.

**Cases:** The three cases were found in females at the age of 15, 18 and 33 years. One case was discovered the mandible as periapical lesion and two cases associated with impacted maxillary canines. All cases show well-defined mixed radiolucent and radiopaque appearance. Root resorption was not observed in the mandibular case. Slow growing was reported in all cases. An excisional biopsy was done in the three cases. Microscopically, all cases revealed an encapsulated tumor compose of sheets of solid basaloid epithelium with duct-like spaces. Cystic and solid patterns with dystrophic calcification were also observed. No recurrence has been reported.

**Conclusion:** Although, the mandibular case was located in an uncommon location and showed an atypical appearance, all cases demonstrated an indolent behavior. These cases confirm the benign nature of this tumor.
Introduction: Clear cell carcinomas in the jaws are very infrequent neoplasms. Differential diagnosis includes metastatic carcinomas, mucoepidermoid carcinoma, clear cell odontogenic carcinoma, and others. We present two cases of jaw tumors and focus on the diagnostic challenge of each.

Case Reports: The first case is a 65 year-old man without diagnosis of a systemic disease, with a gingival red tumor and a radiolucent image with irregular borders in the incisor area. Histopathology showed proliferation of clear cells with round hyperchromatic nuclei, some with atypia. These cells formed solid nests separated by thin connective tissue septa with marked vascular proliferation. The clear cells presented diastase–periodic acid–Schiff, anti-Vimentin, anti-CD-10 and anti-PAX-8, anti-human Ki-67 positivity (30% of the cells) and it was negative for S-100 and CK-7. The diagnosis was clear cell carcinoma suggestive of clear cell metastatic carcinoma (MRCC). The second case is a 36 year-old woman with an asymptomatic radiolucent lesion in the periapical area of maxillary premolars. Histopathology showed a cellular proliferation formed by nests of clear oval and polygonal cells, with mild atypia separated by fibrous connective tissue septa. The immunohistochemical staining showed positivity for cytokeratin AE1/AE3 and negative for both S-100 and α-smooth muscle actin. Mucicarmin and Congo-red stains were negative. This case was diagnosed as suggestive of clear cell odontogenic carcinoma (CCOC); it was indicated to rule out metastasis. The imaging evaluation confirmed a renal neoplasm in the first case and rule out the presence of lesions in the rest of the body in the second case.

Conclusions: CCOC and MRCC are histologically similar and immunohistochemistry studies play an important role in diagnosing clear cell tumors. So it is vital for the pathologist to know histomorphology and histo and immunohistochemistry staining should be considered.
Objective: The presentation of CD30+ lymphoproliferative disorder can pose a diagnostic challenge, as CD30 expression has been observed in various reactive, inflammatory and neoplastic diseases. In this study we described two case reports with the immunohistochemical (IHC) profile of TLPD and ruled out TLPD mimics such as anaplastic large cell lymphoma.

Findings: Case 1: A 90-year-old female presented with a 6-month history of 3 x 5 mm ulceration of the left ventrolateral tongue. Case 2: A 52-year-old female presented with a 15 x 20 mm deep submucosal mass of the left dorsum tongue. Histopathologic examination in both cases revealed infiltrate of atypical lymphocytes with some showing mitotic figures, mixed with eosinophils that penetrated deep into the muscle layers. The IHC profile revealed positivity for CD3 and CD2. CD30 was also positive in almost 75% of the atypical infiltrating cells. CD1a, EMA, ALK-1 and GRANZB were negative. Case 2 showed scattered positivity for CD20, and more of plasma cells with non-restricted positivity for Kappa and Lambda. In concert with hematopathology, both cases were reviewed and a diagnosis of TLPD was favored due to the increased strong diffuse positivity for CD30, negative expression of ALK-1 and CD1a, and the lack of trauma history.

Conclusion: As TLPD is managed clinically similar to Traumatic ulcerative granuloma with stromal eosinophilia (TUGSE) and follows an indolent course, it is important to recognize these entities to avoid possible overtreatment from a misdiagnosis of anaplastic large cell lymphoma.
The 4th edition of the World Health Organization's Classification of Head and Neck Tumours was published in January 2017. In this edition ameloblastic fibroma, ameloblastic fibro-dentinoma and ameloblastic fibro-odontoma have been grouped under odontomas as developing odontomas rather than inclusion as mixed odontogenic neoplasms. BRAFV600E mutations and low frequency of fractional allelic loss of tumour suppressor gene loci have been reported in ameloblastic fibroma and ameloblastic fibro-odontoma, indicative of a neoplastic process, however the prevailing view is that once dental hard tissues are produced, these lesions are more likely maturing into odontomas rather than true neoplasms, a view which has some support in the literature. Notwithstanding some of these lesions reach significant size prior to diagnosis and management with bone expansion suggesting a neoplastic process. In addition lesions may recur and malignant transformation has been reported. The purpose of this paper is to present a case of ameloblastic fibro-odontoma, a case of ameloblastic fibroma and discuss the merits of the current classification of these lesions.
#102 Expression of cytokines (IL22, IL23, IL17) and STAT 3 within metastatic lymph nodes of oral squamous cell carcinoma

Monday, 25th June - 00:00 - Poster Session Available from 25th (16:30- 18:30) -26th (18:30-20:30) June 2018 - Bayshore Ballroom D-F - Poster - Abstract ID: 279

Dr. Adil Alkharusi (University of Otago), Dr. Haizal Hussaini (University of Otago), Prof. Rosnah Zain (MAHSA university), Prof. Alison Rich (University of Otago)

The concept of pre-metastatic niche (PMN) is the process of a tumour preparing the microenvironment at a future metastatic site to facilitate the survival of disseminated tumour cells. The ability to produce a pro-inflammatory response is paramount to prevent the establishment of a PMN. We postulate that establishment of PMN is modulated by specific cytokines and the transcription factor STAT3.

**Objectives:** The aim of this study was to compare the expression of cytokines interleukin (IL) 22, IL23, IL17 and STAT3 in oral squamous cell carcinoma (OSCC) in lymph nodes with or without metastatic OSCC. Formalin-fixed paraffin-embedded tissue blocks were obtained from the Oral Cancer Research Coordinating Centre, University of Malaya, Malaysia. Samples were divided into two groups; 1) OSCC positive cervical lymph nodes with histological evidence of metastasis and 2) OSCC negative cervical lymph nodes without histological evidence of metastasis. Immunohistochemistry (IHC) was carried out to detect protein expression of IL17, IL22, IL23 and STAT3 using anti-human antibodies. Gene expression was performed using real time polymerase chain reaction to validate the results.

**Findings:** IHC results showed that expression of IL22, IL23 and STAT3 was significantly higher in negative nodes when compared with the positive group (p<0.05). Gene expression analysis showed no significant differences between the two groups.

**Conclusion:** The results suggest that there may be downstream evidence of PMN establishment in OSCC negative lymph nodes, modulated mainly by IL22, IL23 and STAT3.
**#103 Verruciform Xanthoma: Case Series of An Unusual, Commonly Misdiagnosed Lesion**

**Dr. Sonal Shah (New York University College of Dentistry)**

**Introduction**

Verruciform Xanthoma (VX) is a benign condition occurring primarily in the oral cavity with some lesions also found on the genital mucosa or skin. VX occurs primarily in the fifth decade of life and shows a slight male predilection. This lesion generally presents as a papillary or rough-surfaced, painless, well-demarcated lesion, ranging from white, yellow-white, to orange in color. The etiology of VX is still largely unknown and definitive diagnosis is made based on histology. This lesion is thought to correlate with localized trauma or chronic inflammatory conditions such as lichen planus, lupus, epithelial dysplasia, pemphigus vulgaris, and mucous membrane pemphigoid. We report a series of three cases from our institution in which we examine the demographics associated with verruciform xanthoma as well as its connection to known inflammatory conditions.

**Patient Cases**

Our case series includes two males and one female patient ranging in age from 45-76 years old. The lesions were found in 3 different sites: gingival mucosa, ventral tongue, and buccal mucosa. Two of the patients had biopsy-proven oral lichen planus. The social and medical histories of each patient will be examined and compared for overlapping factors that may be of assistance in further clarifying demographic and etiological factors.

**Conclusion**

Clinicians should be familiar with verruciform xanthoma as it is often misdiagnosed as the more commonly occurring viral papilloma. Patients may be concerned they have contracted a viral disease and thus this lesion should be biopsied to rule out HPV infection.
Oral cancer is a devastating disease and tumor associated inflammation is a key component of the tumor microenvironment. Current techniques to evaluate inflammatory infiltrate are based on a visual, operator-based quantification and may not accurately quantify specific inflammatory signatures. **Objective:** To develop a method for characterizing the inflammatory infiltrate associated with oral epithelial dysplasia (OED) and oral squamous cell carcinoma (OSCC) using confocal microscopy and multichannel fluorescent colocalization analysis (MFCA). **Methods:** We performed a retrospective analysis of 49 biopsy samples of lateral tongue lesions with a diagnosis of hyperkeratosis, ED and OSCC. The inflammatory infiltrate was identified using a combination of 2 primary antibodies for each cell type followed by staining with Alexa 488 or 555 tagged secondary antibodies for FIHC. Identification of the inflammatory cells was performed by 2-channel colocalization using a custom-made, semi-automated algorithm in Volocity 6.3. **Results:** Using our novel analysis technique we identified and quantified neutrophils, TCD8, TCD4, eosinophils, plasma cells, B cells, Macrophages and NK cells in biopsy specimens. T-lymphocytes represented the main component of the inflammatory infiltrate in all specimens and there was a marked increase in inflammatory cell density from benign to OSCC lesions. Our results also showed that the CD4/CD8 ratio and neutrophils/lymphocytes ratio (NLR) had a progressive increase when moving from benign lesions to OSCC. **Conclusions:** We described a new, method to quantify inflammatory infiltrates in oral biopsies. This semi-automated approach decreases operator bias and provides robust and reproducible data to study inflammation in tissue samples. Using this technique, we provide evidence that cancer progression is mirrored by progressive changes in the inflammatory infiltrate. **Significance:** Understanding specific changes in cancer associated inflammation is essential to develop immune-targeted therapies. This technique and our current results will be further explored as a potential prognostic maker of oral cancer.
#105 Visualization and Characterization of Exosomes in Breast Cancer Cells

Monday, 25th June - 00:00 - Poster Session Available from 25th (16:30 - 18:30) - 26th (18:30-20:30) June 2018 - Bayshore Ballroom D-F - Poster - Abstract ID: 282

*Prof. Young Kim (Chonnam National University), Dr. Tae-sup Lee (Division of RI-convergence Research, Korea Institute of Radiology and Medical Sciences)*

**Objectives**
Exosomes are extracellular vesicles of endocytic origin with a size range of 40-150 nm and a lipid bilayer membrane. Though exosomes are known as dynamic mediators of intercellular communication, its characteristics and function have not been fully studied. In this report, we used a metabolic labeling method to prepare fluorescent exosomes to investigate the characteristics and the movement of exosomes derived from various breast cancer cells.

**Findings**
MCF-7 and MDA-MB-231 cells were treated with three types of azido sugars, Ac4ManNAz, Ac4GalNAz, or Ac4GlcNAz (50 mM) for 3 days to produce the azide (-N\(_3\)) containing exosomes through metabolic glycosylation. It is confirmed that the azido sugar decorated exosomes were able to maintain their original characteristics such as size, lipid bilayer morphology, and protein profile. The exosomes prepared with Ac4ManNAz have shown the highest labeling efficiency with ADIBO-Cy3 fluorescence dye in MCF-7, MDA-MB-231, BT-549 and MDA-MB-468 cells at 17.2%, 14.8%, 13.2% and 14.9% respectively. To study their uptake capability, the labeled exosomes from different origins were incubated with a panel of breast cancer cells, including MCF-7, MDA-MB-231, MDA-MB-468 and BT-549, and normal NIH/3T3 fibroblast cells for 24 hours. The cells were then evaluated by fluorescence microscopic imaging and flow cytometry. It was observed that exosomes from different origins have a different uptake efficiency, suggesting that each exosome may have its unique navigation systems. Furthermore, the cells which have aggressive metastatic potential, such as MDA-MB-231 showed a better pickup of all exosomes. In contrast, the exosomes released by MDA-MB-468 showed higher loading in five kinds of cells.

**Conclusions**
Our development has demonstrated an effective labeling method that can facilitate exosome research by providing a new way of quantification and tracking in vitro and potentially in vivo studies.
The cytoskeletal alteration modulates cell invasiveness of OSCC cells through RhoA-YAP signaling in stromal fibroblasts

Objectives: Cancer-associated fibroblasts (CAFs) are most abundant stromal cells among tumor microenvironment that participate in carcinogenesis. This study aimed to investigate the mechanism of cytoskeletal alteration of CAFs and its role in carcinogenesis of oral squamous cell carcinoma (OSCC).

Findings: We first evaluated if immortalized normal fibroblasts (hTERT-hNOFs) can be substituted for CAFs. hTERT-hNOFs co-cultured with OSCC cells showed myofibroblastic and senescent phenotypes like CAFs. Next, we observed the cytoskeletal alteration in hTERT-hNOFs co-cultured with OSCC cells, including enlarged cellular size, distinct F-actin assembly (stress fibers). To further understand the mechanisms, we identified the expression of RhoGTPase gene family. Among them, RhoA was significantly increased. These results were confirmed by RhoA-ROCK inhibitor (Y27632). In spite of fibroblasts grown with OSCC cells, Y27632 reduced cell size and stress fibers. Furthermore, YAP distribution, as a downstream transcriptional factor of RhoA, was examined. YAP was mainly localized at nucleus in hTERT-hNOF co-cultured with OSCC cells, unlike hTERT-hNOFs co-cultured with HEK (human normal epidermal keratinocyte). To further verify if RhoA and cytoskeletal change modulate YAP distribution, Actin polymerization inhibitor (Lat.A) and Y27632 were used. As results, the inhibitors interrupted nuclear YAP localization, suggesting that YAP can be regulated by RhoA-induced cytoskeletal alteration. Lastly, we examined if nuclear YAP localization of fibroblasts exacerbates OSCC progression. YAPS127A mutant fibroblasts, maintained in nuclear YAP, were generated. As results, YAPS127A showed cytoskeletal rearrangement, such as increased gel contractility and matrix stiffness, and thereby enhanced the invasiveness of OSCC cells.

Conclusions: The alteration of tumor microenvironment, such as cytoskeletal change and matrix remodeling via RhoA-YAP in CAFs, modulates OSCC progression. These understandings will provide the novel approaches for CAFs-based OSCC therapy.
Ameloblastoma is the most frequent odontogenic epithelial tumor in the jaw. Though ameloblastoma belongs to benign odontogenic tumors, it exhibits a locally aggressive behavior with high recurrence rate. However, molecular markers predicting the recurrence have not been reported yet. The aim of this study was to find the prognostic markers in ameloblastoma. To detect apoptosis-related genes showing difference of expression level between ameloblastomas and normal oral tissues, the public database was analyzed. As results, OPG and Bcl-2 were identified as 2 most upregulated genes in ameloblastomas. To confirm public database analysis, in vitro study was conducted by use of AM-1 cell line. AM-1 cells expressed higher level of OPG and Bcl-2, compared with normal human epidermal keratinocytes (HEK). Exposing AM-1 cells to various environmental factors during culture in the 3-dimensional collagen gels were increased level of OPG and Bcl-2 than monoculture. To evaluate tumor-forming properties of AM-1 cells, subrenal capsule assay was conducted using AM-1 cells with hTERT-hNOF. As results, tumor formation were observed in 3 weeks, in which OPG and Bcl-2 expression was identified. To evaluate whether OPG and Bcl-2 regulates cell viability and apoptosis in AM-1 cells, siRNA transfection was conducted. As results, the knockdown of OPG and Bcl-2 reduced the cell viability and promoted the apoptosis of AM-1 cells. Knockdown of OPG and Bcl-2 decreased tumorigenesis. Eighty-nine cases of ameloblastomas were used for this study. Recurrence rate was 20.2%. Then, to validate whether these genes are associated to recurrence in ameloblastomas, immunohistochemistry were performed. Each positivity classified 2 group by appropriate scoring system, low and high expression. The OPG and Bcl-2 expression was significantly associated with recurrence in conservative treatment group. These studies indicate that OPG and Bcl-2 status were independent predictive factors for recurrence.
Chronic granulomatous inflammatory reactions are uncommon in the oral cavity. These lesions are reactive in origin and are characterized by macrophages which fuse to form multinucleated giant cells or transform into epithelioid histiocytes. Multiple etiologies exist for CGIR and include foreign body reactions to endogenous and exogenous materials, allergic reactions, infectious diseases (fungal or bacterial), sarcoidosis, and Crohn’s disease. Here we review CGIR seen over ten years and attempt to clarify their etiologies with the hope that this data will yield information which will allow us to better guide clinicians in the evaluation and treatment of their patients. A review of all cases of CGIR from New York Presbyterian/Queens between 2007-2016 was performed. After eliminating all lesions where foreign material or fungal organisms could be seen, 120 cases of CGIR were identified. Additionally, cases seen in conjunction with a lichenoid inflammatory infiltrate were excluded from the review as they warrant further, separate study. Using relevant clinical information submitted as well as responses to a ten-question survey sent to doctors which included questions regarding the etiology of the CGIR, medical work up, the presence of additional lesions, treatment, progression and recurrence, we identified the following information. Of the 120 cases, 56 were male and 64 were female. The age range was 3 – 88 years old. 122 sites were identified as some cases had multiple lesions. Only 13 of the 122 lesions were central in bone. The most striking findings was that 9 cases occurred under the age of 18 and all these were in males. Two of these patients had intrabony lesions. In this group, Crohn’s disease was found to be the commonest etiology, seen in 5 patients. Therefore, the finding of granulomas, especially intrabony, in a young male warrants a gastrointestinal work up prior to an extensive medical evaluation.
Metformin is one of the most commonly prescribed drugs worldwide for the management of diabetes. Oral Squamous cell carcinoma is a public health problem worldwide and very little has been achieved regarding survival rates since the 1980s, despite some advancement in traditional treatment options. Metformin has demonstrated a citotoxic effect on neoplastic cells by inhibiting anabolism and stimulating catabolism. AMPK lead to inhibition of the mTOR pathway, thus reducing global protein translation and, therefore, slowing tumor progression. Objectives: To evaluate the effect of metformin on viability and proliferation of oral squamous cell carcinoma cells in vitro. Methods: Three cell lines were used, namely CAL27, HaCat and SCC4 (ATCC). The cultures were treated with a single dose of metformin at 10 mM and 20 mM. Cell proliferation and viability were evaluated at 24h and 48h using flow cytometry. Annexin V-FITC and propidium iodide (PI) were used to establish the rate of apoptosis and cell death, respectively. Results: Metformin proved cytotoxic with increased rates of apoptosis and cell death in the HaCat (24.5% and 43%, respectively) and SCC4 lines (55% and 35%), especially at 20mM and 48h of treatment, except for the CAL27 line, which did not respond to the treatments. Conclusion: Metformin caused cell death via apoptosis in oral squamous cell carcinoma cultures in vitro in a dose and time dependent manner.
Objectives. The aim of this study was to determine the epidemiology and clinical concordance of pericoronal lesions of unerupted teeth in biopsies of the Oral Pathology Laboratory of Universidad Peruana Cayetano Heredia (1991-2015).

A retrospective study was performed. Request forms for anatomical-pathological examination and histopathological slides were assessed. Data registered included: Age, sex, dental piece, presumptive and definite diagnosis. The WHO Classification (2017) was used for cysts and odontogenic tumors.

Findings. 270 pericoronal lesions were found (1.69% of the total). There was relationship between the diagnoses and association to teeth (p=0.021), but not with position of the teeth and sex. It was present more in second and third decade of life (range: 5-80 years). The main histopathological diagnoses were dentiger cyst (40%) and normal dental follicle (23.7%). About pericoronal lesions, they mainly were located in inferior third molars (35.93%) and superior canines (21.85%). The concordance between presumptive and definitive diagnosis is low (Kappa=0.2536).

Conclusion. No concordance was found between presumptive and definitive diagnosis, it is the reason why the histopathological study in pericoronal lesions is very important.
#111 A new high-resolution invasion test (HIT) can predict malignant transformation in oral epithelial dysplasias.

Monday, 25th June - 00:00 - Poster Session Available from 25th (16:30- 18:30) - 26th (18:30-20:30) June 2018 - Bayshore Ballroom D-F - Poster - Abstract ID: 298

Ms. Andresa Borges Soares (Faculty of Dentistry, University of Toronto; São Leopoldo Mandic Institute and Research Center), Ms. Denise Lopez Eymael (Faculty of Dentistry, University of Toronto), Dr. Marco Magalhaes (Faculty of Dentistry, University of Toronto)

**Rationale:** Detecting the earliest signs of invasion and predicting transformation in oral potentially malignant lesions (OPMLs) can facilitate earlier treatment of oral squamous cell carcinoma (OSCC) and decrease morbidity and mortality. Here we described a new test to diagnose early invasion and predict malignant transformation in OPML.

**Methods:** Fluorescent immunohistochemist and multichannel colocalization were used to identify invadopodia markers FISH, cortactin and MMP14 in OSCC and OPML. The presence of invadopodia markers was calculated using 3-channel colocalization analysis based on a custom algorithm developed using Volocity Software. The threshold for colocalization was determined by linear least-square fit of the channel intensities and the product of the difference of the means was (PDM) was used to compare the area of colocalization (HIT score). This algorithm was applied to 80 cases (10 cases of non-dysplastic hyperkeratosis, 22 cases of epithelial dysplasias (ED), 20 cases of OSCC and 28 cases from patients who progressed from ED to OSCC) to determine the overall validity of the approach and establish cut off values.

**Results:** There was a significant and progressive increase in the colocalization of invadopodia markers (HIT score) in dysplasias and OSCC compared to control. The results showed that the HIT score could detect lesions that transformed to OSCC independently of the histopathological diagnosis with a sensitivity of 84% and specificity of 61.76%, PPV= 0.61 and NPV=0.84, AUC= 0.7653, likelihood ratio of 2.1, p<0.005. The HIT score was also able to distinguish transforming from non-transforming dysplasias with a sensitivity of 63.4% and specificity of 73.9%, PPV=0.7, NPV=0.68, likelihood ratio of 2.4, p<0.01.

**Conclusion:** The HIT scores can predict malignant transformation in oral biopsies independent of the histopathological diagnosis. Larger prospective studies are needed to validate and assess the applicability of this test in combination with conventional histopathology.
Granular cell tumor is a benign mesenchymal lesion that occurs more often in the oral cavity and skin. Its cell origin is controversial, including muscle, fibroblasts, neural crest, neural sheath and histiocytes. Granular cell tumors composed of larger and polygonal cells with abundant eosinophilic granular cytoplasm. Classic granular cell tumor shows positive immunostaining for S-100 and vimentin, and in some cases, positive CD68 staining is also reported positive. However, three cases of S100 negative granular cell tumor in oral mucosa and several cases in skin have also been reported in the literature recently. Therefore, the purpose of this study is to report a case of oral S100 negative granular cell tumor to increase the awareness of this entity. A 79-year-old female patient presented with a small asymptomatic, circumscribed mass lesion in the posterior lateral aspect of the palatal torus. Histologically, the specimen was covered by keratinized stratified squamous epithelium showing no pseudoepitheliomatous hyperplasia. The lamina propria consisted of fibrous connective tissue with chronic inflammation and cluster or sheet of large polygonal cells with granular cytoplasm. Immunohistochemistry showed that the granular cells stain positive for CD68 but negative for S100. Currently there is no difference in recommended treatment or in prognosis of S100 negative from S100 positive granular cell tumor. However, it is important to be aware of this rare variant of granular cell tumor for establishing correct diagnosis.
Odontogenic cysts showing features of two or more distinct types of cysts are rare. Particularly, calcifying odontogenic cyst (COC) associated with odontogenic keratocyst (OKC)-like areas have not been reported. The patient, an 81-year-old man, was referred for diagnosis of a mandibular radiolucent lesion of unknown duration. On cone-beam computed tomography, sagittal views revealed a well-delimited, unilocular, and hypodense lesion located in the right edentulous mandibular body, which caused enlargement of the buccal and lingual cortical bone. Panoramic reconstruction revealed that there was thinning of the superior cortical bone. Residual radicular cyst was the clinic-radiographic diagnosis. Under local anesthesia, an incisional biopsy was performed. Microscopically, a cystic cavity lined by ghost cells was observed, with basal cells showing reverse nucleus polarity. Solid areas were also noted. Moreover, there were cystic cavities lined by epithelium presenting a corrugated parakeratin surface and prominent basal cells disposed in a palisaded fashion. Cytokeratins 14 and 19 were positive in both areas, COC and OKC. However, bcl-2 was positive only in COC areas. Thus, the diagnosis was of COC with OKC-like areas. The lesion was excised, confirming these histopathological findings. Currently, the patient is under follow-up, without clinical or imaging signs of recurrence after 2 years of treatment. In conclusion, COC with OKC-like areas is rare and this association seems present a good prognosis.
Protozoal, invasive fungal and mycobacterial infections in the head and neck region are exceedingly rare in the developed world. However, in developing countries, endemic infections may involve the oral mucosa or facial skin. Here we present three unusual infections involving these sites. Case 1: A 48-year-old male presented with difficulty in swallowing for a couple of months. Intraoral exam showed ulceration on the palate extending down to the oropharynx. Although a malignant diagnosis was favored initially, that was ruled out since a destructive lesion involving the left auricle and helix was also present. Histopathologically the case was diagnosed as leishmaniasis following identification of small oval organisms in macrophages which was confirmed with Giemsa stain. Case 2: A 38-year-old female presented with multiple nodules on the temporal skin that had been progressively enlarging over the past 2 years and hypo-pigmented skin patches. A prior biopsy was inconclusive. The repeat biopsy of the largest nodule showed presence of bright red colored bacilli on Fite staining confirming a diagnosis of leprosy. Case 3: A 19-yr-old male presented with a one year history of an extra-oral draining sinus after extraction of mandibular posteriors. Following a radiographic diagnosis of osteomyelitis, multiple courses of antibiotics were administered with no resolution and increase in the size of sequestrum. During surgical removal of sequestrum, a soft tissue mass was also noted in the vicinity. Sections from the necrotic bone and tumor-like mass showed chronic granulomatous inflammation along with septate hyphae, consistent with aspergillosis. All patients were referred to an infectious disease expert for further care. Each of this case enforces the need for histopathological awareness of infectious entities, so that appropriate treatment can be rendered.
Extranodal Natural Killer/T-cell Lymphoma, nasal type (ENKTCL-NT) is an aggressive non-Hodgkin lymphoma with poor prognosis, is predominant in Latin-America and Asia, whose validated prognostic model have not yet defined, and the prognostic value of CD30 in this disease remains controversial. **Objective:** The purpose of this study was to describe clinical, pathological and sociodemographic features and evaluate the survival and prognostic implications of CD30 expression of patients treated at National Cancer Institute, México. **Methods:** The medical records and slides histological were reviewed of ENKTCL-NT patients seen between 1999 and 2013; we used immunohistochemical method to investigate the expression of CD30. Statistical analysis: The survival curves was performed by the Kaplan-Meier method, the difference was computed by the log-rank test, and was used a multivariate Cox regression model. **Results:** A total 66 patients were seen, 32 met the selection criteria. The media age was 43 years (20–81 years), the male to female ratio was 3.6:1. The 5-year Overall Survival (OS) rate was 15% (95% CI, 0.05-0.30), with nine patients (28.1%) died during follow-up of 14 years. CD30 positive expression was detected in 71.9% cases. Univariate analysis showed statistical significance (p<0.05) for immunoexpression of CD30 with Granzyma B, cellular size and sex, it was also statistically significant the time survival with immunoexpression of Granzyme B, sex and status. Multivariate analysis showed CD30 expression was not a prognostic factor for OS (p=0.492) and patients without tumor have 81% lower probability of death (RM=0.190, 95% CI, 0.0415-0.875). **Conclusions:** Data on epidemiology was similar to that seen in other Asia countries, and CD30 was not a prognostic factor for OS but was frequently expressed in ENKTCL-NT. We suggest new reports with bigger samples.
Objectives: Oral ulcerative stomatitis may be seen in patients with autoimmunity in treatment with methotrexate, demonstrating a wide clinical and histopathologic spectrum that ranges from non-specific ulceration to EBV (+/-) lymphoproliferative disorders, disseminated necrotizing and ulcerative lesions affecting the gingiva extensive to the tongue has not been previously reported, we present a rare oral manifestation of methotrexate and summarize the clinicopathologic features of previously published cases. Clinical presentation: A 62-year-old female patient with a 5-year history of Hodgkin lymphoma in remission, and one year of dermatomyositis in treatment with prednisone, colchicine and methotrexate, presented with burning and pain in the gingiva, which lasted 10 days. Physical examination revealed that there was multiple necrotic ulcers located in the upper and lower marginal gingiva, including the interdental papillae that extend to the palate. The inserted gingiva shows edema and petechiae, there is radicular exposure without dental mobility or bone destruction. In the left lateral border of the tongue, a crater-like ulcer is detected, irregular and indurated edges. Intervention and outcome: It was decided to suspend methotrexate previous medical interconsultation and take a biopsy. The result of pathology reported B-cell diffuse lymphoma, the large-sizes lymphoid cells were positive for CD20, CD3, CD30, EBV, Ki67 and negative for CD2, CD56, Grandzima, CD15, CD1a, k and l. After 15 days of having stopped the methotrexate there is total remission of the lesions. Based on the clinical-histological correlation, lymphoproliferative lesion associated with methotrexate was established. Conclusion: Oral necrotizing and disseminated ulcerative lesions are part of the wide clinical presentation of lymphoproliferative disorders associated to methotrexate. Clinical, histopathologic and immunohistochemical evaluation, may provide the correct diagnosis.
#117 Defining pathologic and molecular characteristics of tongue lesions in the 4NQO mouse carcinogenesis model

Monday, 25th June - 00:00 - Poster Session Available from 25th (16:30-18:30) -26th (18:30-20:30) June 2018 - Bayshore Ballroom D-F - Poster - Abstract ID: 319

**Dr. Aditi Bhattacharya** (Bluestone Center for Clinical Research, Department of Oral and Maxillofacial Surgery, New York University College of Dentistry), **Dr. Ratna Veeramachaneni** (Bluestone Center for Clinical Research, Department of Oral and Maxillofacial Surgery, New York University College of Dentistry), **Dr. Bauke Ylstra** (VU Medical Center Amsterdam), **Dr. Brian Schmidt** (Bluestone Center for Clinical Research, Department of Oral and Maxillofacial Surgery, New York University College of Dentistry), **Dr. Donna Albertson** (Bluestone Center for Clinical Research, Department of Oral and Maxillofacial Surgery, New York University College of Dentistry)

Oral cancer patients experience function-related pain, whereas patients with oral epithelial dysplasia rarely report pain. To study pain and model its onset with progression to cancer, we use the 4-nitroquinoline-1-oxide (4NQO) rodent carcinogenesis model that recapitulates oral cancer progression. Consensus is lacking regarding histopathologic definition of 4NQO-induced lesions.

**Objective:** Our objective was to determine histopathologic and genomic alterations of 4NQO-induced tongue lesions to better model human oral cancer pain and improve understanding of cancer progression and evolution.

We offered C57BL/6 mice 4NQO or vehicle in the drinking water for 16 weeks. At 32+ weeks, animals were sacrificed. Fifty 5 μm longitudinal sections were obtained from formalin fixed paraffin embedded tongues. Every tenth section was stained with H&E and examined for lesions.

**Findings:** Vehicle treated animals lacked lesions (n=5). Tongues from 4NQO treated animals (n=9) bore multiple lesions, including field changes, dysplasia, papillomas, carcinoma in situ (CIS) and invasive cancers distinguished by depth of invasion – superficially invasive (< 2 mm depth of invasion) and deeply invasive cancers (> 2 mm). Hierarchical clustering (Euclidean distance, Ward linkage) according to presence of lesions (CIS, papilloma, invasive cancer, deeply invasive cancer) revealed three clusters, each with three animals. Significantly greater numbers of lesions were present in Cluster 3 tongues compared to Clusters 1 and 2 (p=0.03 for both comparisons, Ordinary one-way ANOVA, Holm-Sidak multiple comparisons test). Cluster 1 comprised tongues with the deeply invasive cancers, which also showed aggressive features, including perineural invasion. Significantly fewer papillary lesions were present compared to Clusters 2 and 3 (p=0.004 and p=0.0002, respectively, two-way ANOVA, Tukey's multiple comparisons test).

**Conclusions:** Our data suggest possible division of the 4NQO model into subtypes. Lesion associated genomic copy number alterations and mutations are being determined to identify molecular and evolutionary relationships among lesion types and possible model subtypes.
#118 Prevalence of drug-resistant microorganisms in oral cavity during orthodontic treatment

Ms. Gabriela Sabino (São Leopoldo Mandic Research Centre), Dr. Selly Suzuki (São Leopoldo Mandic Research Centre), Dr. Aguinaldo Garcez Segundo (São Leopoldo Mandic Research Centre), Mr. Alexandre Czezacki (São Leopoldo Mandic Research Centre), Ms. Thaina Pugliesi (São Leopoldo Mandic Research Center), Mrs. Gilca Saba (São Leopoldo Mandic Research Center), Mr. Thiago Almeida (São Leopoldo Mandic Research Centre), Mrs. Ione Caselato (CQC), Dr. Victor Montalli (São Leopoldo Mandic Research Centre)

Bacterial antibiotic resistance is a steadily growing global problem, which is nowadays compared with issues such as global warming, ozone depletion and extinction of species. Rough surfaces such as brackets in orthodontics treatment can cause biofilm accumulation and maturation, what could advance changes in the oral microbiota, favoring the resistance of these microorganisms. Objectives: To investigate the prevalence of drug-resistant microorganisms in patients using fixed orthodontic appliance. Methods: Sample consisted in 22 patients (11 female and 11 male) with mean (SD) of 22.3 (11.0) years with good general and oral health conditions participates in the study. Oral biofilm was evaluated by autofluorescence imaging analysis (using LED light) to indicate mature biofilm and posteriorly collected at the buccal tooth surface around fixed orthodontic appliance. Oral biofilm samples were inoculated into chromogenic medium and screening of representative microorganisms was performed. The CFUs were isolated and tested with antibiogram discs and antimicrobial agents which are common in clinical practice were used. Results: Oral microorganisms collected around brackets showed a surprising high prevalence of bacterial resistance for all tested drugs: Erythromycin (54.5%), Clindamycin (50%), Amoxicillin (45.5%), Amoxicillin with Clavulanic Acid (31.8%) and Cephalexin (31.8%). Conclusion: A special attention should be directed to precautions against these microorganisms, particularly in immunosuppressed patients, who are more susceptible to infections.
#119 Folliculosebaceous Cystic Hamartoma Of The Oral Mucosa: Clinicopathologic Analysis Of 3 Cases Of An Uncommon Entity

Monday, 25th June - 00:00 - Poster Session Available from 25th (16:30- 18:30) -26th (18:30-20:30) June 2018 - Bayshore Ballroom D-F - Poster - Abstract ID: 327

Dr. Prokopios Argyris (University of Minnesota School of Dentistry), Dr. Ioannis Koutlas (University of Minnesota School of Dentistry), Dr. Raj Gopalakrishnan (University of Minnesota School of Dentistry)

**Objective:** Folliculosebaceous cystic hamartoma (FSCH) represents an unusual type of cutaneous hamartomatous proliferation, manifesting clinically as an asymptomatic, slow-growing papulo-nodular lesion that most commonly affects the facial skin, primarily around the nose. Microscopically, FSCH is composed of infundibular structures with numerous radiating sebaceous lobules embedded in a mesenchymal stromal component. Despite the nomenclature, significant cystic dilatation is observed in <40% of the cases. Intraoral involvement of FSH is exceedingly rare. We aim to present and analyze the clinicopathologic characteristics of a case series study of 3 intraoral FSCHs.

**Results:** Three FSCH cases were identified in the archives of the Oral and Maxillofacial Pathology Laboratory, University of Minnesota between 2008-2017 with M:F ratio=2:1 and mean age =42.3 years (age range: 27-61 years). All cases were located in the buccal mucosa and presented as painless, submucosal nodules of long duration measuring 0.6-1.5 cm. No previous history of skin graft in the area of the lesions was reported and none of the patients had a clinically identifiable syndrome. Histopathologically, oral FSCHs showed aggregates of variable number of rudimentary follicular structures and sebaceous lobules. Occasionally, the sebaceous glands were radially arranged and attached to small in size infundibular structures featuring rare microcystic changes, or were scattered in the deeper portions of the oral mucosa. The pilosebaceous units were immersed in a dense, focally desmoplastic, connective tissue stroma with variable amounts of mature adipocytes and vessels. Piloerector muscles were present in 2 out of 3 FSCHs, while inflammation was generally absent. **Conclusions:** Oral FSCH is an infrequent lesion which can be misdiagnosed as ectopic Fordyce granules or other sebaceous neoplasms. Similar to a subgroup of cutaneous FSCH, oral lesions fail to show prominent cystic formation. Notably, a predilection for the buccal mucosa is reported. Whether oral FSCH represents late developing stage of trichofolliculoma remains unknown.
#120 Odontogenic Tumors: A 50-year experience

Dr. Merva Soluk Tekkesin (Istanbul University, Institute of Oncology), Dr. Sırmahan Cakarer (Istanbul University, Faculty of Dentistry), Dr. Nihan Aksakallı (Istanbul University, Institute of Oncology), Prof. Canan Alatlı (Istanbul University, Institute of Oncology), Dr. Vakur Olgac (Istanbul University, Institute of Oncology)

Objectives:
Odontogenic tumors are a heterogeneous group of lesions of diverse clinical behavior and histopathologic types, ranging from hamartomatous lesions to malignancy. They are derived from epithelial and mesenchymal elements of the tooth-forming apparatus so they are unique to the jaws. The last update of these tumors was published in 2017 January. According to this classification, benign odontogenic tumors are classified as follows: Epithelial, mesenchymal (ectomesenchymal), or mixed depending on which component of the tooth germ gives rise to the neoplasm. Malignant odontogenic tumors are quite rare and named similarly according to whether the epithelial or mesenchymal or both components are malignant. Epidemiological data on odontogenic tumors within in Turkey is scarce. Our aim is to determine the incidence of odontogenic tumors according to the new classification within a Turkish population. These tumors were identified using the pathology files, Istanbul, about a 50-year period.

Findings:
Over a thousand cases of odontogenic tumors were diagnosed in the Oral and Maxillofacial Pathology Unit between 1971-2018. The cases were reviewed and reclassified histopathologically in accordance with the 2017 WHO classification of head and neck tumors. The most common three tumors were ameloblastoma (n:366, including unicystic and peripheral ameloblastomas), odontoma (n:335, both complex and compound), and odontogenic myxoma/fibromyxoma (n:190), respectively. Malignant and peripheral odontogenic tumors are a small proportion of this series. The mean age is about 32 and there is a slight female predilection. The most common site is molar region of the mandible, followed by the anterior mandible and the anterior maxilla.

Conclusions:
This is one of the largest series of odontogenic tumors to be described from the Europe. The location, site, gender and age of the patients are similar to that in other populations, however there are some differences about the frequency of the tumors types.
#121 The importance of early recognition of oral potentially malignant disorders in HIV-AIDS individuals.

Objective: An increase in head and neck cancer (HNC) in HIV-infected individuals has been described in several epidemiological studies, suggesting that immunosuppression, even in treated patients, may play a role in the development of HNC. A thorough oral examination is essential for the identification of potentially malignant lesions, particularly in individuals at high risk to develop cancer. Thus, we report two cases of oral potentially malignant disorders occurring in HIV individuals.

Clinical Presentation: Case 1. A 39-year-old male HIV+ since 2013. In 2015 presented an asymptomatic, slightly granular, red/white pediculate tumor on the left buccal mucosa, clinically compatible with multifocal epithelial hyperplasia with post-traumatic hyperkeratosis (251 cells/ml CD4+, undetectable viral load [VL]). Two weeks later, the lesion showed marked erosive/ulcerated areas, thus, a complete excision was done. The final diagnosis was in situ squamous cell carcinoma positive to HPV-16. Case 2. A 40-year-old male HIV+ since 2005, with histologically confirmed oral hairy leukoplakia, immunohistochemistry showed positive expression to EBV and negative to HPV. In 2015 presented a white well circumscribed homogeneous plaque, with a slightly rough surface and some satellite lesions, comparable with the previous hairy leukoplakia. The patient referred itching and burning sensation, so an excisional biopsy was done, showing hyper orthokeratosis with moderate dysplasia. The sample was negative for EBV and HPV. Both patients have remained asymptomatic, without signs of recurrence.

Outcome: The present cases evidence that some oral potentially malignant disorders may resemble other common lesions in HIV-patients that could be underdiagnosed, delaying an appropriate management and impacting prognosis. It is essential to highlight that HIV/AIDS patients should be closely monitored. Oral examination should be cautious even in the presence of lesions with a benign appearance.
Objectives: FEH is a benign mucosal condition often presenting in female children. The Indian descendants in America, Eskimos in Greenland and Canada, the Nahuatl population in Mexico and Aboriginals in Australia are commonly affected populations while in Africa; cases have been reported from the Khoi San population in South Africa and from Ghana and Nigeria. Clinically, lesions may be localised or multiple, flat (Papillomatous) or raised (Papillonodular) and are more common on the lips and buccal mucosa

Material and Methods: An epidemiological demographic screening project between 2015-2017 was undertaken for FEH by the NRU, Khartoum, Sudan. This assessed 647 persons in the age groups 5 – 38 years living in the province of ‘Kalakla’ (North, West and East), an area with a high population of FEH presentation as determined by health statistical analysis, ministry of health. Clinical assessment was carried out in all persons and genetical and molecular HPV subtyping was carried out in 30% of the assessed population.

Findings: 77% of persons were 5-15 years, 14% were between 16-27 and 9% were between 28-38 of age. Of 647 persons, 147 persons were clinically diagnosed with FEH and the lips were the commonest area affected. Mean age of presentation was 14 years (range: 5 – 23), 27% of persons with FEH had a familial relation and 132/147 were female. 30/147 underwent PCR analysis and HPV 32 was the most common subtype, followed by 1,11,12 and 13. 3 persons had no evidence of HPV infectivity. Finally, 12/15 persons who underwent genetical analysis were positive for HLA DRB 1*0404 expression.

Conclusion: Persons with FEH and their relatives are greatly affected by the aesthetic, medical and traumatic concerns related with this condition. Differential diagnosis includes other viral lesions, epidermodysplasia verruciformis, dysplastic PUVA keratosis and syndromes such as Neurofibromatosis and Cowdens.
**#123 Interferon gamma (IFNγ) antitumor effects on oral cancer cells are accompanied by ER stress response modulation and DSPP activity suppression**

Monday, 25th June - 00:00 - Poster Session Available from 25th (16:30- 18:30) -26th (18:30-20:30) June 2018 - Bayshore Ballroom D-F - Poster - Abstract ID: 336

**Dr. Nikolaos Nikitakis** (Dental School, National and Kapodistrian University of Athens, Greece), **Dr. Ioannis Gkouveris** (School of Dentistry, University of Texas, Health Science Center at Houston), **Dr. Jaya Asservatham** (School of Dentistry, University of Texas, Health Science Center at Houston), **Prof. Kalu U.E. Ogbureke** (School of Dentistry, University of Texas Health Science Center at Houston)

**Objectives.** Expression of proinflammatory cytokines in various malignant neoplasms is widely considered to represent a host immune response to control tumor development. Recently, the role of interferon gamma (IFNγ) in oral squamous cell carcinoma (OSCC) and its relation with endoplasmic reticulum (ER) stress pathways were investigated. Dentin sialophosphoprotein (DSPP) has been involved in malignant transformation, invasion and metastasis of OSCC. The present study examined the effects of IFNγ treatment on ER stress, Unfolded Protein Response (UPR) and calcium homeostasis regulating mechanisms and the potential interaction with DSPP in OSCC cells.

**Findings.** Oral cancer OSC2 cells were assessed following IFNγ treatment at specific time-points. DSPP and MMP20 mRNA expression levels, as well as ER stress, UPR and calcium homeostasis-related proteins, including GRP78, SERCA2b, IP3r, PERK and IRE1, were assayed by RT-PCR, while Bcl-2, Bax, PCNA and Cytochrome C protein expression levels were analyzed by Western blot. IFNγ treatment significantly downregulated mRNA levels of major ER stress regulator GRP78, and, to a lesser extent, UPR-related molecule IRE1, but without significant effect on PERK. Furthermore, IFNγ affected the mRNA expression levels of important ER calcium homeostasis molecules, downregulating SERCA2b and upregulating IP3r. Additionally, DSPP and MMP20 mRNA levels were significantly reduced by IFNγ. IFNγ treatment also hampered OSC2 migration (assessed by wound-healing assay), reduced cell viability (evaluated by MTT), and enhanced apoptosis (assayed by Annexin V/FITC flow cytometry). These changes were accompanied by induction of Bax and Cytochrome c and downregulation of PCNA and Bcl-2 protein levels.

**Conclusions.** IFNγ appears to inhibit oral cancer cell viability and migration, and drive apoptosis, possibly by regulating ER stress and UPR mechanisms. DSPP and MMP20 downregulation appears to correspond to the IFNγ-induced changes in ER calcium homeostasis in OSCC.
#124 Hairy Leukoplakia in a Patient Undergoing Anti-Retroviral Therapy

Monday, 25th June - 00:00 - Poster Session Available from 25th (16:30- 18:30) -26th (18:30-20:30) June 2018 -
Bayshore Ballroom D-F - Poster - Abstract ID: 337

Dr. Kelcie Barnts (Texas A&M College of Dentistry), Dr. Celeste Abraham (Texas A&M College of Dentistry), Dr. Yi-Shing Lisa Cheng
(Texas A&M University College of Dentistry)

We report a case of hairy leukoplakia that developed in a patient undergoing anti-retroviral therapy.

A 53-year old white male presented with mild erythema in the anterior maxillary gingiva and was managed with clobetasol gel, after excluding the possibility of candidiasis. Patient’s medical history was significant for HIV, bipolar disorder, high blood pressure, high cholesterol, chronic bronchitis, smoking, and alcohol. His medications included Androgel, Axiron, atorvastatin, bupropion, clozapine, finasteride, hydrochlorothiazide, lamotrigine, lisinopril, pantoprazole, Prezobix, Trazadone, Truvada (200 mg emticitabine, 300 mg tenofovir), Ziprasidone, zolpidem, and baby aspirin. During one of multiple follow-up appointments, an asymptomatic white plaque was identified on right lateral tongue. Clinical differential diagnoses included hairy leukoplakia and hyperkeratosis secondary to trauma. Patient reported that his physician changed Truvada to Descovy (200 mg emticitabine, 25 mg tenofovir) since his last appointment. At the appointment six weeks later, the white plaque increased in size, and additional white plaques were found on the left dorso-lateral surface and dorsal tongue.

Two biopsies were taken, one from the right lateral and the other from left dorso-lateral tongue. The biopsies showed similar histological features including hyperparakeratosis with shaggy surface and bacterial colonization. Intracellular edema and pyknotic nuclei were noted in the spinous cell layer. Upper spinous cell nuclei were enlarged and glassy appearing, without obvious nucleoli or nuclear beading. An Epstein-Barr encoding region (EBER) in-situ hybridization was performed, which demonstrated presence of EBV. Blood testing, taken five days after the biopsy, showed a CD4 count and viral load within normal limits. The patient's physician prescribed a course of acyclovir 800mg for treating oral hairy leukoplakia. The oral lesions reduced in size at the follow-up appointment three weeks after completion of acyclovir therapy. Further follow-up information also will be presented.
Introduction: Carvajal syndrome is characterized by woolly hair, striated palmoplantar keratoderma and left-sided ventricular cardiomyopathy. It is inherited as an autosomal recessive disorder due to a homozygous mutation in the gene coding for desmoplakin, which truncates the C-terminal of the protein and maps to chromosome 6p24. Signs and symptoms of Carvajal syndrome include: woolly hair that is present from birth, palmoplantar keratoderma that develops after infancy, follicular keratoses on elbows, knees, face, abdomen and lower limbs, clubbing of fingers and rarely mucosal lesions. The desmoplakin (DSP) abnormality can result in arrhythmogenic ventricular cardiomyopathy.

Clinical Presentation: A 2 month old male of Ecuadorian descent presented with oral ulcerations and poor feeding as reported by his mother. The oral lesions were noted at 2 weeks of age. Bilateral dorsal tongue and palatal erosions with sloughing were noted on oral examination. Skin excoriations were noted at sites of electrocardiogram leads. It was also noted that the child had sparse woolly hair that extended on to the forehead and had a hoarse cry.

Intervention and Outcome: Biopsies of the anterior dorsal tongue, lingual epiglottis, and duodenal, gastric, esophageal and rectosigmoid mucosa were performed. The tongue and epiglottis surface epithelium consisted of discohesive squamous epithelial cells with interspersed inflammation and bacterial colonies. Esophageal biopsy showed suprabasilar separation from underlying lamina propria. Direct immunofluorescence studies were negative. Whole Exome Sequence Analysis revealed patient was compound heterozygous for the c.7623delT and c.7623delG pathogenic variants in the DSP gene.

Conclusion: The mucosal lesions of this syndrome can present intraorally, and have a rather unique histopathology characterized by dyskeratosis and discohesion. Patients with this syndrome require regular cardiac evaluations as the cardiac issues are of paramount importance.
Introduction: Oral melanoacanthosis is a rare, benign, mucosal pigmentation characterized by rapid growth which may clinically resemble mucosal melanoma. A biopsy is often indicated to confirm this diagnosis and exclude other pathologies. A reactive etiology is suggested, as melanoacanthosis typically presents on trauma prone mucosal sites. Melanoacanthosis often occurs as a solitary lesion, however multifocal lesions have been reported. Histopathologic characteristics include pigment-laden, cytologically benign melanocytes with prominent dendritic processes scattered throughout acanthotic stratified squamous epithelium. Regression of the lesion has been observed following biopsy, surgical removal, and spontaneously.

Case Description: An 18 year old male presented for evaluation of spontaneous, multifocal oral mucosal pigmentation. The patient's medical history was significant for eczema which was refractory to topical steroid therapy. Extraoral examination revealed multiple eczematous lesions of the skin of the face, neck, limbs and focal involvement of lower lip. Intraoral examination revealed dark brown, well defined, flat pigmentation of the maxillary and mandibular attached gingiva, bilateral buccal mucosae, bilateral retromolar pads, soft palate, and focal involvement of the hard palate. A biopsy of the left buccal mucosa demonstrated classic histopathologic features of melanoacanthosis. He was subsequently referred to dermatology for evaluation and management of eczematous skin lesions. The patient's identical twin brother had no evidence of melanoacanthosis and no eczema.

Conclusion: Melanoacanthosis is a rare pigmented lesion of the oral cavity that often resolves post biopsy. This entity is rarely multifocal. The preferred term melanoacanthosis is used to highlight the reactive, benign nature of the condition.
Phosphaturic mesenchymal tumor (PMT) is a rare neoplasm that has been associated with oncogenic osteomalacia. This tumor secretes fibroblast growth factor-23 (FGF-23). Although other mesenchymal tumors can cause oncogenic osteomalacia, PMT is the most common mesenchymal neoplasm associated with oncogenic osteomalacia and accounts for 80% of such cases. Most patients are adults and the tumor can affect both men and women. The most common location for the tumor is the lower extremities followed by the head and neck area. Patients typically present with diffuse bone pain, bone fractures, and progressive muscle weakness. The laboratory studies usually reveal increased levels of FGF-23, hyperphosphaturia, increased alkaline phosphatase, normal serum calcium and parathyroid hormone levels, normal to low levels of 1,25-dihydroxyvitamin D and hypophosphatemia. The four common phosphaturic mesenchymal tumor microscopic subtypes are: phosphaturic mesenchymal tumor mixed connective tissue variant (PMTMCT), osteoblastoma-like variant, ossifying fibroma-like variant, and non-ossifying fibroma-like variant. The small size of this slow growing tumor and the non-specific clinical presentation may present a diagnostic challenge to clinicians. We present a case of a 48-year-old Haitian male who was diagnosed with PMT in the right angle of the mandible. Fewer than 15 cases of PMT presenting in the oral cavity have been reported in the literature. The clinical presentation, the laboratory findings, imaging characteristics, and the histopathologic features for this case are discussed along with the molecular genetic aspects, treatment and prognosis for this rare neoplasm.
#128 Study of the biopsies conducted in the clinic of Stomatology of a reference center in oral pathology treatment in Brazil.

**Dr. Victor Montalli** (São Leopoldo Mandic Research Centre), **Ms. Paula Sampaio** (São Leopoldo Mandic Research Centre), **Mr. Flavio Garcia** (A.C. Camargo Cancer Center), **Ms. Mariana Raeder** (University of Campinas), **Dr. Vera Araújo** (São Leopoldo Mandic Research Centre), **Dr. Ney Araújo** (São Leopoldo Mandic Research Centre), **Dr. Paulo Moraes** (São Leopoldo Mandic Research Centre)

Epidemiological research on maxillofacial lesions establishes and helps in the determination of demographic characteristics of oral pathology. It cooperates in planning the population needs and guiding dental surgeons in determining preventive actions and appropriate treatment. Objectives: To perform a retrospective analysis of the biopsies done at the Stomatologic clinic of São Leopoldo Mandic Institute and Research Center (Brazil). Methods: The study of all the biopsies done in the Stomatologic clinic that were performed between January 2012 and December 2017 is the aim of this research. Results: It was observed that during the evaluated period, 2,892 appointments and 341 biopsies were performed. These biopsies were classified according to the order of higher prevalence of the diagnosed oral pathologies: 1) Reactional lesions (n = 82), 2) Cysts (n = 39), 3) “others” (n = 36), 4) Malignant neoplasms (n = 31), 5) Bone lesions (n = 26), 6) Non-neoplastic epithelial lesions (n = 24), 7) Infectious lesions (n = 20), 8) Inflammatory lesions of the salivary gland (n = 19), 9) Autoimmune conditions (n = 14), 10) Benign neoplasms (n = 10). Conclusion: The study provided the possibility to observe the profile and prevalence of the pathologies that affected the patients attended in the Stomatologic clinic, in addition to assisting the professionals in future planning of this important service of diagnosis and treatment of oral diseases.
#129 Attitude and use of traditional home remedies in the treatment of oral diseases among educated people in Makkah and Medina areas, Saudi Arabia: a cross-sectional study

Dr. Huda Hammad (Jordan University of Science and Technology, Formerly visiting at Taibah University, Medina, Saudi Arabia), Dr. Layla Abu-naba’a (Jordan University of Science and Technology, Formerly Taibah University, Medina, Saudi Arabia), Dr. Hisham Al-Shorman (Jordan University of Science and Technology, Formerly Taibah University, Medina, Saudi Arabia), Dr. Wael Swelam (Taibah University (Formerly, Deceased))

Objectives:
The aim of this study was to investigate the attitude of an educated sample of population towards the use of traditional remedies in the treatment of various oral diseases in Makkah and Medina areas, Kingdom of Saudi Arabia.

Findings:
The number of questionnaires answered was 125. The majority of respondents were female (85.6%), with an average age of 30 years (range 15-83 years). Most were highly educated with 75.2% having college education and 10.4% having graduate education, coming from families with variable levels of income, mostly moderate income families. Although 16% stated that they “always” and 65.6% “sometimes” believed in effectiveness of traditional medicine, 44% would not try traditional treatment before resorting to dentist for oral conditions. Only 12.8% would always try traditional treatment first. The most widely used products included clove or clove oil, myrrh, Acacia nilotica extract, and tahini (sesame seed paste).

Conclusions:
Traditional home remedies are still being used for oral conditions by some educated people in the two areas. However, the largest proportion favors modern treatment by dentists.
#130 IMMUNOHISTOCHEMICAL EXPRESSION OF AMELOGENIN AND DENTIN SIALOFSOFOPROTEIN IN TEETH WITH AMELOGENESIS IMPERFECTA, DENTINOGÉNESIS IMPERFECTA AND REGIONAL ODONTODYSPLASIA

Monday, 25th June - 00:00 - Poster Session Available from 25th (16:30-18:30) - 26th (18:30-20:30) June 2018 - Bayshore Ballroom D-F - Poster - Abstract ID: 344

Dr. Claudia Camacho (Universidad de Chile), Prof. Ana Ortega-Pinto (Universidad de Chile), Prof. Blanca Urzua (Universidad de Chile)

OBJECTIVE: To compare the immunohistochemical expression of amelogenin (Amelx) and dentin sialofosfoprotein (DSPP) in teeth with Amelogenesis imperfecta (AI), dentinogénesis imperfecta (DI) and regional odontodysplasia (RO).

STUDY DESIGN: In the present study we included patients who signed informed consent and agree to donate exfoliated deciduous teeth and third molars. This study analyzed six teeth with hypoplastic AI (HpAI), five teeth with hypocalcified AI (HcAI) three cases of Hipomature AI (HmAI), two teeth with DI and two teeth with RO and seven normal teeth. All cases were non-syndromic forms. Amelx C-19 and Amelx F-11 antibodies were used to detect amelogenin, and DSPP antibodies LFMb 21 and ab122321 were used for DSPP. For the characterization and diagnosis of each case anamnesis, clinical and radiographic examination was performed.

RESULTS: AI cases: Only in cases of HcAI was sufficient enamel matrix left after decalcification, in these cases Amelx was detected in the interrods region. In dentine Amelx was not detected, DSPP was detected in peritubular dentin in most cases.

DI cases: When decalcifying these teeth, the enamel was lost. In dentine, DSPP was only detected with the Ab122321 antibody in the peritubular area. The antibody LFMb21 was negative in dentin.

RO cases: Temporary tooth enamel marked positive for Amelx and for DSPP. the dentin of the temporal tooth marked scarce marking for DSPP. In the permanent tooth the enamel was lost when decalcifying and in dentine no DSPP was detected.

CONCLUSIONS: The teeth with AI lost the enamel when decalcifying, except those with HcAI that presented Amelx in the enamel matrix. Dentin presented normal distribution of DSPP in AI teeth. The teeth with DI did not present DSPP in dentin. The teeth with OR presented anomalous marking of these proteins in enamel and dentin.

Work funded by Project: FONDECYT Nº 1140905.
Ameloblastoma is the most common benign odontogenic tumor of dental epithelial origin in the jaw. Its behavior is variable and the most common types of this neoplasia are the multicystic (MA) and the unicystic (UA) pattern; the latter considered a less aggressive entity when compared to the MA. Objective: To analyze cases of ameloblastoma with emphasis on the clinical, radiographic and histopathological findings and compare MA to UA. Methods: This retrospective study was conducted from 98 cases diagnosed from January 2005 to February 2018 in the Oral Pathology Laboratory of the São Leopoldo Mandic Institute and Research Center (Brazil). The cases were classified as MA or UA by the radiographic aspects. Furthermore, characteristics such as anatomical region, cortical expansion, gender, age and histopathological patterns were compared. Results: The radiographic analysis revealed that the posterior region was the most prevalent one (84.6%), while 15 cases were located in the anterior region and 7 cases were observed in both regions. Moreover, 55 cases were classified as MA and 43 as UA. The cortical expansion was observed in 90 cases; from this amount, 54 cases of ameloblastoma were MA (98.2%) and 36 cases of UA (80%) (p=0.01). The gender distribution was higher in men (55%) than in women. The general average age was 31.3 years (range 9-74 years); the average for MA was 35.6 years and 27.1 years for UA (p=0.007). The painful symptomatology was referred to 21 cases. The predominant histological patterns in MA were the plexiform (36%) and the follicular type (29%) and in UA were cystic (51%) and plexiform (31%). Conclusion: Radiographs and histopathologic exams are a fundamental aid for the diagnosis of ameloblastoma. It is important for practicing clinicians to know the salient features of this tumor in order to accomplish a correct diagnosis and an adequate therapeutic care.
#132 Metastasis to the mandible from an undiagnosed pulmonary adenocarcinoma: A report and review of the literature.

Monday, 25th June - 00:00 - Poster Session Available from 25th (16:30-18:30) - 26th (18:30-20:30) June 2018 - Bayshore Ballroom D-F - Poster - Abstract ID: 347

**Dr. Patricia DeVilliers** *(University of Alabama at Birmingham, Department of Pathology)*, **Dr. Kelsey Mansheim** *(Brookwood Baptist Health Anatomic and Clinical Pathology Residency Program, Birmingham, AL)*, **Dr. Jon Holmes** *(Clark Holmes Oral Facial Surgery, Birmingham AL)*, **Dr. Lindsay Montague** *(DynamicPathology, Bradenton, FL)*, **Dr. John Voss** *(Meridian Oncology Associates, MS)*

Objective: Metastatic lesions account for 1% of all oral and maxillofacial malignancies. A quarter of gnathic metastases are discovered before the primary tumor is known. We present a case of adenocarcinoma of the mandible, as first evidence of advanced lung cancer. Findings: A 65-year-old male presented to the oral surgeon with a 6-month history of lower left jaw pain. Panoramic radiograph showed an ill-defined radiolucency inferior to the mandibular canal. A biopsy revealed a scattered glandular proliferation, with a few areas consisting of cribriform architecture and foci of back to back glandular lumens. No features of mucoepidermoid carcinoma were identified. A subsequent PET CT scan showed an ill-defined nodule in the left upper lobe of the lung measuring up to 2.5 cm in greatest dimension. Multiple hilar, subcarinal, and paratracheal nodules were also identified, concerning for nodal metastasis. Immunohistochemical stains were then performed on the original biopsy from the mandible and the tumor cells stained positive for TTF1, Cytokeratin 7, and Napsin A, suggestive of adenocarcinoma of pulmonary origin. Consequently, MRI of the brain identified lesions in the parietal and frontal lobes, measuring up to 3.4 cm. Treatment for the patient included chemotherapy with Pemetrexed (Alimta) and carboplatin, immunotherapy with Keytruda, and once tapered off, palliative radiotherapy. Conclusion: Primary adenocarcinoma of the jaw is extremely rare, except for 2–3% central mucoepidermoid carcinomas. The possibility of a metastatic tumor should be a consideration when encountering unusual histomorphology of an adenocarcinoma in the jaw bone.
#133 Clinical and histopathological characterization of head and neck cancer patients: the need for early diagnosis

Monday, 25th June - 00:00 - Poster Session Available from 25th (16:30- 18:30) -26th (18:30-20:30) June 2018 - Bayshore Ballroom D-F - Poster - Abstract ID: 348

Dr. Bernardo Venegas (Hospital Carlos Van Buren, University of Talca), Dr. Oscar Badillo (Hospital Carlos Van Buren), Dr. Victor Moraga (Hospital Carlos Van Buren), Dr. Eduardo Saez (Hospital Carlos Van Buren)

OBJECTIVES: To determine clinical and histopathological characteristics in a group of patients with diagnosis of head and neck cancer.

FINDINGS: A retrospective study of 257 chilean patients with head and neck cancer was carried out. Clinico-pathological, habits and survival rates were registered. Descriptive analysis was performed. Ages fluctuated between 20 and 92 years old, average of 65 years. Sex distribution showed 76.65% of males. TNM analysis showed 82.38% diagnosed in III or IV stages and 27% of lesions were located in oral cavity. Differentiation degree analysis showed 45.58% well differentiated and 46.90% moderately differentiated lesions. 72.15% reported being a smoker and 67.46% reported drinking alcohol. 26.58% of patients were treated with surgery plus radiotherapy and 23.21% only with radiochemotherapy. Survival rates showed 53 % at 5 years.

DISCUSSION: Head and neck cancer is globally considered a health problem. Its impact involves not only affected patients but also the family, health team and society. At present, in spite of growing knowledge and advanced research, poor survival rates are found in the literature, mainly because of late diagnosis. Knowledge of clinical features is necessary to improve early diagnosis rates among clinicians. Statistics are coincident with the literature; however, a remarkable finding is the late diagnosis (173 of 210 patients in stages TNM III or IV). Consequences are related to complex and expensive therapies and a considerable commitment to the quality of life of patients and their families.

CONCLUSION: Strategies to improve early diagnosis are needed in order to improve therapeutical and survival rate conditions.
#134 Use of virtual microscopy in non-presential time for the teaching of histopathology in dental students

Monday, 25th June - 00:00 - Poster Session Available from 25th (16:30- 18:30) -26th (18:30-20:30) June 2018 - Bayshore Ballroom D-F - Poster - Abstract ID: 266

Dr. Daniel Droguett (University of Talca), Dr. Claudio Morales (Private dental practice), Dr. Loreto Muñoz (Private dental practice), Dr. Bernardo Venegas (University of Talca), Dr. Margarita Retamal (University of Talca)

INTRODUCTION: Virtual microscopy (VM) in teaching histopathology is widely accepted by students and teachers around the world as a tool of multiple benefits. This methodology has only been evaluated in face-to-face applications (PVM), but not in non-presential modality (NPVM). NPVM is a systematic learning tool that allows to optimize classroom times.

OBJECTIVE: To compare the degree of knowledge and user satisfaction using VM applied in non-presential versus presentational modality for the teaching of histopathology in dentistry students.

MATERIALS AND METHODS: For this experimental study, a population of 150 students enrolled in the course of “Human Pathology” (2nd year) and “Pathology and Oral Diagnosis” (3rd year) of the Odontology career of the University of Talca, Chile, were selected. A quantitative comparison was made based on the qualifications obtained in the laboratory test (T test) and satisfaction controls through a survey (Chi square).

RESULTS: When analyzing the grades obtained by working with both modalities, in 3rd year, statistically significant differences were observed in favor of the NPMV. In 2nd year, this result was inverse, with PMV showing better grades. From the satisfaction point of view, there was poor perception with the application of NPMV.

DISCUSSION: NPMV modality is a method that improves the teaching of histopathology in courses previously exposed to PMV. This could be due to the fact that prior exposure to the methodology is required to achieve a better performance. On the other hand, the students raise their dissatisfaction on both levels with the NPMV given that, in their opinion, it uses too much time in an academic program already saturated with autonomous work.

CONCLUSION: NPMV improves the qualifications of students who have had a previous exposure to the PMV. Perception of this methodology by the students must be improved by optimizing the use of the resource in non-presential time.
#135 Determination of the prevalence and the risk of developing pathologies of the oral mucosa in the Maule Region, Chile

Monday, 25th June - 00:00 - Poster Session Available from 25th (16:30- 18:30) -26th (18:30-20:30) June 2018 -
Bayshore Ballroom D-F - Poster - Abstract ID: 350

Introduction: There are few studies that report the prevalence of Pathologies of the oral mucosa (POM) in Latin America. The development of these can be associated with environmental, genetic, cultural and social factors. Establishing the prevalence of POM and its association with these factors is very important to create public policies in oral health.

Objectives: Establish the prevalence and risk factors associated with the development of POM in the Maule Region, Chile.

Materials and Methods: 2417 people, from all the communities of the Maule Region, were clinically examined by 5 students, previously calibrated with the teachers of the Oral Pathology Unit of the University of Talca. The examination technique, the registers and forms were standarized with the recommendations and the WHO criteria. Age, sex, rural-urban condition, the presence of systemic and oral pathologies, smoking and the clinical diagnostics of POM were taken as parameters. A risk analysis was performed with the Cox and Snell test.

Results: 17.2% of the subjects presented POM, with a higher prevalence of reactive lesions in the groups of 6, 12 and 15 years and fungal infections in the groups of 35-45 and 65-79 years. The greatest risk of presence of POM was associated with sex and age (groups of 35-45 years and 65-79 years), but not with the urban-rural condition, smoking or the presence of diabetes or hypertension.

Discussion: The prevalence of POM is very similar to other reports around the world. Most of the POMs detected can be diagnosed and treated by the general dentist. It is important to prioritize the teaching of these POMs in the undergraduate programs and focus the publics heath programs in its treatement.

Conclusion: The most prevalent POMs are those of reactive etiology and fungal infections in very well-established age groups. Age and gender increase the risk of POMs.
Objectives: In recent decades, anti-angiogenic treatment strategy is well-described in cancer treatment including ovarian, colorectal, non-small cell lung cancers. Here, the anti-angiogenic activity of both Bevacizumab and Aflibercept have been searched on ten previously established primary Oral Squamous Cell Carcinoma (OSCC) cells of an Iranian population with different purity, searching for the most effective anti-angiogenic targeted drug.

Findings: To investigate and compare the effect of Bevacizumab and Aflibercept on Vascular Endothelial Growth Factor (VEGF) secretion of ten primary OSCC cells, cell proliferation and viability was assessed by ELISA and MTT assays. Also, cell migration was studied using scratch assay. The results showed that VEGF impressively expressed in all primary cancer cells. Although both drugs significantly reduced the secretion of VEGF, the effect of Aflibercept was more prominent. Also, Bevacizumab-treated cells migration was lower than the control group and the cells treated with Aflibercept showed the lowest migration rate comparing with Bevacizumab and control groups.

Conclusion: The anti-angiogenic targeted drugs could probably be used in treatment of the patients with OSCC in combination with conventional surgical treatments.
Objective: To present a primitive monophasic sarcoma of the mandible in a young male with spindle-cell predominant component and non-specific immunohistochemical phenotype.

Uncertain origin sarcomas are a very complex and heterogeneous group of neoplasms, categorized by their undetermined histogenesis and peculiar morphological features; generally associated to a specific translocation. This type of sarcomas has not sufficient clinical and diagnostic information because its low frequency in this site.

Case report: A 23-year-old male presented with slow-progressive mobility and tooth loss associated with gingival enlargement in the third quadrant. Local examination showed a firm mass of approximately 5x4 cm in the body of the mandible. X-ray examination revealed an extensive ill-defined radiolucency on the left side of the mandibular body. CT-scan assessed bone and soft tissue infiltration. Hemimandibulectomy was performed and gross examination consisted of a solid nodular mass. Microscopically a monotonous spindle-cell lesion with fascicular pattern was observed, hypercellular areas and hemangiopericytoid-like vessels were the predominant component. The neoplastic cells displayed pleomorphic nuclear features with vesicular chromatin. A wide immuhistochemical panel was performed showing reactivity for Calponin, CD68, CD99, Bcl-2, TLE-1, NSE, FLI-1, WT1, PTEN and 40% Ki67 index. Conclusion: Despite of the high sensitivity, antibodies are not conclusive for an accurate diagnosis. Molecular techniques were required to establish this entity with great implication in patient management. Complete assesment of undifferentiated sarcomas should include clinical/radiological correlation, histopathology, immunohistochemical staining and genetic confirmation.
#138 AN IMMUNOHISTOCHEMICAL ANALYSIS OF LYMPHOCYTIC INFILTRATION IN FOLLICULAR ADENOMA AND PAPILLARY CARCINOMA THYROID; RELATION TO PROGNOSTIC VARIABLES

Monday, 25th June - 00:00 - Poster Session Available from 25th (16:30- 18:30) - 26th (18:30-20:30) June 2018 - Bayshore Ballroom D-F - Oral to Poster - Abstract ID: 187

Dr. Varda Jalil (superior university), Dr. Rabia Safdar (Uni), Prof. Abdul Hanan Nagi (retired (ex prof of university of health sciences, Lahore))

OBJECTIVE
To determine the density of CD 8+ve Cytotoxic T Lymphocytes (CTLs) & CD 56+ve Natural Killer (NK) cells in biopsies of patients with follicular adenoma and papillary thyroid carcinoma (PTC)

FINDINGS
50 diagnosed paraffin embedded tissue blocks of follicular adenoma and papillary carcinoma thyroid were recruited according to the exclusion and inclusion criteria. Density of CD 8+ve CTLs & CD 56+ve NK cells was determined immunohistochemically and related with other histological parameters. The density of CTLs & NK cells was scored from 1–5 by French et al 2010. According to it, Score 1 is Single lymphocytes in the peritumoral region, Score 2 indicates Lymphocyte aggregates in the peritumoral region, Score 3 shows Intratumoral single lymphocytes with or without lymphocytes in the peritumoral region, Score 4 shows Fewer than 10 intratumoral aggregates while Score 5 indicates 10 or more intratumoral aggregates with or without peritumoral lymphocytes. Score 5 indicates extensive infiltration. Increased frequency of score 3 (56%) and score 5 (40%) were observed in cases of follicular adenoma and PTC respectively (p=0.01). Whereas when the density of CD 56+ve NK cells was related to the total number of follicular adenoma and PTC, increased frequency of score 3 (96%) was observed in cases of follicular adenoma as compared to PTC (52%) (p=0.000)

CONCLUSION
The density of peritumoral & intratumoral lymphocytic infiltrate varies with transition from benign to malignant tumour. The prevalence of both CD8+ve T cells and CD+ve 56 NK cells are important in both follicular adenoma and papillary carcinoma of thyroid. Tumour infiltration by CD 8+ve cytotoxic T cells increases while CD 56+ve NK cells decreases as it progresses from benign to malignant neoplasm. It might be an independent prognostic factor if studied on a comparatively large sample size with follow up of the patients.
OBJECTIVE
Subgemmal neurogenous plaques are subepithelial neural structures usually located along the posterolateral border of the tongue. Often associated with the taste buds, they are mostly asymptomatic, but occasionally patients present with pain or a burning sensation. Our objective for this study is to assess previous cases of this entity and contribute eleven new cases to the literature.

FINDINGS
We performed a retrospective analysis of the archived cases from the Department of Pathology, The Mount Sinai Hospital, New York. A detailed search was performed using the PowerPath (Sunquest) laboratory information system, which consisted of a review of all cases received from the year 2013 to 2017. 11 cases were found to be diagnosed as subgemmal neurogenous plaque. All cases were located in the tongue. The lesions showed a female predilection with a mean age of 51.7 years. These findings are consistent with previous published studies. In cases with S-100 immunohistochemical staining (8/11), S-100 confirmed the diagnosis. According to the clinical histories provided, the majority (6/11) were asymptomatic, mass-forming lesions, two cases were red/white lesions with no associated pain or burning sensations, one case presented as tongue pain and two cases lacked clinical information.

CONCLUSION
Subgemmal neurogenous plaque is a common entity which has been previously misinterpreted as a neurofibroma, neuroma, ganglioma and even squamous cell carcinoma. Proper diagnosis requires histopathological examination. It is important to create awareness among current students and residents in addition to practicing pathologists about this entity. Our study is consistent with other studies performed to date and contributes a further reinforcement and addition to the current literature. We also recommend a larger and more diversified study of this entity for the future.
#140 A comparative study of oral health status in diabetic and non-diabetic patients

Monday, 25th June - 00:00 - Poster Session Available from 25th (16:30-18:30) - 26th (18:30-20:30) June 2018 - Bayshore Ballroom D-F - Oral to Poster - Abstract ID: 318

Dr. Bukola Adeyemi (University College Hospital/University of Ibadan), Dr. Oluwatoyin Abimbola (University College Hospital, Ibadan), Dr. Bamidele Kolude (University College Hospital/University of Ibadan)

Objective: This study compares the prevalence and awareness of oral features in diabetic and nondiabetic groups.

Findings: A total of 111 (84.09%) diabetics had features associated with diabetes mellitus; male: female ratio was 1.05:1. Prevalent oral features were periodontitis 81 (61.36%), xerostomia 48 (36.36%) and halitosis 46 (34.85%). Candidiasis was only seen in 10 (7.58%) patients. Diabetic neuropathy was seen in 60.6% of cases as xerostomia, hypo-salivation and burning mouth. Prevalence of oral features of diabetes mellitus increased with duration of diabetes mellitus. Majority of patients with oral lesions were above the 5th decade of life. Only 13(11.7%) of the patients with oral features of diabetes mellitus had average fasting blood glucose within the normal range. Significant oral features of diabetes mellitus found in control cases were hyposalivation ($\chi^2 = 49.531, df=1, p<0.05$), Burning mouth; ($\chi^2 = 5.587, df=1, p<0.05$), Halitosis ($\chi^2 = 13.384, df=1, p<0.05$), Coronal caries ($\chi^2 = 14.937, df=1, p<0.05$) and Periodontitis; ($\chi^2 = 24.383, df =1, p<0.05$).

A total of 105 cases (79.5%) and 95 (72.0%) control subjects were unaware that diabetes mellitus has oral manifestations, 19 cases (14.3%) and 33 (25%) controls were able to name at least one oral feature of diabetes. Cases having higher awareness (>3 oral features) had significantly better mean glucose level. Awareness was unrelated to educational level of cases but directly related to education of controls.

Conclusion: There was significant difference in oral features among diabetics compared to control and features were directly proportional to glycemic as diabetics with poor glycemic control showed more oral features than those that attained euglycemic status. Overall, there was low awareness of oral features of diabetes amongst study cohort which was worse amongst diabetics compared to control.
Objective: Central xanthoma of the jaw is an extraordinarily rare entity with less than 30 cases reported in the English literature so far. This benign lesion is often associated with endocrine and metabolic diseases (e.g. hyperlipidemia, diabetes mellitus, etc.). When those conditions are ruled out, primary xanthoma of the jaw is the appropriate diagnostic term. Adult males are most commonly affected, and the lesion is most frequently reported in the mandible. The classic microscopic features include the presence of histiocytic-like cells with foamy cytoplasm that stain positive by immunohistochemistry for CD68, but are negative for S100 and CD1a. Due to the microscopic similarities of histiocytic-like cells in H/E slides, Erdheim-Chester disease and Rosai-Dorfman disease are two systemic conditions that should be considered in the work-up.

Findings: We present a case of a 15 years-old male patient with multiple, ill-defined, non-corticated, radiolucent entities in the left ramus of the mandible. The lesions appear to be coalescing in some views. There is no evidence of bucco-lingual expansion and cortical destruction of bone. An excisional biopsy is performed. Microscopic examination reveals mixed soft and hard tissues. The hard tissue is composed of reactive vital bone. Sheets of foamy cells with dark, centrally placed vesiculated nuclei, prominent nucleoli and well-defined cytoplasmic membrane are noted between the bony trabeculae. In some areas, epithelioid cells with more amphophilic cytoplasm and less distinct cytoplasmic membrane are identified. Chronic inflammatory infiltrate with extravasated erythrocytes within the background of the connective tissue is also observed.

Conclusion: The appropriate diagnosis of central xanthoma of the jaw requires the work-up for systemic diseases in association with immunohistochemical profile. The recommended treatment is excision and curettage, which has been associated with excellent prognosis and extremely low recurrence rate.
**#142 Candida species and strains in the oral cavities of the elderly: a comparison between people in home-based care and in aged-care facilities**

Monday, 25th June - 00:00 - Poster Session Available from 25th (16:30-18:30) -26th (18:30-20:30) June 2018 - Bayshore Ballroom D-F - Poster - Abstract ID: 277

Dr. Nurul Thiyahuddin (Sir John Walsh Research Institute, Faculty of Dentistry, University of Otago), Prof. Richard Cannon (Sir John Walsh Research Institute, Faculty of Dentistry, University of Otago), Dr. Erwin Lamping (Sir John Walsh Research Institute, Faculty of Dentistry, University of Otago), Prof. Alison Rich (University of Otago)

Oral candidiasis is prevalent in the elderly population due to medical conditions, use of systemic medications and the presence of oral appliances such as dentures. It is uncertain whether residing in an aged-care facility contribute to Candida carriage and has an impact on the Candida species or strains colonizing elderly patients.

**Objective:** The aim of this study was to investigate the presence and abundance of Candida species and strains in saliva and from the oral mucosal swabs and smears of people living in institutional rest homes and those living at home.

**Findings:** A higher proportion of elderly people living in rest homes had PAS’ Candida hyphae present in smears (9/25, 36%) compared to those living in their own home (5/21, 24%). CFU were present in 17/25 (68%) palatal swabs, 20/25 (80%) tongue swabs and in saliva from 21/25 (84%) of elders living in rest homes compared with 4/21 (19%) palatal swabs, 6/21 (28%) tongue swabs and from saliva in 12/21 (57%) of elderly living in their own home.

**Conclusion:** The results indicate that elderly people living in aged-care facilities are more likely to have Candida hyphae detected on PAS stained smears and have a higher Candida carriage rate compared to elderly living at home. This may be due to the presence of co-morbidities which led to the need for residential care and/or may be related to the rest home environment.
Metastatic tumours involving the oro-facial tissues are infrequent, with an incidence ranging between 1-8% of oral malignant tumours. The peak incidence is in the 5-7th decades and they can be the first sign of an occult cancer or manifest during the follow-up of a patient with a known primary tumour.

We describe a case of metastasis from unknown lung adenocarcinoma occurring in the maxilla, around dental implants, causing recurrent implants failure. A 62 year-old male without relevant clinical history was referred for dental implant failure in the left maxilla. New dental implants were positioned in the same maxillary area, but an additional implant failure occurred one month later; implants removal with an accurate bone curettage was performed and the surgical sample sent for histological examination. Unexpectedly, small foci of adenocarcinoma were found, with spiculae of medullary bone, prominent inflammatory changes and bacterial deposits. At immunohistochemistry, the tumour positively stained for CK7+ and TTF1+ but not for CK20 and PSA. Additional clinico-radiological investigations revealed a primary tumour of the lung, subsequently characterized as acinar adenocarcinoma.

Metastases to the oro-facial tissues can involve the oral mucosa, jawbones and salivary glands; lung, kidney, prostate and colon-rectum in males, uterus, breast, ovary and lungs in females are the most frequent primary localisations. It is accepted that metastatic neoplasms in the oro-facial region show high predilection for sites with peculiar clinical conditions, such as the parodontal inflammation or edentulous individuals bearing prosthesis. The molar and premolar regions of the jawbones and the post-extraction sites frequently are involved; this was related to the rich vascularisation and high bone marrow content and/or to re-organisation of the blood cloth of such sites. This report highlights the importance of histological examination of gingival-parodontal inflamed tissues when plaque and calculus accumulations have been excluded as primary causes.
OBJECTIVE
On the basis of manufacturers’ and some authors’ claims, all commonly used injection materials for aesthetic correction and different formulations of hyaluronic acid (HA), with or without adjunctive substances, result in no immunogenic reactions or other complications; nevertheless, unexpected, late or early adverse reactions have been reported. Overall, HA reinforced with hydroxyethyl-methacrylate (HEMA) can promote the formation of late foreign body granulomas (FBGs). The authors report on the histological (conventional and confocal laser scanning microscopy) features of a case occurred 10 years after the injection of HA+HEMA in the lower lip of a female patient.

FINDINGS
The nodular lesion was mainly composed by several almost empty and polygonal spaces, surrounded by fibrous collagen and sparse multinucleated giant cells, pointing at long-standing FBG. The polygonal spaces were 20–120 μm in size and partly filled with translucent particles, with a broken-glass appearance.

CONCLUSIONS
HA is a constituent of several normal tissues and, as such, does not lead to adverse reactions. When FBG is present, one should argue that additional components were bound to HA. HEMA has been used as a stabilizer of HA-based fillers but it is known to induce transient macrophagic reaction, fibroblast proliferation with scarce collagen deposition and multinucleated giant cells. The morphological features of the present case are consistent with previous injection of HA+HEMA and the prolonged time interval from injection to clinical manifestations indicates the adverse reaction is slowly progressive. Also, it was postulated that macrophages would incorporate foreign particles, thus keeping the foreign particles in a latent stage. Subsequently, additional priming events (e.g., supervening infections) would be needed to re-activate macrophages, lead to multinucleated giant cell accumulation and finally to wide granulomatous reaction. Such pathogenetic mechanism may explain the prolonged course of the disease, with only late development of clinically detectable nodular lesions.
Regional lymph node metastasis is a crucial negative prognostic factor in oral squamous cell carcinoma (OSCC). Whilst angiogenic and lymphangiogenic factors have been extensively investigated in primary OSCC, their expression in metastatic lymph nodes remains uncertain. **Objectives:** To investigate the expression of markers associated with lymphangiogenesis [vascular endothelial growth factor (VEGF)-C, D, VEGF receptor 3 (VEGFR3) and prospero homeobox 1 protein (PROX1)] in cervical lymph nodes from OSCC patients with and without metastatic deposits. Formalin-fixed paraffin-embedded (FFPE) blocks were accessioned from the Oral Cancer Research Coordinating Centre (OCRCC), University of Malaya, Malaysia. Samples were divided into two groups; Group A comprised cervical lymph nodes with histologically confirmed metastatic deposits from primary OSCC (n=17) and Group B, cervical lymph nodes from patients with primary OSCC without metastatic deposits, (n=17). Immunohistochemistry (IHC) was undertaken with antibodies against VEGFC, VEGF-D, VEGFR3 and PROX1. Quantitative analysis using ImageJ was used to delineate the extent of positivity (proportion and intensity) and lymphatic vessel density (LVD). Three samples from each group were subsequently selected for gene expression analysis of the lymphangiogenic markers (VEGFC, VEGFD, VEGFR3 and PROX) using qPCR. **Findings:** IHC showed significantly greater VEGFC expression in Group A compared with Group B (p=0.0002). Significant positive correlation was found between VEGFC and TNM stage (p=0.004). No statistically significant differences were observed in the protein and gene expression level of the other tested markers. **Conclusions:** This is the first study demonstrating significant overexpression of VEGFC in positive lymph nodes and suggests that VEGFC is an important growth factor involved in OSCC lymph node metastasis.
#146 Activating NOTCH1 Mutation in High-grade Evolution of Adenoid Cystic Carcinoma

Monday, 25th June - 00:00 - Poster Session Available from 25th (16:30-18:30) - 26th (18:30-20:30) June 2018 - Bayshore Ballroom D-F - Poster - Abstract ID: 349

Dr. Chuan-Xiang Zhou (Peking University School and Hospital of Stomatology), Prof. Tiejun Li (Peking University School and Hospital of Stomatology)

**Objective.** Salivary adenoid cystic carcinoma (SACC) is identified as a tumor with biphasic differentiation of epithelial and myoepithelial cells, showing tubular, cribriform and solid subtypes. The solid subtype is considered as high-grade with more aggressiveness and poorer prognosis. However, the molecular mechanism remains unknown. The aim of this study was to identify the clinicopathological characteristics of high-grade SACC, to clarify the molecular mechanism underline its distinct characteristics, and hopefully to explore potential molecular targets for SACC therapy.

**Study design.** Activated Notch1 (NICD) and myoepithelial cell markers were used for immunohistochemistry in 119 SACCs including 59 cribriform-tubular and 60 solid subtypes. Notch1 mutations were analyzed by DNA sequencing in all the SACC cases. The effect of activating NOTCH pathway on the biological behavior of SACC cell lines was investigated with transfection and functional studies.

**Results.** Notch1 mutations in the negative regulatory region and Pro-Glu-Ser-Thr-rich domains were identified in 26 of 119 patients with SACC, and 24 (92%) of 26 Notch1 mutant cases were predicted to be activating with NICD positive, with 2 cases predicted to be inactivating with NICD negative. Most (23/24, 96%) cases with activating Notch1 mutations were high-grade solid SACCs. Meantime, only 17 (18%) of 93 NOTCH1 wild-type tumors stained positive, and 16 of 17 tumors with NICD positive were high-grade solid subtypes. Furthermore, high-grade solid SACCs showed dramatically decreased short-term survival, tended to suffer bone invasion and metastasis, and presented NICD positive and myoepithelial cell markers negative simultaneously. Transfection and functional studies showed forced NICD expression promoted high level of proliferation and migration in SACC cells.

**Conclusions.** Our findings showed activating Notch1 mutations were related to the loss of myoepithelial differentiation in high-grade SACCs and might contribute to higher proliferation and worse outcome in high-grade tumors. Targeting the Notch signaling pathway in high-grade SACCs may provide therapeutic benefits.
#147 Histomorphological Comparison of Solitary Keratocyst and Keratocyst Associated with Basal Cell Nevoid Syndrome (NBCS).

Monday, 25th June - 00:00 - Poster Session Available from 25th (16:30- 18:30) -26th (18:30-20:30) June 2018 - Bayshore Ballroom D-F - Poster - Abstract ID: 345

Dr. Veronica Palacios (Pontificia Universidad católica de Chile), Dr. Rodrigo Goya (Pontificia Universidad católica de Chile)

Abstract:

**Histomorphological Comparison of Solitary Keratocyst and Keratocyst Associated with Basal Cell Nevoid Syndrome (NBCS).**

**Introduction:** The keratocyst of the jaws is an odontogenic entity of locally aggressive biological behavior, with potential for progressive growth, with infiltrative growth, despite being a completely benign cystic lesion. However when associated with NBCS, the behavior is more aggressive, without changing its benign biological nature. **Objectives:** compare the histopathological findings of solitary keratocyst v / s associated with Basal Cellular Nevoid Syndrome.

**Material and method:** The histology of 20 cases of solitary keratocyst is reviewed and compared with 20 keratocysts associated with SNBC. The characteristics of the epithelium and the connective tissue that make up the cystic capsule are evaluated; all stained with hematoxycin eosin.

**Conclusions:** There are histomorphological differences in both tipes of keratocyst; the most outstanding difference is the presence of a remarkable number of satellite cysts in the cystic capsule, of those associated with the SNBC, which would explain the high recurrence rate of them.

OBJECTIVES
This study aimed to evaluate the percentage of expression and the possibility of synchronicity between E-cadherin (Ecad) and Epithelial syndecan-1 (Syn1E) in Unicystic ameloblastoma (UAM) and solid multicystic ameloblastoma (SMA) and the association between this synchronicity and stromal immunoexpression of Syn1 (Syn1S).

FINDINGS
Immunohistochemical analysis of Ecad and Syn1 was performed for 30 (15 UAM, 15 SMA) cases of ameloblastoma, the percentage of expression was evaluated with the average value for expression, and intensity was evaluated with the Immunomebrane plug-in. (Image J, BioMediTech, Finland) The percentage expression of Ecad and Syn1E was high in UAM. (p<0.05 vs SMA) The stromal expression of Syn1 was high in SMA (p<0.05, vs UAM) and the intensity expression was similar in both types of ameloblastomas. (p=0.05)

CONCLUSIONS
We observed synchronicity in the expression of Ecad and Syn1E in both types of ameloblastomas. The adhesiveness of the tumoral cells is probably related to the regulation of expression of both proteins; thus, an increase or reduction of synchronicity is related to cell invasion and the capacity to migration to the stroma, which was reflected in the behavior of the ameloblastomas in the present cases. This assumption may be further supported by an increase in expression of Syn1S in the SMAs; therefore, it is possible that the low synchronicity between Ecad and Syn1E constitute an important factor for the aggressiveness of ameloblastomas.
Introduction: Formerly known as mammary analogue carcinoma (MASC), secretory carcinoma of the salivary glands (SCSG) is a low-grade malignancy harboring the ETV6-NTRK3 translocation. SCSG shares morphological and genetic features with secretory carcinoma of the breast. It shows a characteristic protean histological phenotype reminiscent of acinic cell carcinoma, mucoepidermoid carcinoma, and adenocarcinoma, NOS. We report a case of SCSG in a pediatric patient showing a pure zymogen-poor acinic cell carcinoma morphology. Clinical presentation: A 9-year-old female patient presented to the ENT clinic with 8 months history of left facial swelling. Imaging studies showed a 2.7 cm lesion of the left parotid gland with no lymphadenopathy. Left lateral lobe parotidectomy with facial nerve dissection and preservation was performed. Gross examination of the tumor revealed a tan, hemorrhagic ill-defined mass, measuring 2.5 x 2.4 x 2 cm. Microscopic examination showed lobulated growth pattern consisting of papillary architecture and microcystic spaces. Lobules of tumor cells were identified in the intraparotid lymph node. The tumor was negative for DOG-1 and strongly positive for Mammaglobin, S-100, GATA-3, CK 7, and Pan cytokeratin. The ETV6 gene translocation was subsequently detected by FISH. Literature review: A total of 17 cases of pediatric SCSGs (age range: 8-18 years) have been reported in the literature. The parotid gland (88%) is the most common location. The mainstay of treatment is surgical resection. Based on the limited number of documented cases, SCSG appears to show an indolent biological behavior rarely occurring in pediatric patients. Conclusion: Because of the spectrum of histological patterns of SCSG, immunohistochemical markers and genetic documentation of the ETV6-NTRK3 gene fusion are essential to correctly diagnose this tumor.
**Objective:** Ameloblastomas are benign but aggressive neoplasms of the jaw. The odontogenic keratocysts (OKC) are aggressive jaw cysts of odontogenic origin. A recent WHO classification designated OKC as a neoplasm but a current edition re-designated it as a cyst. The small integrin-binding ligand n-linked glycoproteins (SIBLINGs) are a family of molecules that some epithelial neoplasms use in furthering their progression. Members of the SIBLING family are bone sialoprotein (BSP), dentin matrix protein 1 (DMP1), dentin sialophosphoprotein (DSPP), matrix extracellular phosphoglycoprotein (MEPE), and osteopontin (OPN). The objective of this study was to compare the expression of the SIBLINGs in ameloblastomas and odontogenic keratocysts.

**Findings:** Using immunohistochemistry, with appropriate controls, 49 cases of ameloblastomas and 35 cases of OKCs were screened for the expression of all five SIBLINGs in a retrospective study on archived paraffin sections. Immunoreactivity was scored as positive if > 10% of tumor/cyst cells stained for a SIBLING and negative if <10% of cells failed to stain for a SIBLING. For ameloblastomas 46 (94%) were immunopositive for BSP, 49 (100%) for OPN, 38 (76%) for DSPP, 16 (33%) for DMP1, 32 (65%) for MEPE, and 47 (96%). For OKCs 32 (91%) were positive for BSP, 27 (77%) for DMP1, 35 (100%) for DSPP, and 14 (40%) for MEPE. The expression of DSPP and MEPE in ameloblastomas and OKCs respectively, were significant (p<0.05) compared with controls. MEPE ($\chi^2=6.15$, p<0.05), and BSPP ($\chi^2=26.06$, p<0.05) had positive predictive values greater than chance for ameloblastoma and odontogenic keratocyst, respectively.

**Conclusion:** While all members of the SIBLINGs are expressed in ameloblastomas and OKCs, DSPP expression in OKCs is significantly higher than in ameloblastomas, whereas, MEPE expression in OKCs is considerably lower than in ameloblastomas. The differences in the expression of DSPP and MEPE between ameloblastomas and OKCs may indicate differences in the degree of aggressive behaviors.
Galectin-1 is a carbohydrate-binding molecule that has been shown to be over-expressed in many types of cancer, including oral squamous cell carcinoma (OSCC). The higher the level of expression of galectin-1 by OSCC cells the greater the likelihood of invasion, distant metastasis and a poor survival rate.

Objectives:
Investigation of the effect of galectin-1 in OSCC invasion, migration and epidermal-mesenchymal transition in vitro, and the effect of inhibition of galectin-1 using a small-molecule inhibitor (OTX008).

Results:
One normal oral keratinocyte (NOK) cell line and three OSCC cell lines were cultured and the expression of galectin-1 protein in each quantified using an ELISA. All cell lines were found to express galectin-1, and one of the OSCC lines produced significantly more galectin-1 than the NOK cell line at 6, 24 and 48 hours.

All four cell lines were cultured with three concentrations of galectin-1 (50, 100 and 150 ng/mL) and four concentrations of OTX008 (12.5, 25, 50 and 100 μg/mL), and cell viability was assayed at 24, 48, 72 and 96 hours. Galectin-1 decreased cell viability at 24 hours in two of the OSCC lines, had no effect on the third, and increased cell viability in the NOK cells at 72 hours. OTX008 reduced cell viability in a dose-dependent manner in all cell lines, and this effect increased at each time point during a 96 hour culture period. OTX008 had the least effect on cell viability of the OSCC line with the highest galectin-1 levels compared to the other cell lines.

Conclusions:
Galectin-1 is expressed by NOK and OSCC cell lines in vitro. OTX008 decreases the cell viability of OSCC and NOK cells in a dose-dependent manner, however this effect is reduced by higher endogenous levels of galectin-1.
#152 Down-regulated YAP inhibits proliferation and migration of oral squamous cell carcinoma cells

Monday, 25th June - 00:00 - Poster Session Available from 25th (16:30-18:30) - 26th (18:30-20:30) June 2018 - Bayshore Ballroom D-F - Poster - Abstract ID: 217

Prof. JAE IL Lee (Dept. of Oral Pathology, School of Dentistry, Seoul National University), Ms. JI SOO HONG (Dept. of Oral Pathology, School of Dentistry, Seoul National University)

**Objectives**: The network including Hippo signaling controls growth, proliferation, differentiation and apoptosis of the cell and tissue which also plays crucial role in organ size control in mammals and drosophila. In this network, tumor suppressor kinases include MST and LATS while YAP and TAZ exist as oncoproteins. Above all YAP is associated with the development of early embryo and the regeneration of the skin wound as well as abnormal growth of cancers in case of over-expression. However, there have been no reports on the effect of down-regulation of YAP in oral cancer cells. And further, research is needed to evaluate the role of YAP in oral squamous cell carcinoma(OSCC) cells. In the current study, we investigated the effects of YAP down-regulation on in vitro proliferation and migration of OSCC cells.

**Methods**: We screened 13 OSCC cell lines expression of YAP mRNA and protein were confirmed by PCR and western blot analysis. Among them 2 OSCC cell lines (HSC2, KOSCC11), YAP was expressed high levels comparing with other OSCC cell lines. HSC2 and KOSCC11 cell lines were transfected with sh.RNA compared to sh.RNA Control-transfected cells. Also we performed single cell cloning for cell line's clonal isolation. We checked that down-regulation of YAP. And in vitro cell proliferation and migration assays were used to investigate the effect of YAP down-regulation on cell proliferation and migration.

**Findings**: The YAP down-regulated OSCC cells grew significantly slower than the sh.RNA Control transfected cells (p<0.05). Additionally, migration of sh.HSC2 and sh.KOSCC11 cells decreased significantly compared with sh.Con cells. (p<0.05)

**Conclusions**: These results suggest that down-regulation of YAP induces anti-proliferative and anti-migratory effects in OSCC, and YAP may be a useful target molecule for the treatment of OSCC.
#153 Overexpression of Twist and reduced E-Cadherin expression are associated with poor biological behavior in lower lip squamous cell carcinoma: an immunohistochemical study

**Objectives:** This study aimed to evaluate the immunoexpression of Twist and E-Cadherin in 59 lower lip squamous cell carcinomas (LLSCC) and to verify their relationship with clinical and histopathological parameters (tumor size, regional lymph node metastasis, clinical stage, outcome, recurrence and tumor histological grade). Possible correlations between these two proteins were also evaluated.

**Findings:** Higher expression of E-Cadherin was observed in LLSCCs classified in early clinical stages (stage I) \((p < 0.05)\) and in cases with disease-free survival after 5 years of follow-up \((p < 0.05)\). Overexpression of Twist was found in lesions classified in advanced stages (II, III and IV), with recurrence and high grade of malignancy \((p < 0.05)\). Significant positive correlation between nuclear immunoexpression of Twist and cytoplasmic E-Cadherin expression \((p = 0.046)\) was also found. In turn, there was a significant negative correlation between cytoplasmic expression of Twist and membrane expression of E-Cadherin \((p = 0.028)\).

**Conclusion:** The results of this study suggest the potential involvement of Twist and E-Cadherin proteins in the modulation of events related to tumor progression and the poor prognosis of LLSCC.
#154 MAMMARY ANALOG SECRETORY CARCINOMA OF SALIVARY GLANDS: A CASE REPORT.

Monday, 25th June - 00:00 - Poster Session Available from 25th (16:30-18:30) - 26th (18:30-20:30) June 2018 - Bayshore Ballroom D-F - Poster - Abstract ID: 310

**Dr. Jia Zhang (Stomatological Hospital of Xi’an Jiaotong University), Dr. Jiafeng Duan (Stomatological Hospital of Xi’an Jiaotong University), Dr. Hong Qi (Stomatological Hospital of Xi’an Jiaotong University), Dr. Shuwei Li (Stomatological Hospital of Xi’an Jiaotong University)**

Objective: Mammary analog secretory carcinoma (MASC), is a distinctive low-grade malignant salivary cancer. Microscopically, most cases of MASC consist of a circumscribed mass divided by thin fibrous septa into lobules composed of microcystic, tubular, and solid structures. Due to the scarcity of reported cases, however, little information exists regarding this lesion in the salivary gland. Here, we report a case of MASC occurring in the parotid gland.

Clinical Presentation: Our patient is a 28-yr-old male who presented with a 3.0 x 2.5 x 2.0cm in the right parotid gland, referred slowly growing, painless approximately one year duration. The tumor is rubbery, with a white-tan to gray cut surface. On the cut surface of the mass, many small cystic spaces may be seen, containing yellow to whitish fluid. The borders of the tumor is circumscribed but not encapsulated.

Conclusion: Most cases of MASCs were diagnosed as AcIIC or adenocarcinoma not otherwise specified. Many MASC were found to harbor an ETV6-NTRK3 fusion gene because of a t(12;15) (p13;q25) translocation, a finding identical to secretory carcinoma of the breast. The most recent version of the World Health Organization (WHO) Classification of Head and Neck Tumours utilizes the terminology of “secretory carcinoma” for consistency. In addition to the case report, we review the past and current cases enrolled of MASC. Awareness of such a clinical presentation is important for the clinician.
Objectives:
Research on the relationship between O-GlcNAc and oral squamous cell carcinoma by the tissue and cells.

Findings:
There were significant difference of O-GlcNAc and OGT between normal mucosa and oral squamous cell carcinoma (p<0.05). The expression of O-GlcNAc and OGT increased with the higher grade of the carcinoma. The expression of OGA was inconsistent with O-GlcNAc and OGT. TG could activated the expression of O-GlcNAc and OGT, DON could inhibited the expression of O-GlcNAc and OGT, in addition, DON could inhibited the proliferation of TCA8113 cells and the expression of PCNA.

Conclusions:
O-GlcNAc could activate the oral squamous cell carcinoma. Inhibitor DON could depress the proliferation of TCA8113.
#156 IMMUNOHISTOCHEMICAL ANALYSIS OF SOX2, FGF-10 AND WNT-1 IN BENIGN EPITHELIAL ODONTOGENIC LESIONS

Monday, 25th June - 00:00 - Poster Session Available from 25th (16:30- 18:30) -26th (18:30-20:30) June 2018 - Bayshore Ballroom D-F - Poster - Abstract ID: 317

Dr. Lélia Batista de Souza (Federal University of Rio Grande do Norte), Dr. Marcelo Anderson Barbosa Nascimento (Federal University of Rio Grande do Norte), Ms. Hellen Santos (Federal University of Rio Grande do Norte), Prof. Roseana De Almeida Freitas (Federal University of Rio Grande do Norte), Prof. Leão Pereira Pinto (Federal University of Rio Grande do Norte)

Objectives: This study evaluated the immunoexpression of SOX2, FGF-10 and Wnt-1 in 20 cases of odontogenic keratocyst (OKC), 20 solid ameloblastoma (AM), 20 adenomatoid odontogenic tumor (AOT), 10 calcifying epithelial odontogenic tumor (CEOT) and 5 dental germs.

Findings: The analysis of SOX2 immunoexpression revealed positivity in most cases of the lesions. The immunostaining score for SOX2 revealed a statistically significant difference between the groups of lesions, with a higher frequency in OKC and CEOT (p < 0.001). After pairing, we observed a significant difference between AM and OK, AM and CEOT, OKC and AOT, OKC and CEOT, and AOT and CEOT (p < 0.05). Analysis of the immunoexpression of FGF-10 revealed positivity in all cases of the lesions, with no statistically significant difference between the groups (p = 0.628). There was a significant difference in relation to the positivity scores for Wnt-1 (p < 0.001) with higher frequency in OKC and AOT. After pairing, there was a statistically significant difference between AM and OKC, AM and CEOT, OKC and CEOT and, AOT and CEOT (p < 0.05).

Conclusions: The expression pattern of SOX2, FGF-10 and Wnt-1 in dental germs and odontogenic lesions evaluated here confirms the participation of these proteins in the tooth development as well as in the development of benign epithelial odontogenic lesions.
Ameloblastic Fibrodentinoma (AFD) is currently considered as a developing odontoma, and has subsequently been removed from the new WHO classification of odontogenic tumours. However, the presence of dentinoid in AFD, absence of enamel, the potential for continued growth, its exceptionally low recurrence rate, and the occurrence of AFD within the same age group as ameloblastic fibroma (AF) and ameloblastic fibro-odontoma (AFO), suggest a unique mixed odontogenic neoplasm, separate from AF, AFO and developing odontoma. The histologic diagnosis of AFD can be challenging in small/limited biopsy specimens composed of odontogenic ectomesenchyme and lacking odontogenic epithelium. In such cases, it may not be possible to distinguish between AFD, odontogenic myxoma, dental follicle and central odontogenic fibroma (COF) with confidence, and a circumspect report may be necessary. Herein, a rare case of a large AFD of the anterior maxilla in a 5 year old boy will be presented.
INTRODUCTION
Primary malignant melanoma evolves from melanocytic precursors via the formation of intermediate lesion of varying stability. Less than 1% of all malignant melanomas arise in the head and neck area, the anterior maxilla and alveolar mucosa being the most frequently affected sites. Males and females are equally affected, with an age range between adolescence and senescence. The prognosis is usually poor, with a 5-years survival rate of 30-35% and a median survival of 36 months.

Several cases of primary malignant melanoma of the head and the neck area have been reported in the literature but in most cases no clear evidence was shown whether such lesions were primary or metastatic in origin.

CASE REPORT
We present a case of malignant melanoma in a 50-years old male, who complained for a rapidly growing maxillary nodular lesion, involving the ethmoid sinus and the orbital base. Histopathological intraoperative examination revealed a poorly differentiated malignancy, with spindle-shaped cells showing prominent nucleoli. Subsequent immunohistochemical stains highlighted pan-CK (dot-like) and S100 protein positivity but HMB-45 and melan-A were negative, supporting the diagnosis of malignant melanoma. The tumour was treated by en-block resection with mapping-margins and additional histopathological examination showed an intra-mucosal hyper-melanotic lesion, consistent with an acral lentiginous-type melanoma, which was considered the primary neoplastic focus.

CONCLUSIONS
Primary malignant melanomas in the oral cavity are rare and usually asymptomatic at early stages, thus leading to delayed diagnosis. This must rely upon accurate histopathological and extensive immunohistochemical evaluation as the morphological features often are misleading or non-specific. It is worth to emphasise that melanocyte-specific antigens (Melan-A and HMB-45) frequently are negative in such neoplasm and unexpected cytokeratin positivity may occur, which may result in an inappropriate diagnosis.
Objective. Mucoepidermoid carcinoma (MEC) is the most common salivary gland malignancy, but to date, there are few reported cases of the pigmented variant of mucoepidermoid carcinoma. Classically, MEC is a malignant epithelial tumor composed of varying proportions of mucous, epidermoid, intermediate, columnar, clear, and occasionally oncocytic cells. There are two main classification systems that stratify MEC into low-, intermediate-, and high-grade types on the basis of morphologic and cytologic features. Additionally, there are well recognized variants of MEC, including clear cell and oncocytic variants of MEC. This case is selected to highlight the uncommonly encountered pigmented variant of MEC.

Clinical Presentation. A 32 year-old male with a one year history of cheek pain presented with a 0.9 x 0.5 cm pigmented and painful swelling of the right inferior buccal mucosa, adjacent to tooth #30.

Intervention and Outcome. An incisional biopsy was taken of the right inferior buccal mucosa and submitted for histopathologic diagnosis. A diagnosis of mucoepidermoid carcinoma, pigmented, low-grade (AFIP Grading Scheme) was rendered. Subsequent CT and PET imaging revealed no evidence of metastasis, and the tumor was fully resected with negative margins under general anesthesia. Immunohistochemical profile demonstrated positive staining for CK5/6 and p63 with focal S100 and mammaglobin positivity.

Conclusion. Mucoepidermoid carcinoma is a common salivary gland malignancy, but the uncommon pigmented variant of MEC can pose confusion for the surgical pathologist.
OBJECTIVES: Protein biomarker, S100A7, in oral dysplasia and squamous cell carcinoma has shown some predictive value for the transformation of dysplasia to cancer. The objectives of this study are: (1) to determine a correlation between the expression of S100A7 and histologic grade of oral dysplastic lesions using immunohistochemistry and an algorithm based on image analysis; and (2) to evaluate whether S100A7 can be utilized as a reliable predictor for progression of low grade oral dysplastic lesions or transformation to carcinoma.

FINDINGS: 8 low grade lesions evolved into high grade lesions, and 7 high grade lesions evolved into higher grade lesions, over time. For the low grade lesions, the average S100A7 immunostaining score was 5.6; three were graded low risk and 5 were graded medium risk by algorithm. One low grade and 3 high grade lesions did not progress and remained stable. For these, the average S100A7 immunostaining score was 5.8; one was graded low risk and 3 were graded medium risk by algorithm. Preliminary analysis suggests S100A7 has increased expression in higher risk lesions.

CONCLUSION: The identification of a reliable, quantitative measure in the diagnosis of dysplasia and the ability to predict the likelihood of transformation to malignancy will potentially lead to more individualized treatment and better patient outcomes.
#161 Low-grade Mucinous Sinonasal Adenocarcinoma Non-intestinal type: A Case Report

Mr. Salvador Domínguez-Díaz (Universidad Nacional Autónoma de México), Dr. Javier Portilla-Robertson (Universidad Nacional Autónoma de México), Dr. Roberto Onner Cruz Tapia (Universidad Nacional Autónoma de México), Dr. Adriana Molotla-fragoso (Universidad Nacional Autónoma de México)

Objective. Present a case of low-grade mucinous sinonasal adenocarcinoma, non-intestinal type in maxillary sinus. The intestinal type sinonasal adenocarcinomas (I-TSAC) are a very rare neoplasm with similar architectural and cytological features to a G.I. metastatic carcinomas; the non-intestinal type carcinomas are less frequent that I-TSAC.

Case. 70-year-old male with a painless swelling on the zygomatic area, epistaxis and nasal obstruction symptoms with six months of evolution. X-ray examination revealed solid mass occupying the left maxillary antrum, infiltrating the zygomatic arch and the eye orbital floor. The microscopic findings consist in solid-mucinous neoplasm of pleomorphic low columnar cells, the cellular proliferation was arranged in nest with back to back architectural growth pattern, and focal bone invasion. A very loose eosinophilic stroma with mucinous aspect surround the neoplastic nests. Immunohistochemical reactions was positive for CK7, and pS100, being negative for CK20, and MUC-2. PET-scan revealed no systemic disease and confirming no metastatic origin.

Conclusions. The SN-ITACs are a very uncommon neoplasm, localized mainly in the ethmoidal sinus, nasal cavity and maxillary sinus. The SN-ITACs are very likely to the intestinal adenomas and adenocarcinomas, these tumors could be positive to CK20, MUC-2, and CDX-2. The differential diagnosis is the pleomorphic adenoma and its malignant counterpart (Carcinoma ex-pleomorphic adenoma), metastatic adenocarcinomas must be included in the differential diagnosis especially those with gastro-intestinal origin. Renal, breast and prostate carcinomas has been reported with sinonasal metastasis.
Objectives: Salivary gland epithelial neoplasms are very rare in children and adolescents. The aim of the present study was to determine the clinicopathologic characteristics of salivary gland neoplasms in patients younger than 19 years from January 2005 to December 2017 at our institution according to the 2017 World Health Organization classification of salivary gland tumors.

Findings: During the 13-year period, a total of 77 patients were analyzed. The tumors were located in the parotid (n = 37), submandibular gland (n = 15), and minor salivary glands (n = 25). The mean age was 14.5 years old (ranging from 6 to 18 years). Seventy-two (93.5%) of 77 tumors occurred in the 10–18 year age group, and only 5 in patients aged less than 10 years. The male-to-female ratio was 1:1.08. Fifty tumors (64.9%) were benign and 27 (35.1%) were malignant. The histologic types of adenomas were pleomorphic adenoma (n = 45, 58.4%), myoepithelioma (n = 4, 5.2%), and sebaceous adenoma (n = 1, 1.3%). The histologic types of carcinomas were mucoepidermoid carcinoma (n = 18, 23.4%), secretory carcinoma (n = 4, 5.2%), acinic cell carcinoma (n = 3, 3.9%), adenoid cystic carcinoma (n = 1, 1.3%), and myoepithelial carcinoma (n = 1, 1.3%). Three of the 4 cases of secretory carcinoma were initially diagnosed as cystadenocarcinoma.

Conclusions: Salivary gland epithelial neoplasms in Chinese pediatric patients are rare. There was a roughly equal sex distribution. The vast majority of patients were diagnosed in the 10–18 year age group. Parotid gland was most common involved site, and pleomorphic adenoma was the most common tumor overall. Among the malignant tumors, mucoepidermoid carcinoma was the most common type, followed by secretory carcinoma and acinic cell carcinoma.
Ki67 is an independent prognostic marker for recurrence and relapse in oral squamous cell carcinoma patients

Objectives: Ki67 expression was associated with the prognosis of several tumors and played a key role in the choice of medical treatments. However, the diagnostic value of Ki67 in oral squamous cell carcinoma (OSCC) has not been fully-evaluated. In this study, we aimed to elucidate the prognosis value of Ki67 in large number of OSCC patients.

Findings: Ki67 expression was detected by immune-histochemical staining methods in 298 OSCC samples and 98 none-tumor oral mucosa samples (62 dysplasia mucosa and 26 normal mucosa), which were acquired from Nanjing Stomatological Hospital, Medical School of Nanjing University. Expression of Ki67 was assessed independently by two professional pathologists. Expression of Ki67 in normal mucosa, mucosa with dysplasia and OSCC tissue was compared. Correlations between Ki67 expression and clinicopathological parameters were analyzed by Chi-square test. Kaplan-Meier survival curves and cox progression analysis were used to assess the diagnostic value of Ki67 for OSCC. We found that Ki67 expression was higher in OSCC tissues than in non-tumor tissues, and it increases with the progression of dysplasia in oral mucosa tissues. In addition, high Ki67 expression in OSCC patients was associated with poorer tumor differentiation (P=0.001), more lymph node metastasis (P=0.006), and inferior worst pattern of invasion type (WPOI) (P<0.0001). Kaplan-Meier survival analysis demonstrated that patients with higher Ki67 expression was correlated with poorer OS (P=0.0333), RFS (P=0.003), MFS (P=0.0032) and DFS (P=0.003). Further, multivariate analysis also demonstrated Ki67 expression remained an independent negative prognostic factor for survival for OS, DFS, RFS and MFS.

Conclusions: Ki67 overexpression is associated with the progression of OSCC and can serve as an independent prognostic factor for OSCC patients
#164 Fascin expression in ameloblastoma, odontogenic keratocyst and dentigerous cyst

Monday, 25th June - 00:00 - Poster Session Available from 25th (16:30- 18:30) -26th (18:30-20:30) June 2018 - Bayshore Ballroom D-F - Poster - Abstract ID: 62

Dr. Samira Derakhshan (Fascin expression in ameloblastoma, odontogenic keratocyst and dentigerous cyst), Dr. Sedigheh Rahrotaban (Department of Oral and Maxillofacial Pathology, School of Dentistry, Tehran University of Medical Sciences), Dr. Nariman Nikparto Nikparto (Oral and Maxillofacial Surgery Resident, Tehran University of Medical Sciences)

Objectives: The purpose of this study was to assess and compare fascin expression in 4 lesions which differ in aggressiveness: odontogenic keratocyst (OKC), dentigerous cyst (DC) and two types of solid and unicystic ameloblastoma, and to find out whether fascin expression is associated with aggressiveness of these lesions or not.

Methods: 9 solid ameloblastomas (SA), 12 unicystic ameloblastomas (UA), 13 OKC and 12 DC were assessed in this study. The slides were examined at x400 magnification. Finally the lesions were divided into two groups based on microscopic examination, “low expression” and “high expression”.

Findings: There were no significant differences between the lesions, except that fascin expression was slightly higher in UA in comparison to other groups in intensity and count of the immunostaining cells.

Conclusions: The results of this study suggest that fascin might be more involved in cell invasion and migration (as in carcinomas) than local aggressiveness. We suggest more studies with more samples, assessing expression of different proteins be done in the future.
ORAL ESSAYS
Essay Program
Tuesday, June 26, 2018
3:30pm - 6:00pm
(15:30 - 18:00)
Tunicamycin-induced endoplasmic reticulum stress up-regulates tumour-promoting cytokines in oral squamous cell carcinoma

Tuesday, 26th June - 15:30 - Stanley Park Ballroom – Salon 1 - Oral

Dr. Muhammed Yakin (Charles Sturt University), Dr. Benedict Seo (University of Otago), Prof. Alison Rich (University of Otago)

Objectives
Signal transducer and activator of transcription (STAT)-3 lies at the convergence point of key pathways involved in many malignancies including oral squamous cell carcinoma (OSCC). Endoplasmic reticulum stress (ERS) and the unfolded protein response promote either survival or apoptosis in different cancers. We investigated the expression of STAT3 pathway-related genes and proteins under ERS in OSCC.

Three normal oral keratinocyte (NOK) and three OSCC cell lines were subjected to tunicamycin to induce ERS for 24 hours or to the vehicle medium as control. A pathway-focused array was used to analyse the modulation of STAT3 pathway gene expression under ERS using qPCR. The expression of key regulated proteins was investigated in the cell lines using immunocytochemistry and in 76 OSCC and 9 normal oral mucosa (NOM) tissue samples using tissue microarray technology and immunohistochemistry.

Findings
ERS resulted in up-regulation of interleukin-6 receptor (IL6R) gene in NOK cell lines (p = 0.001) and IL5 (p = 0.005) and IL22 (p = 0.024) in OSCC cell lines. Greater STAT3 (p = 0.019) and leukaemia inhibitory factor receptor (p = 0.042) protein expression was observed in treated than untreated NOK cell lines.

Conclusions
The gene and protein regulation patterns show that ERS plays a role in modifying the tumour microenvironment in OSCC by up-regulating tumour-promoting cytokines.
Clinico-pathological significance of B-catenin and E-Cadherin expression in salivary gland tumor at UCH Ibadan

Dr. Bamidele Kolude (University College Hospital/ University of Ibadan), Dr. Bukola Adeyemi (University College Hospital/ University of Ibadan), Dr. Oluwatoyin Lawal (University College Hospital/ University of Ibadan), Dr. Akinyele Adisa (University of Ibadan), Dr. Akindayo Akinyamoju (University co), Dr. Olabiyi Ogun (University College Hospital/ University of Ibadan)

Objectives: β-catenin (B-Cat) is a cell adhesion molecule associated with the invasion and metastasis of carcinomas of the head and neck, esophagus while reduced expression of E-cadherin (E-cad), a transmembrane glycoprotein, is associated with loss of differentiation, acquisition of an invasive phenotype, and an unfavorable prognosis in carcinomas from several sites. B-Cat & E-Cad complex are involved in cell adhesion, signal transduction & motility. Aim is to identify the clinical / pathological significance of B-Cat & E-Cad expressions in salivary gland tumors (SGTs) presenting at the University College Hospital, Ibadan.

Findings: The expressions of β-cat & E-Cad were analyzed in 46 SGTs (10 pleomorphic adenomas PSA, 3 basal cell adenoma, 12 adenoid cystic carcinoma ADCC, 10 mucoepidermoid carcinoma MEC, 5 acinic cell carcinoma ACC, 4 polymorphous low grade adenocarcinoma PLGA & 2 papillary cystadenocarcinoma PCADCA) by immunohistochemistry in formalin-fixed, paraffin embedded specimens (Rabbit monoclonal; Satacruz biotechnology). Result shows immunostaining of B-cat & E-Cad were membranous & cytoplasmic without nuclear involvement, staining was more severe in the ductal areas especially in PSA, there was significant loss of membranous stain in ACC on multivariate analysis. E-Cad staining loss was significantly associated with tumour stage in ACC & MEC.

Conclusion: loss of β-catenin adhesion molecule may be involved in the development of ACC. E-cad expression is an independent indicator of clinical aggressiveness in patients with ACC.& MEC.
KRAS mutations drive adenomatoid odontogenic tumor

Ms. Bruna Coura (Universidade Federal de Minas Gerais), Dr. Silvia Sousa (Universidade Federal de Sergipe), Dr. Vanessa Bernardes (Universidade Federal de Minas Gerais), Dr. Josiane Franca (Universidade Federal de Minas Gerais), Prof. Hélder Antônio Rebelo Pontes (Joao de Barros Barreto University Hospital, Federal University of Pará, Belém), Dr. Danyel Perez (Universidade Federal de Pernambuco), Dr. Ricardo Albuquerque Junior (Universidade Tiradentes), Dr. Manoela Martins (Universidade Federal do Rio Grande do Sul), Prof. Aline Batista (Federal University of Goiás), Dr. Marina Diniz (Universidade Federal de Minas Gerais), Dr. Ricardo Gomez (Universidade Federal de Minas Gerais), Dr. Carolina Gomes (Universidade Federal de Minas Gerais)

Objective
KRAS is the most frequently mutated oncogene in human neoplasms and we have previously reported KRAS p.G12V mutations in adenomatoid odontogenic tumors (AOT). We aimed to expand this cohort of samples and to test the association of KRAS mutations with clinical and histopathological parameters. A convenience sample of 30 AOT cases was included in the study. The hotpot KRAS p.G12V mutation was assessed by TaqMan allele-specific qPCR and codon 12 was direct sequenced. Clinical information obtained included patients age, tumor site, association of the lesion with impacted teeth and clinical tumor size. In addition, tumor capsule thickness was evaluated by morphometric analysis. Statistical analysis was carried out to test the association of KRAS codon 12 mutations with clinico-pathological parameters.

Findings
Molecular results confirmed KRAS p.G12V mutation in 14/23 cases, and p.G12R in 1/23. Eight cases were wild-type and samples from 7 cases failed amplification. Codon 12 mutations were not associated with any of the clinico-pathological parameters tested (p>0.05).

Conclusion
AOT show high frequency of KRAS codon 12 mutations (15/23, 65%), which occur irrespectively of patients’ age, tumor location, association with impacted teeth, tumor clinical size or histopathological capsule thickness. Supported by FAPEMIG, CAPES and CNPq/Brazil.
Objectives: Oral cancer etiology is multifactorial and the main risk factors are tobacco chewing and smoking along with alcohol consumption and viruses. In the current study from a South Indian population, we sought to determine the role of HPV 16 in the pathogenesis, its concordance with p16 overexpression in OSCC. Preliminary examination on FFPE embedded OSCC (n = 297) sample was observed by H & E staining, and cases showing cytological changes were selected.

Findings: HPV 16 DNA prevalence were assessed by Conventional PCR method which showed 128 out of 297 samples positive for HPV16 DNA. Further, the frequency distribution of HPV 16 E6/E7 in 128 tissues was evaluated by qPCR which showed 97 samples were positive for HPV16 E6 qPCR and 98 samples positive for HPV16 E7 qPCR. For the same 128 samples immunohistochemistry was conducted for p16 evaluation. Out of 128 tissue samples, 19 tissue samples were found to be positive for p16 overexpression (+++). Evaluation of mRNA expression of E6 and E7 in the 19 samples was estimated by flow-cytometry, which revealed only 7 samples positive for the mRNA expression. There was no correlation between p16 expressed (+++) samples and quantification of HPV16 mRNA expressions.

Conclusion: This led to the performance of meta-analysis in which studies pertaining to HPV-related OSCC evaluated by application of conventional and qPCR, flow cytometry and IHC for the detection of DNA, mRNA and p16 overexpression, respectively were included. The results obtained were indicative that HPV prevalence in the oral cavity is low and unlikely to play a major significant or decisive role in the etiology, pathogenesis of OSCC. Our results were in accordance with the meta analysis results.
Wnt/β-catenin signaling pathway regulates tumor-initiating cells in head and neck squamous cell carcinoma

Tuesday, 26th June - 16:18 - Stanley Park Ballroom – Salon 1 - Oral

Dr. Chia-Cheng Li (Harvard School of Dental Medicine), Dr. Cheng-chia Yu (School of Dentistry, Chung Shan Medical University), Dr. Reshma Menon (N/A), Ms. Ingrid Carvo (Harvard School of Dental Medicine), Dr. Zhe Li (Department of Medicine, Division of Genetics, Brigham and Women’s Hospital)

Objectives: Head and neck squamous cell carcinoma (HNSCC) is one of the leading cancers, with a 40% 5-year survival rate in advanced cases. HNSCC is notorious for its high recurrence rate and frequent occurrence of synchronous/metachronous primary tumors. Tumor initiating cells (TICs) model was proposed to explain its tumor heterogeneity and frequent recurrences. Lineage tracing is a genetic approach that allows identification of TICs in their native habitats and characterization of their in vivo behavior. Findings: Our re-analysis of TCGA data revealed that high expression of AXIN2, a downstream target of Wnt signaling, was significantly correlated with low survival rate of HNSCC. To characterize the Wnt-responsive cell population, we established a carcinogen-induced model using Axin2-CreER reporter mice. After tamoxifen induction, clonal expansion of fluorescent reporter-positive cells (Wnt-responsive tumor cells) was visualized in the basal cell layer of epithelial dysplasia and HNSCC, suggesting the critical role of Wnt in regulating TICs in early stages of carcinogenesis. β-catenin and LEF1 immunofluorescent staining were performed to confirm Wnt activation. Lineage tracing was also accomplished in 3D organoid culture. The fluorescent reporter-positive cells were capable of forming organoids. Furthermore, application of cisplatin enriched AIXN2 cell population. Conclusions: Activation of Wnt/β-catenin signaling pathway is an early event in HNSCC carcinogenesis. Lineage tracing using the Axin2-CreER reporter may link TICs properties with a fundamental signaling pathway in normal development. Further research is required to clarify the role of Wnt-responsive TICs in recurrence and therapy resistance of HNSCC.
Adenoid ameloblastoma: A series of 5 tumors

Tuesday, 26th June - 16:30 - Stanley Park Ballroom – Salon 1 - Oral

Dr. Elizabeth Ann Bilodeau (University of Pittsburgh), Dr. Raja Seethala (University of Pittsburgh)

Background
First described in 1959 by Waldron and more fully characterized by Loyola et. al. in 2014, adenoid ameloblastoma (with dentinoid) is a rare odontogenic tumor variant with less than 20 reported cases in the literature.

Objectives
Adenoid ameloblastomas were identified after review of ameloblastomas from the University of Pittsburgh Medical Center Department of Pathology archives from 1990 to 2018.

Findings
A review of our archives yielded 6 cases of adenoid ameloblastoma in 5 patients. Of these, 2 tumors were obtained from the “in-house” pathology files with one tumor being a recurrent adenoid ameloblastoma, whereas the remaining were consultations. The 4 cases (in 3 patients) received in consultation had a differential diagnosis of a salivary neoplasm. All cases were in the maxilla (5/5, 100%), 60% were in males, with a mean age of 52.6 years (range 29-65), and mean size of 5.8 cm (range 4.0 to 7.8 cm). Increased mitotic activity was present in all cases, (mean 7 mitoses/10hpf, range 3-11 mitoses/10hpf). All tumors exhibited pseudoglandular spaces. Other common histologic features included whorls or morules, clear cells, ghost cells, and matrix production with hard tissue formation. Immunohistochemically, the tumors were positive for p63 (3/3, 100%), beta catenin within the morules (2/3, 66.6%), AE1/3 (1/1, 100%), CK5/6 (1/1, 100%), vimentin (1/1, 100%), CEA (2/2, 100%), p40 (1/1, 100%) and negative for BRAF V600E (0/3, 0%), calretinin (0/2, 0%), CK7 (0/1, 0%), SMA (0/4, 0%), S100 (0/3, 0%), Sox-10 (0/1, 0%), TTF-1(0/1, 0%), Pax-8 (0/1, 0%), p16 (0/1, 0%).

Conclusions
Adenoid ameloblastoma (with dentinoid) is a rare, aggressive odontogenic tumor variant with morphologic overlap with salivary neoplasms. Given the histologic similarities to other tumors and the high rate of recurrence, further characterization of this entity is needed.
Primary Intraosseous Soft Tissue Myoepithelioma of the Mandible: Case Report and Literature Review

Tuesday, 26th June - 16:42 - Stanley Park Ballroom – Salon 1 - Oral

Dr. Lama Alabdulaaly (Harvard School of Dental Medicine), Dr. Sook Bin Woo (Harvard School of Dental Medicine)

**Introduction:** Soft tissue myoepithelioma (STM) is a benign tumor composed of spindled and epithelioid cells arranged in various patterns within chondromyxoid stroma. While salivary gland myoepithelioma has been well-recognized as a variant of pleomorphic adenoma, the absence of normal myoepithelial cells within STM may be why STM was only recently-recognized. The occurrence of STM within the bone is rare with only 16 cases reported in the literature, none of which have been reported in the mandible.

**Case Report:** A 14-year-old female presented with a lobulated gingival nodule measuring 1.2 x 0.8 cm between teeth #20 and 21. Radiographically, the lesion was a well-circumscribed, non-corticated multilocular radiolucency between the roots of #20 and #21 measuring 1.4 x 1.0 cm, extending from the alveolar crest to close to the root apices. An incisional biopsy was performed. Microscopically, the lesion consisted of a non-encapsulated, multilobular tumor composed of a proliferation of spindle and epithelioid cells within a delicate myxochondroid stroma. Tumor cells were positive for S-100, vimentin, neuron-specific enolase (NSE) and epithelial membrane antigen (EMA) and negative for CAM5.2, AE1/3, SMA, SOX-10, CD57, glial fibrillary acidic protein (GFAP), and p63. Ki-67 labeled less than 5% of the cells. These findings are suggestive of STM, and the bone and soft tissue consultant pathologist concurred with this diagnosis.

**Discussion:** The putative cell of origin for this tumor is a stem cell within the soft tissues that differentiates towards a cell with myoepithelial phenotype. Unlike salivary gland myoepithelioma which harbors PLAG1 and HMGA2 rearrangements, STM harbors the EWSR1 rearrangement in up to 44% of the cases. Ectomesenchymal chondromyxoid tumor may represent the same entity since it has similar histomorphology and immunohistochemical profile but exhibits EWSR1 rearrangement in only 25% of cases. To our knowledge, this is the first report of a STM occurring in the mandible.
Prognostic classifier for Oral Potentially Malignant Disorders: An integrated histopathological and molecular approach.

Tuesday, 26th June - 16:54 - Stanley Park Ballroom – Salon 1 - Oral

Dr. Hans Prakash SATHASIVAM (Newcastle University), Prof. Philip Sloan (Newcastle University), Dr. Ralf Kist (Newcastle University), Dr. Max Robinson (Newcastle University)

Objectives: Oral squamous cell carcinoma (OSCC) is associated with a high degree of morbidity and mortality. OSCCs are often preceded by oral potentially malignant disorders (OPMD) which have a higher propensity to undergo malignant transformation (MT) compared to clinically normal oral mucosa. Currently there is no reliable method to determine which OPMD cases will undergo MT. This study was performed to construct a prognostic classifier for patients with OPMD by integrating clinical, histopathological and molecular factors and to discover a gene expression signature that characterises OPMD with a high risk of undergoing MT.

Findings: Statistical analysis of an OPMD patient cohort (23 MT vs. 25 with no MT) showed that site of initial OPMD (p = 0.043), binary oral epithelial dysplasia (OED) grading (p = 0.009) and loss of heterozygosity at 3p/9p/17p (p = 0.026) were statistically significant. Other demographic factors, clinical features and the WHO 3-tiered OED grading system were not statistically significant. Gene expression experiments revealed several genes that were differentially expressed between OPMD that underwent MT and those that did not [false discovery rate of < 0.05]. Statistical model building was performed, and the outputs were used to construct a prognostic classifier.

Conclusions: Our findings show that a classifier combining histopathological and molecular factors outperforms conventional methods for prognosticating clinical outcome in patients with OPMD. We have also shown that formalin-fixed paraffin-embedded tissue can be used to generate a molecular classification with clinical utility.
Somatic driver mutations in Oral and Sinonasal Mucosal Melanoma. A Referral Centre Experience in Mexico City

Tuesday, 26th June - 17:06 - Stanley Park Ballroom – Salon 1 - Oral

Dr. Jessica Lissete Maldonado Mendoza (Universidad Autónoma Metropolitana Xochimilco), Dr. Velia Ramirez-Amador (Universidad Autónoma Metropolitana Xochimilco), Dr. Gabriela Anaya Saavedra (Universidad Autónoma Metropolitana Xochimilco), Dr. Erika Ruíz García (National Cancer Institute of Mexico), Dr. Héctor Maldonado Martínez (National Cancer Institute of Mexico), Dr. Edith Fernández Figueroa (Computational Genomics, National Institute of Genomic Medicine), Dr. Abelardo Meneses García (National Cancer Institute of Mexico)

Objective. Oral and sinonasal mucosal melanomas (OSNMM) are aggressive tumors with low survival and few therapeutic alternatives. The aim of this study was to describe the prevalence of mutations in $NRAS^{Q61K}$, $BRAF^{V600E}$, $CKIT^{L576F, K642E}$, $MITF^{E318K}$ and $PTEN^{R130}$, and to analyze the clinic-pathological features present.

Findings. Cross-sectional and observational study that included cases with OSNMM from the National Cancer Institute of Mexico City and the Oral Pathology Laboratory of UAM-X (January 2000-December 2016). Demographic and clinical data were obtained, and histopathological diagnosis was confirmed. Genomic DNA was obtained and molecular analysis was carried out through quantitative polymerase chain reactions (qPCR) (Customized Biomarker somatic mutation Array®, Qiagen). The statistical analysis was performed using the SPSS v20 software.

Forty-eight cases were included, 56.2% were sinonasal melanomas (SNM) and 43.7% oral melanomas (OM). The median age of the individuals was 60 years ($Q_1$-$Q_3 = 51$-$74$), 54.2% of the cases were men. Higher symptomatology percentages were found among SNM (100% vs. 52.9%, $p<0.001$). At the histopathological analysis, 97% of the tumors showed vertical and infiltrative growth, SNM showed a greater amount of necrosis (68% vs. 32%, $p=0.006$) in comparison with OM. Eight (16.6%) OSNMM presented at least one mutation: 6/28 (21.4%) SNM cases and 2/20 (10%) OM. From 48 OSNMM, three (6.6%) showed $V600E\,BRAF$ mutation, 3/48 (6.2%) $Q61R$ mutation $NRAS$ and 2/48 (4.1%) $K624E$ mutation $KIT$. No mutations were found in $MITF$ or $PTEN$.

Conclusions. A low prevalence of mutations was found. Somatic driver mutations might not be related with OSNMM development; thus, the current biological agents (vemurafenib and imatinib) may probably be ineffective against OSNMM. It is necessary to continue the search of other molecular alterations to suggest therapeutic alternatives for these tumors, such as: proteins amplification (c-KIT) or epigenetic mechanism which might regulate the genetic expression (miRNAs).
Application of Deep Learning Algorithms in Detection of Mitotic Events in Oral Squamous Cell Carcinoma Using Cellphone Images

Tuesday, 26th June - 17:18 - Stanley Park Ballroom – Salon 1 - Oral

Dr. Amber Kiyani (Riphah International University), Dr. Hassan Aqeel (National University of Science and Technology), Mr. Asjid Tanveer (National University of Science and Technology), Mr. Wajahat Nawaz (National University of Science and Technology), Dr. Syed Ali Khurram (University of Sheffield)

Identifying mitoses in tumors and metastatic deposits in lymph nodes can be laborious and time-consuming tasks. Advances in digital pathology and machine learning algorithms have demonstrated promising results by automating these assignments in breast tissue and sentinel lymph node sections. These breakthroughs have made automated histopathological diagnosis a possibility. All prior studies have used high-resolution images from expensive whole slide image (WSI) scanners for training and detection of cellular events. Our aim was to investigate the efficacy of deep learning algorithms for automated detection of mitotic events on low quality images of oral squamous cell carcinoma (OSCC) produced by cellphone cameras.

METHODOLOGY:
A FAST region-based convoluted neural network was trained on WSI from breast cancer. The mitotic events were highlighted through provision of pixel locations to the training algorithm, each patch was approximately 301 x 301 in size. The non-mitosis regions were randomly selected on the images. The final training data set comprised of 4407 image patches. Transfer learning was applied to generate results. Similar algorithms were employed on a data set of comparable size acquired through a cellphone camera from 13 different OSCCs at high-power (40x).

RESULTS:
The WSI demonstrated true positive rates of 0.46 and a false positive of 0.76 with an overall F1 precision of 0.57. The results from cellphone camera showed true positive rates of 0.46, and false positive rates of 0.54. The overall F1 score was 0.49.

CONCLUSION:
Although WSIs outperformed cellphone images in identifying mitoses, enhancing image quality through modified algorithms may improve efficacy. This will facilitate use of low-cost data sets for training future algorithms for automated detection of cellular events, and widen its impact by making it accessible to every pathologist with a cellphone camera.
Stratification of Head and Neck Squamous cell carcinoma using combined analysis of Programmed death ligand 1 and Semaphorin 4D expression by the inflammatory cells in the tumor microenvironment

Tuesday, 26th June - 17:30 - Stanley Park Ballroom – Salon 1 - Oral

Dr. Rania Younis (University of Maryland, school of Dentistry), Dr. Sonia Sanadhya (University of Maryland Baltimore), Dr. Ioana Ghita (University of Maryland), Dr. Ingy H. Elkomary (University of Maryland School of Dentistry), Dr. Haiyan Chen (University of Maryland School of Dentistry)

Objective: Inhibition of the immune check point PD-1/PD-L1 has shown unprecedented improvement in overall survival of platinum resistant head and neck squamous cell carcinoma (HNSCC) patients. PD-L1 immunohistochemical diagnostics showed to be more prognostic of the patient response. Yet, patients’ response remains limited to 45% out of the PD-L1 positive cases, where PD-L1 can be expressed by the tumor cells or by the tumor associated inflammatory cells (TAIs). Semaphorin 4D (Sema4D) is an immune modulator molecule expressed by several inflammatory cells, as well as several tumor cell types including HNSCC. We have recently described a HNSCC stratification model based on combined analysis of PD-L1 / Sema4D IHC expression by the tumor cells. Here we would like to extend our analysis to further stratify HNSCC according to Sema4D/ PD-L1 expression by TAIs in the tumor micro-environment.

Findings: IHC analysis of Sema4D/PD-L1 in 136 HNSCC tissue cores showed: 61% (83 cases) to be Sema4D +ve in TAIs, and 29% (39 cases) to be PD-L1 +ve TAIs. Accordingly, we were able to stratify the examined HNSCC cores into 4 subtypes using the expression of Sema4D/PD-L1 by TAIs in the tumor micro-environment: (1) Sema4D only positive (37%) (50 cases), (2) PD-L1 only positive (4%) (6 cases), (3) Sema4D/PD-L1 (+ve/+ve) (24%) (33 cases), and (4) 35% (47 cases) to be (-ve/-ve). Sema4D only +ve TAIs were significantly higher than PD-L1 only +ve TAIs.

Conclusion: HNSCC stratification according to Sema4D/PD-L1 expression by TAIs in the tumor microenvironment can open new avenues for personalized targeted therapy and might interpret resistance or cytotoxic effects to PD-1/PD-L1 inhibition in HNSCC.
Adenoid cystic carcinoma with high-grade transformation: a retrospective study focused on clinicopathological features and prognostic value in a single center

Tuesday, 26th June - 17:42 - Stanley Park Ballroom – Salon 1 - Oral

Dr. Rong-Hui Xia (Department of Oral Pathology, Ninth People's Hospital, Shanghai Jiao Tong University School of Medicine; Shanghai Key Laboratory of Stomatology), Dr. Chun-ye Zhang (Department of Oral Pathology, Ninth People's Hospital, Shanghai Jiao Tong University School of Medicine; Shanghai Key Laboratory of Stomatology), Dr. Li-zhen Wang (Department of Oral Pathology, Ninth People's Hospital, Shanghai Jiao Tong University School of Medicine; Shanghai Key Laboratory of Stomatology), Dr. Yu-hua Hu (Department of Oral Pathology, Ninth People's Hospital, Shanghai Jiao Tong University School of Medicine; Shanghai Key Laboratory of Stomatology), Dr. Zhen Tian (Department of Oral Pathology, Ninth People's Hospital, Shanghai Jiao Tong University School of Medicine; Shanghai Key Laboratory of Stomatology), Mr. Ting Gu (Department of Oral Pathology, Ninth People's Hospital, Shanghai Jiao Tong University School of Medicine; Shanghai Key Laboratory of Stomatology), Mrs. Lei Li (Department of Oral Pathology, Ninth People's Hospital, Shanghai Jiao Tong University School of Medicine; Shanghai Key Laboratory of Stomatology), Mrs. Ying Zhang (Department of Oral Pathology, Ninth People's Hospital, Shanghai Jiao Tong University School of Medicine; Shanghai Key Laboratory of Stomatology), Mr. Jia-jun Qian (Department of Oral Pathology, Ninth People's Hospital, Shanghai Jiao Tong University School of Medicine; Shanghai Key Laboratory of Stomatology), Prof. Jiang Li (Department of Oral Pathology, Ninth People's Hospital, Shanghai Jiao Tong University School of Medicine; Shanghai Key Laboratory of Stomatology)

Objectives: High-grade transformation of adenoid cystic carcinoma (ACC-HGT) is an extremely rare phenomenon. We reported 18 cases of ACC-HGT and focused on the clinicopathological features and prognostic value in this study.

Findings: 202 cases of ACC were included in the current study. According to the criteria for ACC-HGT had been published by Seethala et al., 18 cases were diagnosed as ACC-HGT. Compared to conventional ACC, ACC-HGT showed a slight male predominance (61.1% vs. 49.5%), higher lymph node metastasis (27.8% vs. 8.2%, p=0.021), higher recurrence rate (44.4% vs. 13.6%, p=0.003), higher vascular invasion rate (77.8% vs. 40.2%, p=0.002) and detected at an advanced stage (55.6% vs. 26.1%, p=0.008). Log Rank test was used to evaluated the prognostic value of the ACC-HGT. Patients with ACC-HGT had a much worse overall survival (OS) compared with conventional ACC (p<0.001). More importantly, compared with solid ACC, a subtype which generally accepted showing stronger invasiveness and having worse prognosis, ACC-HGT had even much worse OS (p=0.015).

Conclusions: Compared to conventional ACC, ACC-HGT showed a slight male predominance, higher lymph node metastasis, higher recurrence rate, higher vascular invasion rate and detected at an advanced stage. ACC-HGT had a much worse OS compared with conventional and solid type ACC. Those results suggesting that ACC-HGT is a highly aggressive tumor and should be considered for neck dissection and closer follow-up. Pathological distinction of this tumor has great significance for treating and predicting patients prognosis properly.
Antioxidant rich tropical herbs to combat Areca-Nut induced OPMDs

Tuesday, 26th June - 15:30 - Stanley Park Ballroom – Salon 2 - Oral

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Objectives: Areca-Nut (AN) induced Oral Premalignant Diseases (OPMDs) are a health burden in Asian countries which causes higher morbidity and mortality. Oral Submucous Fibrosis (OSMF) and Oral Leukoplakia (OL) are the most vulnerable AN induced OPMDs which have a considerable malignant transformation rate. The underline mechanism of the carcinogenesis in OPMDs is still obscure. It was found that the oxidative stress caused by the AN can induce the carcinogenesis in OPMDs. Based on our previous research, it was found that some of these OPMDs have DNA damage caused by oxidative stress. Tropical countries are rich of herbs with antioxidants. Our attempt was to test few herbs as a remedy to reverse the potential carcinogenesis in AN induced OPMDs by reducing the oxidative stress caused by the AN.

Findings: Expression of Phospho histone H2AX, DNA double-strand breaks (DNA DSBs) marker was tested immuno-histochemically in OPMDs with the history of AN consumption and compared with normal oral mucosa (NOM) and oral squamous cell carcinoma (OSCC). Phospho histone H2AX was significantly increased in OL and OSMF compared to the NOM (p<0.05). In-vitro studies using immortalized human oral keratinocytes (IHOK) shown that AN induced reactive oxygen species (ROS) production can be significantly reduced by the ethanol extracts of the antioxidant rich herbs *Shumacheria castaneifolia* leaves (SC-extract) and *Solanum nigrum* linn leaves (SN-extract). Antioxidant properties of the herbs were analyzed by DPPH assay. Furthermore, the amount of Phospho histone H2AX in response to 24hr AN treatment was considerably reduced in pretreated IHOK cell with SC extract. Murine model experiment also revealed that the herbal extracts can reduce the AN induced DNA DSBs in oral mucosa.

Conclusions: This study is evident that blocking ROS generation by herbal extracts as a promising approach to reverse DNA DSBs caused by AN. Especially, to prevent malignant transformation in OPMDs.
microRNA-222 and microRNA-203 signatures in oral squamous cell carcinoma: potential role in progression and as therapeutic targets

Tuesday, 26th June - 15:42 - Stanley Park Ballroom – Salon 2 - Oral

Dr. Madhura M G (DAPM R V Dental College and Hospital, Bengaluru, Karnataka, India)

Objectives: To discuss the proposed role of microRNA-222 (miR-222) and microRNA-203 (miR-203) in oral squamous cell carcinoma in the progression and as possible therapeutic targets.

Findings: miR-222 is colocalized as a cluster in the short arm of chromosome X. Luciferase reporter gene assays in oral tongue squamous cell carcinoma (OTSCC) have shown that hsa-miR-222 regulates the MMP1 expression through both direct cis-regulatory mechanism (targeting MMP1 mRNA) and indirect trans-regulatory mechanism (indirect controlling of MMP1 gene expression by targeting SOD2). Hence, hsa-miR-222 might serve as a novel therapeutic target for OTSCC patients at risk of metastatic disease.

miR-222 has been shown to regulate TRAIL resistance and enhancement of tumorigenicity through PTEN and TIMP3(Tissue inhibitor of metalloproteinase 3) downregulation.

miR-222 has been implicated to target PUMA(p53 up-regulated modulator of apoptosis) to improve sensitization of UM1 cells to Cisplatin.

miR-203 acts as a molecular switch between keratinocyte proliferation and differentiation in adult epidermis by targeting ΔNp63 mRNA. Following DNA damage, ΔNp63 downregulates and a possible activation of the apoptotic program in head and neck squamous cell carcinoma has been thought of.

miR-203 has been shown to target EIF5A2 in colorectal cancer cells. Serving as a tumor suppressor gene, miR-203 has been thought to be a useful potential therapeutic target in colorectal cancer. miR-203 as a therapeutic target in oral squamous cell carcinoma needs further validation.

Conclusion: In tumour progression, several cellular pathways may be affected by a single microRNA since it can target multiple mRNAs. Much more light is to be shed by developing as well as by tracking the identified microRNA signatures in oral squamous cell carcinoma, to pave the way for their future clinical use in the diagnosis, management, and prognosis.
Ladinin-1 is involved in cell motility and proliferation of oral squamous cell carcinoma cells

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[Objectives] Oral squamous cell carcinomas (SCCs) and carcinoma in-situ frequently form the interface between cancer and non-cancerous epithelium. Previously, we identified the altered expression of 7 specific proteins around the interface between cancer and non-cancerous epithelium using proteome analysis of oral SCC tissue sections. Among identified proteins, ladinin-1 (LAD1) expression was significantly increased in the cancer tissue adjacent to non-cancerous epithelium. However, the function of LAD1 in oral SCCs is totally unknown. Thus, the aim of this study was to examine the function of LAD1 in the oral SCCs by in-vitro analysis. [Findings] The gene and protein expressions of LAD1 were confirmed by quantitative PCR and western blotting in three oral SCC cell lines, HSC-2, -3, and -4. Using immunofluorescence, LAD1 was localized in the peripheral area of the cytoplasm of cancer cells. High resolution morphological analysis using structured illumination microscopy revealed that LAD1 was co-localized with actin filament forming “actin arc” in the cytoplasm. Three cell lines demonstrated lower growth potential under inhibition of the expression of LAD1 by using siRNA. Although early adhesion to the plates was not affected, cleaved-caspase-3 positive and TUNEL positive cell ratio were increased in LAD1-knockdown cells. Furthermore, cell motility of LAD1-knockdown cells was significantly suppressed in wound scratch assay. [Conclusions] LAD1 is potentially involved in modulation of actin dynamics in oral SCC cells, affecting their motility and proliferation at the interface between cancer and non-cancerous tissue.
Objectives: Knowledge of molecular biology of oral dysplasia (OD) and oral squamous cell carcinoma (OSCC) is essential in order to find novel biological markers that could serve as predictor markers for malignant transformation. IL-1 receptor antagonist (IL-1RA), IL-1 natural inhibitor, is encoded by the IL1RN gene and has been reported to be downregulated in head and neck squamous cell carcinoma, but the effects of its downregulation in OSCC and OD are largely unknown. Thus, the aim of this research was to study the role of IL-1RA in oral carcinogenesis and oral keratinocyte senescence.

Findings: IL1RN, specifically intracellular IL-1RA type 1 (icIL-1RA1), is constitutively expressed in normal oral epithelium, but is downregulated, both in vitro and in vivo, in OD and OSCC cell lines. We also found an upregulation of IL-1R1 (IL-1 agonist receptor) in OSCC and OD cell lines. Using confocal microscopy, we have found that both proteins, IL-1RA and IL-1R1, are able to localize inside the nucleus, which suggests a new possible ways of interactions of intra-nuclear IL-1α in oral keratinocytes. Transient transfection in OSCC and OD cell lines with a plasmid encoding for icIL-1RA1, showed no or limited effects on cell migration (by cell exclusion and transwell assay), cell proliferation (by EDU incorporation) and IL-6 and IL-8 secretion (by ELISA). Preliminary data suggests an increase of IL-1 alpha and a decrease of icIL1-RA mRNA expression as primary oral keratinocytes and mortal OD cells senesce.

Conclusions: IL1RN is downregulated in oral dysplasia and oral cancer. How this downregulation favours oral carcinogenesis it is not yet known, but might be related with the oral senescence program.
Extraparenchymal extension, lymph node involvement, and a higher Ki67 index were high risk factors for worse prognosis in conventional mammary analogue secretory carcinoma

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Objective: The prognostic factors of salivary gland (mammary analogue) secretory carcinoma (SC) are unclear because of the rarity of the tumors. Here we presented the largest case series to investigate the prognosis related clinicopathological factors in salivary conventional SC.

Findings: The study was based on a retrospective cohort of patients whose sections were reviewed and newly diagnosed as SC by the detection of ETV6 rearrangement from 1993 to 2015. The clinicopathological features were analysed as the primary predictors and patients’ final outcome was collected. Survival analysis was performed in conventional SC by using Kaplan-Meier method and Cox proportional hazards regression model. In our study, totally sixty-two cases of SC were confirmed. Fifty-nine out of 62 cases were conventional SC with a mean age of 43.2 years, showing significant male predilection (49/59, 83.1%) and mostly occurred in parotid glands (49/59, 83.1%). Additional 3 cases were identified as SC with high-grade transformation (HG-SC), with a mean age of 20 years older than that of patients with conventional SC. Lymph node metastasis and Ki67 expression ≥10% were related to poor recurrence-free survival (RFS), distant disease-free survival (DDFS) and disease-free survival (DFS) in conventional SC. Significantly decreased RFS and DFS were seen in patients with extraparenchymal extension. T3/T4 stage, age greater than 44 years and markedly hyalinized fibrous septa were associated with worse DDFS. By using multivariate analysis, the Ki67 index was found to be an independent prognostic factor for RFS ($p = 0.008$) and DFS ($p = 0.003$) in conventional SC. Much more worse RFS and DFS were presented in HG-SC due to its aggressive behaviour.

Conclusion: In conventional SC, patients with extraparenchymal extension, lymph node involvement, and higher Ki67 index exhibited poor clinical outcome. Moreover, Ki67 was a potential predictor of RFS and DFS of conventional SC.
Role of matrix metalloproteinases in tumor growth and invasion; focus on Basal cell carcinoma and Squamous cell carcinoma of head and neck.

Dr. Rabia Safdar (University of Health Sciences, Lahore), Prof. Nadia Naseem (University of Health Sciences Lahore Pakistan), Dr. Varda Jalil (Superior University Lahore), Prof. Abdul Hanan Nagi (Retired (Ex Prof of University of Health Sciences, Lahore))

OBJECTIVE
To determine the Matrix metalloproteinase (MMP) 9 & 14 expression in Head and Neck Squamous cell carcinoma (HNSCC) and Basal cell carcinoma (BCC) respectively and to determine if there is any relation between MMPs expression with HNSCC grade and morphological subtype of BCC.

FINDINGS
49 HNSCC & 42 BCC cases were selected. Sections were microscopically scored using scoring criteria by Kamat et al: intensity (0-3), proportion (0-3), overall score (intensity+proportion). Tumors were categorized into low and high expression groups. Among HNSCC cases, 36.7% showed strong staining intensity of MMP 9 antibody in tumor cells, 28.6% showed moderate, 32.7% weak & only 2% showed negative staining, while 51% cases had strong staining intensity in stroma adjacent to tumor, 26.5% moderate, 20.4% weak & 2% showed negative staining. For 6.1% cases overall expression was weak while 93.9% showed high expression. Statistical relation between histological grade & overall expression as well as overall expression for stroma with tumor invading front staining intensity were significant by applying Mann-Whitney U test.

For BCC cases, 47.6% showed strong staining intensity of MMP 14 in tumor cells, 45.2% moderate & 7.1% had weak staining intensity while 35.7% cases had strong intensity of MMP 14 antibody staining in stroma, 45.2% moderate & 19% cases showed weak staining intensity. Statistical relation between overall expression for tumor & morphological grades of BCC & between morphological grade & MMP 14 staining intensity at tumour invading front were significant.

CONCLUSION
MMPs produced by tumor cells and adjacent stroma play significant role in tumor progression. Our results clearly demonstrate marked expression of MMP 9 & 14 in high grade HNSCC & in high risk morphological grades of BCC respectively. So targeted therapy protocol for MMPs may represent helpful approach as adjuvant in treatment for patients at the initial stages of HNSCC & BCC.
THE EXPRESSION OF MAML2 GENE REARRANGMENT IN CASES OF GLANDULAR ODONTOGENIC CYSTS AND MUCOEPIDERMOID CARCINOMAS WITH OVERLAPPING HISTOLOGIC FEATURES

Tuesday, 26th June - 16:42 - Stanley Park Ballroom – Salon 2 - Oral

Dr. Rekha Reddy (University of Florida), Dr. Liya Davidova (University of Florida), Dr. Mohammed Islam (University of Florida), Dr. Indraneel Bhattacharyya (University of Florida), Dr. Donald Cohen (University of Florida), Dr. Sarah Fitzpatrick (University of Florida)

Objectives: MAML2 expression has been demonstrated in the majority of mucoepidermoid carcinomas (MEC) arising in the salivary glands. MEC may also arise intraosseously in the jawbone (IMEC). Glandular odontogenic cyst (GOC) is an odontogenic cyst with some histologic overlap with IMEC. MAML2 expression has not been extensively studied in IMEC or in GOC. This study will test the reliability of MAML2 in distinguishing cases of IMEC from GOC that share similar histologic features.

Methods: An IRB-approved retrospective search of IMEC, GOC, and IMEC with prior history of GOC was performed within the archives of the UF Oral Pathology Biopsy Service from 1994-2017. Eight cases from four patients were selected with diagnoses of either IMEC with earlier GOC, GOC with IMEC features, or IMEC with GOC features. Tissue was available for six out of the eight cases, on which break apart fluorescent in situ hybridization (FISH) analysis was performed for the presence of MAML2 rearrangement.

Findings: Lesions from two of the patients were negative for the MAML2 gene rearrangement while lesions from the other two patients were positive for the MAML2 gene rearrangement.

Conclusion: Although it can be concluded that the two patients with positive translocation for MAML2 had a diagnosis of IMEC, the same conclusion could not be drawn for the two patients with negative translocation. Whether the cases that were negative for the translocation are GOCs with MEC-like islands or MAML2 negative IMEC could not be ascertained. Therefore, MAML2 gene rearrangement is not always dependable in differentiating IMECs and GOCs that share similar histologic overlap. The limited nature of the study due to small sample size precludes a more definitive conclusion. Collaboration vis-à-vis cases and data exchanges between oral and maxillofacial pathology centers may help achieve a better understanding of two uncommon, but clinically impactful, entities.
TUMOR ASSOCIATED MACROPHAGES: TAGGING AGGRESSIVENESS IN ORAL SQUAMOUS CELL CARCINOMA.

Tuesday, 26th June - 16:54 - Stanley Park Ballroom – Salon 2 - Oral

Dr. Anupama Mukherjee (Goa Dental College and Hospital- Goa University), Dr. Anita Spadigam (Goa Dental College and Hospital- Goa University), Dr. Anita Dhupar (Goa Dental College and Hospital- Goa University), Dr. Karla Carvalho (Goa Dental College and Hospital- Goa University), Dr. Shaheen Syed (Goa Dental College and Hospital- Goa University)

INTRODUCTION:
A tumor cannot progress independently of its micro-environment- the stromal cells, tumor associated inflammation, metabolic alterations and extracellular matrix remodeling is significant in disease progression, evolution and metastasis. Bi-directional interactions between the tumor cells and stromal elements determine individual tumor behavior as reflected in the prognostic variability of cases within the same histological grade. However, pivotal findings relating to the tumor micro-environment (TME) in Oral Squamous Cell Carcinoma (OSCC) still remain unaccounted for in the standard grading and staging systems. Thus evaluation of the TME could provide a more robust and accurate predictive assessment of OSCC.

Tumor Associated Macrophages (TAM) constitute the major inflammatory cell population of the TME, with a prominent role in stromal modulation and tumor progression. TAMs have also been regarded as suitable demonstrators of the “seed and soil theory” of metastasis.

OBJECTIVE:
To correlate the presence and role of TAMs in OSCC with the STNMP staging system.

FINDINGS:
Immunohistochemical evaluation revealed a definitive presence of TAMs at the advancing front of the tumor. The density of cells escalated from STNMP stage-1 to stage-4. A statistically significant, strong positive correlation was noted between- TAMs, tumor stage, tumor size and nodal status. A poor correlation between TAMs and tumor grade was noted.

CONCLUSION:
In India, of the 77,003 new cases of OSCC registered annually, 67.7% of the patients are lost to the disease. While tumor grade is indicative of the degree of differentiation of OSCC, it is inadequate as a sole predictor of tumor behavior and prognosis. A holistic evaluation of tumors and their TME may be the remedy. Thus, it has emerged that TAMs being dynamic cells of the TME, could be utilized as indicators of tumor behavior and aggressiveness.
Plaque-type lichen planus or leukoplakia with lymphocytic host response?

Tuesday, 26th June - 17:06 - Stanley Park Ballroom – Salon 2 - Oral

Dr. Ibrahim Akeel (Harvard School of Dental Medicine), Dr. Sook Bin Woo (Harvard School of Dental Medicine)

**Introduction:** Oral epithelial dysplasia (OED) and oral squamous cell carcinomas (SCCAs) often exhibit a lymphocytic host response (LHR) present as a band at the epithelium-connective tissue interface. Because these are often diagnosed as dysplasia with lichenoid mucositis or lichenoid dysplasia, clinicians assume that such lesions represent dysplasia or SCCA arising within lesions of oral lichen planus (OLP). If the clinical lesion is a solitary plaque, the diagnosis of plaque-type OLP may be made. Lichenoid lymphocytic reactions are not specific to OLP and may be seen in drug-induced, contact hypersensitivity reactions and other conditions. The objective of this study is to review cases of leukoplakia with a lichenoid LHR.

**Materials and Methods:** Cases diagnosed as OED with lichenoid features or lichenoid mucositis that represented biopsies from solitary white lesions were identified from the files of one laboratory from January 2013 to December 2018.

**Results:** There were 13 males and 11 females (1.2:1 male to female ratio), and the median age was 61 (range 37 – 90). All lesions were unilateral and the two most common locations were the tongue (12 cases, 50.0%) and the gingiva (5 cases, 20.8%). Hyperkeratosis and/or parakeratosis and epithelial atrophy was present in 23 (95.8%) and 10 cases (41.6%) respectively while degeneration of the basal cells was present in 7 cases (29.1%) only. OED was present in 13 (54.1%) of the cases (5 mild, 5 moderate, 2 severe, and 1 carcinoma-in-situ); 36.3% of the cases that showed epithelial atrophy also showed OED. A lymphocytic band was present in 24 cases (100%).

**Conclusion:** These lichenoid lesions were solitary plaques located most commonly on the tongue and gingiva, common sites for leukoplakia with 54.1% exhibiting OED. As such, these lesions more likely represent leukoplakia with a LHR rather than OLP. Clinicopathologic correlation is essential for accurate diagnosis.
Comparative Assessment of p16 Protein Expression in Normal and Dysplastic Oral Mucosal Epithelium

Tuesday, 26th June - 17:18 - Stanley Park Ballroom – Salon 2 - Oral

Dr. Vimi Mutalik (The Ohio State University), Dr. Kristin McNamara (Ohio State University), Dr. John Draper (The Ohio State University), Dr. John Kalmar (The Ohio State University)

Objective: Expression of the protein marker p16\textsuperscript{INK4a} is used as a surrogate for human papillomavirus (HPV) infection in biopsies of oral and tonsillar mucosa. While HPV infection accounts for <5% of oral cavity cancers, its association with oral epithelial dysplasia (OED) is unclear, with prevalence estimates ranging from zero to greater than 90%. In this study, the expression of p16\textsuperscript{INK4a} was examined in archived biopsy specimens by immunohistochemistry within three groups: control mucosa (CM), low-grade dysplasia (LGD) and high-grade dysplasia (HGD). Tissue samples were age-, sex- and site-matched with 24 cases in each group. Grading of p16 expression was performed according to the criteria of intensity and proportion of cells as described by Grobe et al.

Findings: Fifteen of the 24 HGDs (62.5%), fourteen of the 24 LGDs (58.3%) and four of the 24 CMs (16.6%) were positive for p16\textsuperscript{INK4a} expression. The difference in p16 expression between HGD versus CM and LGD versus CM were analyzed by Wilcoxon signed rank test and statistically significantly different at level with p-values of 0.0001 and 0.0009, respectively. Greater p16 expression was noted in HGDs compared to LGDs (p-value = 0.01960, which was significant at level). A step-down Holm-Bonferroni method to account for multiple comparisons showed adjusted p-values of 0.0003 (HG versus CM), 0.0018 (LG versus CM) and 0.0196 (HG versus low LG) among three groups.

Conclusion: p16 expression was statistically-significantly greater in LGD and HGD lesions compared to CM, with a trend of greater expression being associated with higher grade of dysplasia.
Determining the inflammatory response in oral squamous cell carcinoma by saliva analysis

Tuesday, 26th June - 17:30 - Stanley Park Ballroom – Salon 2 - Oral

Dr. Catherine Laliberte (University of Toronto, Faculty of Dentistry), Ms. Denise Lopez Eymael (Faculty of Dentistry, University of Toronto), Dr. Grace Bradley (University of Toronto, Faculty of Dentistry), Dr. Marco Magalhaes (University of Toronto, Faculty of Dentistry)

Objectives: Oral squamous cell carcinoma (OSCC) often shows a pronounced inflammatory infiltrate and there is accumulating evidence that this inflammatory infiltrate plays an active role in tumor development and progression. Analyses of saliva may provide a non-invasive approach to study the inflammatory response in OSCC. Our aim is to develop a protocol for collection and analysis of saliva in OSCC patients and to use it to characterize both the inflammatory cell profile and cytokine profile in the saliva of patients across all stages of OSCC. Methods: 42 patients undergoing treatment for OSCC at the Toronto Odette Cancer Centre (stages I to IV), 25 healthy patients, and 9 patients with periodontitis were enrolled. Saliva samples were obtained by rinsing with 3 ml of saline for 30 sec. The samples were kept on ice and stabilized with protease inhibitor until filtration using a 20 μm membrane filter. Cell pellets were separated by centrifugation and supernatants were analyzed using a BioFLex 30-Plex inflammatory panel (BioRad) and Luminex® detection technology. Cell pellets were fixed in 4% PFA and analyzed using multichannel flow cytometry. The fluorescent markers included CD45, CD66b, CD3, CD4, CD8, CD25, CD56, CD68, CD138, Siglec8, PD1 and PDL1. Findings: Distinctive, reproducible changes were observed in salivary cytokines and inflammatory cell profile of patients with OSCC compared to control and periodontal disease patients. Using our protocol, we were able to describe specific patterns of inflammation for oral cancer, including altered CD4/CD8 ratio and marked increase in IL-1b, IL-6 and TNF-a. Conclusion: We created a reproducible protocol to collect saliva and perform high-throughput analysis of inflammatory profile of saliva. This technology can be used to develop non-invasive, early detection/prognostic tests for OSCC, new adjuvant therapies and new techniques to monitor response to treatment.
CHRONIC ULCERATIVE STOMATITIS: A LICHENOID OR VESICULOBULOUS DISEASE?

Tuesday, 26th June - 17:42 - Stanley Park Ballroom – Salon 2 - Oral

Dr. Rekha Reddy (University of Florida), Dr. Sarah Fitzpatrick (University of Florida), Dr. Liya Davidova (University of Florida), Dr. Indraneel Bhattacharyya (University of Florida), Dr. Donald Cohen (University of Florida), Dr. Mohammed Islam (University of Florida)

Objectives: Chronic ulcerative stomatitis (CUS) is a rare disease of unknown etiology. The histopathologic features are similar to lichen planus, but direct immunofluorescence (DIF) studies show characteristic presence of IgG in basal and parabasal epithelial nuclei. This study will review a case series of CUS and assess if the entity is more similar to lichen planus or vesiculobullous diseases. Methods: An IRB-approved retrospective search of CUS was performed within the archives of the UF Oral Pathology Biopsy Service between 2007 and 2017. Findings: Seventeen cases, all female, were included. The median age was 64 years (range 47-83 years). Eleven patients were Caucasian, one was Asian, and one was African-American. Race was not specified in four cases. Buccal mucosa (8/17) was the most common location, followed by gingiva (7/17), buccal vestibule (1/17), and gingiva/buccal mucosa (1/17). The most common clinical presentations were pain/burning (13/17), erythema (13/17), whiteness (11/17), ulcerations/erosions (5/17), blisters/positive Nikolsky's sign (5/17), sloughing (2/17), striae (2/17), and recession (1/17). The clinical impression was lichen planus in 12 cases. Of these twelve cases, 4 included vesiculobullous disease as a differential. Four cases did not include a clinical impression and one listed erythema multiforme as the clinical impression. All cases were confirmed with DIF testing that showed a characteristic speckled pattern of IgG in basal and parabasal cells. Eleven of these cases were also positive for fibrinogen and two cases were faintly positive for C3. None of the cases were positive for IgA or IgM. Conclusion: Since CUS has overlapping clinical, histological, and immunofluorescence features with lichen planus and vesiculobullous diseases, clinicians and pathologists should consider this unusual, but significant, entity whenever oral ulcerative diseases with mixed features are encountered.
IMMUNOHISTOCHEMICAL ANALYSIS OF INFLAMMATORY RESPONSE IN VERRUCOUS CARCINOMA COMPARED TO CONVENTIONAL ORAL SQUAMOUS CELL CARCINOMA

Introduction. Studies on inflammatory response to oral squamous cell carcinoma (OSCC) generally do not include verrucous carcinoma (VC), which typically carries a far better prognosis. While high CD8 expression is associated with favorable outcome in head and neck cancers, the role of CD4+ lymphocytes remains controversial. B cell involvement has been suggested to enhance T cell response. The aim of this study is to evaluate differences in inflammatory infiltrate immunohistochemistry (IHC) between OSCC and VC. Materials and Methods. The archives of the UF College of Dentistry oral pathology biopsy service were retrospectively searched for OSCC and VC. Slides were reviewed and 10 cases of VC, 10 cases of well differentiated SCC (SCC-WD), and 10 cases of poorly differentiated SCC (SCC-PD) were selected for testing. IHC staining for CD4, CD8, and CD20 was performed for 30 selected cases. The results were assessed via Aperio Image Scope positive pixel count assessment and analyzed statistically using ANOVA comparison of means with significance measured at \( p<0.05 \). Results. A total of 90 scanned slides were evaluated. Analysis of the results showed no significant difference in mean scores of CD8 or CD20 across groups; however, there was significant difference in CD4 mean scores, with increasing scores noted from VC to SCC-WD to SCC-PD \( (p=0.002) \). The CD8:CD4 ratio was highest in VC followed by SCC-WD then SCC-PD, but the difference was not statistically significant. No significant difference in B: T cell ratio was observed between diagnostic groups. Conclusions. This study demonstrated a lower level of CD4 positive lymphocytes and a slightly increased CD8:CD4 ratio within the VC infiltrate as compared to SCC. B lymphocyte involvement did not appear to differ between VC and SCC in this sample. Further studies may help elucidate the clinical implications of these differences.
Oral Syphilis: A Report of Two Cases and a Literature Review of This Re-Emerging Entity

Tuesday, 26th June - 15:42 - Stanley Park Ballroom – Salon 3 - Oral

Dr. Richard J. Vargo (University of Pittsburgh), Dr. Elizabeth Ann Bilodeau (University of Pittsburgh)

OBJECTIVE: Syphilis is a sexually transmitted, infectious disease caused by *Treponema pallidum*. It can manifest clinically in three stages: primary, secondary, and tertiary. While rare, oral syphilis cases are starting to re-emerge. Our objective is to report 2 additional cases of oral syphilis—one case of primary syphilis and 1 case of secondary syphilis—to highlight the need to consider this entity in the histopathologic differential diagnosis of nonspecific mucositis.

FINDINGS: Both cases presented to outside oral surgeons in separate geographic regions. In case 1, a 25-year-old male presented with a six-week history of a 1.0 cm non-healing ulcer of the right lateral tongue. In case 2, a 28-year-old male presented with welt-like, slightly raised, red/white lesions of the lateral tongue, buccal mucosa, and hard and soft palates. The clinician reported no other lesions on the body and a negative STD test. An excisional biopsy was performed for case 1 and an incisional biopsy for case 2. Histopathologically, case 1 showed an ulcer with an underlying lichenoid lymphoplasmacytic infiltrate with perivascular plasma cells. Case 2 showed epithelial spongiosis and prominent neutrophilic microabscesses with an underlying lichenoid lymphoplasmacytic infiltrate. Perivascular and perineural plasma cells were also present. Because of the perivascular plasma cells in both cases, *Treponema* immunohistochemistry was ordered, and it highlighted many spirochetal organisms in the epithelium and superficial lamina propria in both cases. Given their respective clinical presentations, case 1 was diagnosed as a chancre of primary syphilis, while case 2 was diagnosed as a mucous patch of secondary syphilis.

CONCLUSION: Due to the resurgence of oral syphilis cases, clinicians should be aware of the histopathologic features and order the appropriate ancillary studies in suspected cases. Proper histopathologic diagnosis is important to prevent the spread and further re-emergence of this treatable infection and avoid misdiagnosis as nonspecific mucositis.
ODONTOGENIC MYXOMA: A 23-YEAR RETROSPECTIVE SERIES OF 38 CASES

Tuesday, 26th June - 15:54 - Stanley Park Ballroom – Salon 3 - Oral

Dr. Abdulaziz Banasser (University of Florida College of Dentistry), Dr. Indraneel Bhattacharyya (University of Florida), Dr. Sarah Fitzpatrick (University of Florida College of Dentistry), Dr. Donald Cohen (University of Florida), Dr. Mohammed Islam (University of Florida)

Introduction: Odontogenic myxoma (OMX) is an uncommon benign tumor arising in the jaw. Though it has some histologic overlap with other entities, correct diagnosis is imperative considering the aggressive nature, high recurrence rate, and necessity of radical surgical intervention in large sized lesions. Materials and Methods: With IRB approval, a retrospective search of the University of Florida College of Dentistry Oral Pathology Biopsy Service archives from 1994-2017 for diagnosis of OMX of the mandible or maxilla was performed. Biopsy reports and original slides for each case were assessed and reviewed along with any accompanying radiographs to confirm the diagnosis. Immunohistochemical (IHC) staining was utilized to exclude entities with histologic overlap such as intraosseous myxoid neurofibroma. Results: A total of 38 cases were included. The patients’ ages ranged between 13 to 82 years, with a mean age of 38.5 years. Females comprised two-thirds of the cases (n=25) versus males (n=13). The mandible was the most affected at 56% (n=21), followed by maxilla 34% (n=13) with 10% (n=4) not specified. Posterior jaw involvement was higher than anterior in both the mandible (n=17 versus n=1) and the maxilla (n=8 versus n=4). The right side was more commonly affected than the left side in both arches. Most lesions presented clinically as expansile masses with variable radiographic appearance, and the submitting providers’ clinical impressions included gelatinous masses, reactive gingival lesions, abscess, odontogenic lesions, fibro-osseous lesions, and soft tissue or bone neoplasms. In 30 cases (79%) the histologic diagnosis was compatible with OMX, while in 8 cases (21%) a more fibrous stroma was identified with diagnoses of fibromyxoma. Conclusion: OMX may exhibit varied demographic and clinical profile and wide spectrum of histologic presentation. Oral and maxillofacial pathologists and surgical pathologists should be sentient of this variability of presentation for accurate diagnosis and management.
IMMUNOHISTOCHEMICAL EXPRESSION OF EZH2 IN ATYPICAL PAPILLARY EPITHELIAL PROLIFERATIONS OF THE ORAL CAVITY: A POTENTIAL MARKER FOR MALIGNANT TRANSFORMATION

Tuesday, 26th June - 16:06 - Stanley Park Ballroom – Salon 3 - Oral

Dr. Faraj Alotaiby (University of Florida College of Dentistry), Dr. Sarah Fitzpatrick (University of Florida), Dr. Mohammed Islam (University of Florida), Dr. Indraneel Bhattacharyya (University of Florida), Dr. Donald Cohen (University of Florida)

Background: Enhancer of zeste homolog-2 (EZH2) is a member of the polycomb group PcG of proteins; the genes that are involved in transcriptional repression. Cell cycle regulation and cell proliferation is associated with EZH2 expression and EZH2 overexpression stimulates cell proliferation and invasiveness. Conversely, inhibition of EZH2 precludes cancer cell invasiveness through inhibition of cell proliferation. Atypical papillary epithelial proliferation (AEP) is a histologic diagnosis rendered for oral lesions with confounding microscopic features, neither overtly benign nor unequivocally malignant. Aim: To evaluate EZH2 antibody expression through immunohistochemical testing to delineate the potential of malignant transformation in AEP by comparing and contrasting with unequivocally benign papillary lesions represented by inflammatory papillary hyperplasia (IPH) and malignant papillary lesions represented by papillary well differentiated squamous cell carcinoma (PSCC). Materials and Methods: 10 cases each of AEP, IPH and PSCC were retrieved from the University of Florida, Oral Pathology Biopsy Service archive and stained with Anti-KMT6/EZH2 antibody. The cases were reviewed and the extent and pattern of EZH2 expression were assessed. The results were analyzed for statistical significance using Fischer’s exact test. Results: The pattern and intensity of EZH2 expression in AEP and PSCC demonstrated statistically significant differences when compared to IPH (p=0.002). In addition, the basal cell layer showed EZH2 expression in all the cases of AEP (100%) and PSCC (100%) but only 3 out of 10 (30%) in IPH (p=0.000), comparable to normal oral epithelial control tissue. Conclusion: EZH2 expression in AEP is more similar to malignant processes than benign lesions. The pattern of basal cell layer expression of EZH2 could be a potential prognostic indicator of malignant transformation risk in oral AEP lesions. A subsequent study by our group to assess EZH2 expression with respect to clinical outcome in AEP lesions is ongoing.
Inter-observer Variability among Pathologists in the Interpretation of Lesions of Proliferative Verrucous Leukoplakia Spectrum: A Collaborative Pilot Study

Tuesday, 26th June - 16:18 - Stanley Park Ballroom – Salon 3 - Oral

Objective: The use of diverse terminology may lead to inconsistency in the diagnosis and subsequent treatment of lesions within the proliferative verrucous leukoplakia (PVL) spectrum. The objective of this study was to determine inter-observer variability between pathologists in the diagnosis of PVL spectrum lesions.

Methods: Digitally scanned slides of 40 PVL lesions of varying stages were diagnosed by six oral pathologists (OP) and six head and neck pathologists (HNP) at multiple institutions. Inter-observer agreement on diagnoses was evaluated by Fleiss' kappa analysis using Microsoft Excel 2013 and IBM SPSS version 25 software.

Results: The responses provided were grouped into five broad categories. Category 1, simple hyperkeratosis with/without low-grade dysplasia; category 2, verrucous hyperplasia/keratosis with/without low-grade dysplasia; category 3, high-grade dysplasia or carcinoma-in-situ with/without verrucous surface change; category 4, verrucous carcinoma (VC) or atypical epithelial proliferation suggestive of but not fulfilling criteria of VC or squamous cell carcinoma (SCC) and; category 5, papillary or conventional SCC. The overall level of agreement between all pathologists for all cases as measured by Fleiss' kappa (K_F) was 0.270, considered fair agreement. Amongst OP the K_F was 0.225, whereas amongst HNP the K_F was 0.344. The best agreement between pathologists was on category 5 lesions (K_F = 0.650) followed by category 1 (K_F = 0.312). The least agreement was within categories 2 (K_F = 0.150), 3 (K_F = 0.192) and 4 (K_F = 0.156).

Conclusion: This study reflects the lack of standardized diagnostic criteria and terminology for lesions in the PVL spectrum. We recommend that standardized criteria and terminology be proposed and established by an expert panel position paper, which would assist pathologists and clinicians to uniformly diagnose and manage PVL spectrum lesions more effectively.
Salivary Gland Anlage Tumor: Molecular Profiling Sheds Light on a Morphologic Question

Tuesday, 26th June - 16:30 - Stanley Park Ballroom – Salon 3 - Oral

Dr. Scott Peters (Columbia University), Dr. Andrew Turk (Columbia University)

Objectives: The salivary gland anlage tumor (SGAT), previously referred to as a “congenital pleomorphic adenoma” or a “squamous proliferative lesion,” is a rare, benign entity which presents within the first few months of life. It occurs almost exclusively in the nasopharynx or the posterior nasal cavity, and affected neonates typically present with respiratory distress and difficulty feeding. Despite this ominous clinical picture, the SGAT can be easily treated by surgical excision, with no recurrence reported in the limited cases available in the literature. Histologic examination of this lesion reveals a distinct biphasic composition containing both epithelial and mesenchymal elements. Although the clinical and histologic features of the SGAT are well-described, the etiology of this entity is still poorly understood. The SGAT is currently believed to be a hamartoma rather than a true neoplasm due to its benign nature and lack of reported recurrence following treatment, however molecular studies have yet to be performed to verify this claim.

Findings: We present three new cases of SGAT on which whole exome sequencing has been performed. Specific attention was given to variants affecting 964 cancer-related genes compiled from five sources: the Cancer Gene Census, Oncomine, and the targets of the cancer panels designed by the Columbia Combined Cancer Panel, Memorial Hospital for Cancer and Allied Diseases, and Foundation Medicine. In the current study, examination of the entire exome from the three cases shows no plausible sequence-level driver mutations.

Conclusions: Our demonstration of apparently normal exome sequences from the three cases provides molecular support for the concept of SGAT as a non-neoplastic process. These results enhance the characterization and understanding of this tumor, and illustrate the manner in which molecular studies may contribute to resolution of morphologic debates and impasses.
Ameloblastoma Arising in Odontogenic Keratocyst: Report of Four Rare Cases, Immunohistochemical Analysis and Review of Literature

Tuesday, 26th June - 16:42 - Stanley Park Ballroom – Salon 3 - Oral

Dr. Moni Ahmadian (New York Presbyterian Queens), Dr. Paul Freedman (New York Presbyterian Queens), Dr. Renee Reich (New York Presbyterian Queens)

Odontogenic keratocyst (OKC) is a developmental cyst of the gnathic bones arising from the rests of dental lamina. This cyst demonstrates propensity for aggressive behavior and a relative high rate of recurrence compared to the other odontogenic cysts. Ameloblastoma is a benign neoplasm of odontogenic epithelium. It is the most common clinically significant odontogenic tumor that may demonstrate a locally aggressive clinical behavior. Ameloblastoma may theoretically arise \textit{de novo} from the rests of dental lamina as well as a developing enamel organ or from the epithelial lining of a pre-existing odontogenic cyst. Rare cases of ameloblastoma arising in the wall of dentigerous cyst, calcifying odontogenic cyst, glandular odontogenic cyst, radicular cyst, and residual cyst have been previously documented in the existing literature. Furthermore, ameloblastomatous changes of cysts in nevoid basal cell carcinoma syndrome (NBCCS) have been previously reported. To our knowledge, only one case of ameloblastoma combined with an OKC in a non-syndromic patient has been reported in the English language literature so far. Here we report four additional and extremely rare instances of ameloblastoma arising in combination with an OKC. Microscopically, all the cases exhibit the distinctive histopathologic features of OKC and ameloblastoma. Immunohistochemical staining for CD56, which has been reported to stain the peripheral layer of ameloblastomas and calretinin was performed on all cases. Additionally, two OKCs were stained with both markers as controls. No case demonstrated calretinin positivity, including in the obvious ameloblastic islands. CD56 highlighted only the ameloblastic areas while the areas of OKC were negative. The lack of staining in the areas typical of OKC help highlight the combined nature of the lesions. These findings suggest that much may still be unknown about the biologic potentials of OKC and that the pluripotentiality of the odontogenic epithelium may be the driving force behind such rare findings.
Introduction. Chairside clinical oral pathology consultations are frequently provided in most dental schools; however, the outcome and efficacy of those consults remains largely unanalyzed. We designed a retrospective study to assess the utilization of consults by Oral and Maxillofacial Pathology (OMP) providers at the UF College of Dentistry (UFCOD). Materials and Methods. With IRB approval, the clinical record system (AxiUm) at the UFCOD was searched from January 1, 2011 until July 1, 2017 for oral pathology consultations. The following information was collected for these consults: year of consult, requesting clinic, reason/clinical impression, presumptive diagnosis, recommended plan of action, and outcome (follow up). Results. A total of 418 consults were included in this study, of which 11 were repeat consults on the same lesion on different occasions. The most frequent clinics requesting consults were in decreasing order: undergraduate DMD clinics, followed by faculty practice, graduate prosthodontics, graduate periodontics clinic, with other clinics requesting consults infrequently. The most common reasons consults were requested in descending order were: white lesions, ulcerations, nodules, pigmented lesions, swellings/enlargements, and erythematous lesions. Radiographic consults were uncommon in our study as at UFCOD, these are usually assigned or re-assigned to oral radiology. The disposition of the consults resulted in the following recommendations: 35% for observation/re-evaluation (ORE) in original clinic, 24% referred for biopsy, 19% treatment in original clinic followed by ORE, 12% referral to specialty clinic for treatment, and 10% multiple recommendations/lesions. In terms of outcome, biopsy and referral compliance was relatively reasonable, however ORE remained problematic. Conclusions. This study illustrates the scope and difficulties associated with clinical consults in dental school and identifies areas of potential improvement.
HPV DOWN-REGULATES THE STEM CELL MARKER CD44 IN VIRAL-RELATED ORAL EPITHELIAL DYSPLASIA AND HNSCC

Mr. Jordan Bolger (University of Minnesota School of Dentistry), Dr. Prokopios Argyris (University of Minnesota School of Dentistry), Ms. Christine Goergen (University of Minnesota School of Dentistry), Dr. Ali Khammanivong (Veterinary Clinical Sciences, University of Minnesota), Dr. Mark Herzberg (University of Minnesota School of Dentistry), Dr. Erin Dickerson (Veterinary Clinical Sciences, University of Minnesota), Dr. Raj Gopalakrishnan (University of Minnesota School of Dentistry)

Objective: Head and Neck Squamous Cell Carcinoma (HNSCC) represents the sixth most common malignancy worldwide and is characterized by dismal prognosis and poor patient survival. More than 75% of HNSCCs arise on a precancerous lesion. CD44 is a membrane bound glycoprotein stem-cell marker strongly expressed in normal oral mucosal epithelium. Upregulated in HNSCC, CD44 participates in key cell functions including cell division, migration and adhesion, and is recognized as a negative prognosticator for the disease. In addition, HPV(+) tumors show decreased CD44 levels when compared to HPV(-) neoplasms. We aimed to investigate the role of HPV infection in the regulation of CD44 expression in oral epithelial dysplasia (OED) and invasive HNSCC.

Methods: Formalin fixed, paraffin embedded specimens of HPV(+) OED (N=16), HPV(-) OED (N=15) and HNSCC (N=29) were evaluated by immunohistochemistry for CD44. Among the carcinoma specimens, five were HPV(+) and 24 HPV(-); 13 well-differentiated (WD), 5 moderately-differentiated (MD) and 6 poorly-differentiated (PD). HPV positivity was confirmed by immunohistochemistry for the surrogate marker p16. CD44 immunoreactivity was semi-quantitatively evaluated. Statistical analysis was performed using one-way ANOVA.

Results: HPV(+) OEDs (mean expression=1.74) showed significantly lower CD44 membranous immunoexpression than HPV(-) OEDs (mean expression=2.42, p<0.01). Similarly, HPV(+) HNSCCs (mean expression=0.98) exhibit prominent loss of CD44 expression when compared to HPV(-) cancers (mean expression=2.99, p<0.01). Interestingly, CD44 expression appeared to associate with tumor differentiation since WD and MD specimens collectively (mean expression=3.18) display higher CD44 positivity than PD (mean expression=2.10, p<0.05).

Conclusions: Lower CD44 expression in HPV(+) OEDs and HNSCCs may reflect decreased numbers of stem cells in HPV-driven lesions. The latter, can explain the limited frequency of malignant transformation in HPV(+) OEDs and better survival rates for patients with HPV(+) tumors.
USP6 gene rearrangement testing of gnathic aneurysmal bone cysts: a multicenter analysis of ten cases

Tuesday, 26th June - 15:30 - Cypress Room 1 & 2 - Oral

Dr. Mark Mintline (University of Florida), Dr. Molly Smith (University of Kentucky), Dr. Sarah Fitzpatrick (University of Florida), Dr. Paras Patel (Texas A&M College of Dentistry), Dr. Harvey Kessler (Texas A&M College of Dentistry), Dr. Kristin McNamara (Ohio State University), Dr. Elizabeth Ann Bilodeau (University of Pittsburgh), Dr. Raja Seethala (University of Pittsburgh), Dr. Donald Cohen (University of Florida), Dr. Julia Bridge (University of Nebraska Medical Center), Dr. John Reith (Cleveland Clinic)

BACKGROUND: The jaws are an uncommon location for primary aneurysmal bone cysts (ABCs), and few gnathic cases have been tested for USP6 rearrangement. Rearrangements of CDH11 and/or USP6 are identified in approximately 70% of primary extragnathic ABCs.

MATERIALS/METHODS: Herein, this multi-institutional, IRB-approved study investigates the USP6 status and clinicopathologic characteristics of cases histopathologically diagnosed as primary gnathic ABC. This study retrospectively identified 11 cases from four Oral & Maxillofacial Pathology Services and submitted them for USP6 analysis. Evaluation of one case failed, but the results of FISH testing, histomorphology, patient age and sex, lesion location, lesion duration, and clinical impression were abstracted for the remaining 10 cases.

RESULTS: The patients ranged in age from 10 to 43 years (mean: 25.4 years), with a male-to-female ratio of 1:1 (5:5). Nine cases occurred in the mandible and one case in the maxilla. The majority of lesions were present for an unknown duration or more than one month. Morphologically, five cases exhibited classic ABC features while five exhibited few cystic spaces with “solid” morphology. None of the tested cases demonstrated rearrangement of the USP6 locus by FISH.

CONCLUSION: In the jaws, lesions that morphologically mimic primary extragnathic ABC rarely show USP6 abnormalities, and may be genetically distinct lesions. Lesions with USP6 rearrangement are neoplastic; however, the etiology of lesions lacking rearrangement is less certain and may represent primary ABC without USP6 rearrangement, secondary ABC that have effaced the lesion of origin, or ABC-like degenerative lesions.
Abstract

**Background:** Inflammatory cytokines such as TNF-α and TNF-β may play a pathogenic role in the development of oral precancerous lesions and oral cancer. Genetic polymorphisms of these genes are known to predispose to malignant disease. We hypothesized that the risk of oral precancerous lesions and oral cancer might be associated with polymorphisms in these two inflammatory genes.

**Methodology:** A total 500 patients with oral pre cancer & cancer and 500 healthy volunteers were genotypes for the TNF-α (-238) G/A and TNF-β (252) A/G gene polymorphism. Genotypes were identified by polymerase chain reaction (PCR) restriction fragment length polymorphism (RFLP). Genotype frequencies were evaluated by Chi-square test.

**Results:** Compared to the GG genotype the GA genotype of TNF-α (G238A) polymorphism has been found to significantly increase the risk of oral disease (OR = 1.99) and especially the risk of Lichenplanus and oral malignancy (OR = 2.805 and 5.790 respectively). The risk of overall oral disease, Lichenplanus and oral malignancy were also high with allele A compared to allele G of TNF-α (G238A) polymorphism (OR= 1.88, 2.34, 4.42) and respectively). Similarly, the risk of oral disease was also more in the heterzygote (AG) than the common allele homozygote (AA) of TNF-β (A252G) polymorphism (OR = 1.483).

**Conclusions:** We conclude that the TNF-α (-238) G/A, TNF-β (252) A/G polymorphism were significantly associated with Oral pre cancer & cancer.

**Keywords:** Oral pre cancer & cancer, cytokines, tumor necrosis factor-α, β, inflammation, PCR-RFLP, Gene Polymorphism.
The “old sailors “ illness makes a return

Tuesday, 26th June - 15:54 - Cypress Room 1 & 2 - Oral

Dr. Suma Sukumar (University of Sydney), Prof. Hedley Coleman (Institute of Clinical Pathology and Medical Research, Westmead Hospital)

Vitamin C, also known as ascorbic acid, is a co-factor in multiple enzymatic reactions including that of collagen synthesis. Due to the absence of the enzyme L-gulonolactone oxidase, humans are unable to synthesise ascorbic acid; hence it is recognised as an essential nutrient. Scurvy refers to the clinical presentation of a deficiency of ascorbic acid, which occurs as a result of inadequate dietary intake. It has long been considered an illness of historical rather than contemporary significance. However, a tendency towards Western diets rich in processed foods and lacking in fresh produce has given rise to the re-emergence of the condition in the developed world. Current evidence suggests that there is a resurgence of scurvy in Sydney. A case is highlighted of an otherwise healthy 35 year old male who presented to a hospital emergency dental clinic with generalised red, boggy gingivae. Clinical examination revealed bilateral involvement of the buccal and lingual/palatal gingivae in both the mandibular and maxillary arches, predominantly affecting the interdental papillae. Radiographic examination confirmed there was no associated bone loss or bony pathology. The clinical differential diagnoses included leukaemia, Kaposi sarcoma or possible scurvy. A battery of serological investigations yielded the eventual diagnosis of severe ascorbic acid deficiency (vitamin C level <5µmol/L, HIV negative and blood films and blood counts that did not show features of leukaemia). Dietary intake was immediately instituted in addition to 250mg daily vitamin C supplementation. The condition improved within weeks and completely resolved within 3 months (progress vitamin C level 55 µmol/L) and the patient was educated to henceforth maintain an adequate nutritional intake of ascorbic acid. Though these cases will be infrequent, prudent clinicians need to re-familiarise themselves with the signs and symptoms of scurvy and maintain a wide diagnostic radar in order to ensure a speedy and accurate diagnosis.
The Role of Epigenetic and Epistatic Interactions in the Pathogenesis of Oral Submucous Fibrosis

Tuesday, 26th June - 16:06 - Cypress Room 1 & 2 - Oral

Prof. Raghu Radhakrishnan (Manipal Academy of Higher Education), Dr. Mohit Sharma (Reader, Department of Oral Pathology, ITS Dental College, Hospital and Research Center, Greater Noida - 201308)

Objectives:
Epigenetic factors have shown to play an important role in the development of fibrosis. Persistent injury to oral mucosa because of habitual quid chewing resulting in the upregulation of inflammatory cytokines, leading to myofibroblastic persistence underlies an epigenetic aberration in oral submucous fibrosis (OSF). There is however, a paucity of literature showing the role of epistasis in the pathogenesis of OSF.

Findings:
Epistasis of IGF-1, TGF-1, COX and Lipoxygenase (LIOX) on PTEN are some of the relevant epistatic interaction relevant to the pathogenesis of OSF. Additionally, NF-κB is epistatic to PTEN, which is specifically arbitrated via p65 subunit of NF-κB.

Conclusions:
Given the importance of epigenetic modification in the pathogenesis of OSF the potential role of DNMT and HDAC inhibitors as a therapeutic option holds promise in OSF. Inhibitory microRNAs against profibrotic genes and/or stimulatory microRNAs against antifibrotic genes could be another viable in-vivo therapeutic alternative for the treatment of OSF.
Ameloblastic fibro-odontoma: A distinct entity

Tuesday, 26th June - 16:18 - Cypress Room 1 & 2 - Oral

Dr. Molly Smith (University of Kentucky), Dr. Craig Fowler (University of Kentucky), Dr. Indraneel Bhattacharyya (University of Florida), Dr. Rekha Reddy (University of Florida), Dr. Douglas Damm (University of Kentucky)

Background: Ameloblastic fibro-odontoma (AFO) is a benign odontogenic tumor first described by Hooker in 1967. Its etiology and behavior have long been debated, as some investigators have proposed that AFO may represent a stage in development of an odontoma. For this reason, AFO was eliminated from the most recent Odontogenic and Maxillofacial Bone Tumor section of the World Health Organization (WHO) Head and Neck classification system. Occasional AFOs, however, have been found in patients older than the proposed age for odontoma completion (22 years) or present as large radiolucent lesions consisting mainly of the ameloblastic fibroma (AF) pattern with only foci of mineralized product formation. Herein, we present seven cases of AFO, all of which demonstrate particularly aggressive radiographic and/or histopathologic features and do not support the contention that all AFOs represent maturing odontomas.

Materials and Methods: An IRB-approved retrospective search of the oral pathology biopsy services at the Universities of Kentucky and Florida between January 1, 1975 and January 1, 2018 was completed. Cases with appropriate histopathological and radiographic documentation were selected.

Results: Seven patient cases were identified with ages 8, 8, 12, 16, 17, 27, and 29 years. Six cases were from the posterior mandible, and one was located in the posterior maxilla extending into the maxillary sinus close to the floor of the orbit. Only two of the cases have follow-up information, both of which demonstrate no evidence of tumor following conservative treatment.

Conclusion: Although the majority of cases diagnosed as AFO likely represent developing odontomas, we present seven cases in which the clinical, histopathologic, and/or radiographic features suggest that AFO should exist as a distinct entity and be treated similarly to an AF.
GENETIC POLYMORPHISM AND GENE EXPRESSION OF PI3K GENE IN AMELOBLASTOMA

Prof. AADITHYA B URS (Maulana Azad Institute of Dental Sciences, New Delhi-02), Dr. Hanspal Singh (Maulana Azad Institute of Dental Sciences, New Delhi-02), Prof. Mahesh Verma (Maulana Azad Institute of Dental Sciences, New Delhi-02)

Objective:
Ameloblastoma is a benign and local aggressive odontogenic tumor. Many genes and their respective signalling pathways are involved in the pathogenesis i.e. Patch, SHH, SMO, PI3K, AKT, mTOR etc. PI3K has an important role i.e. cellular quiescence, proliferation, cancer, and longevity in the pathogenesis of Ameloblastoma through PI3K/AKT/mTOR signalling pathway. The study was designed to evaluate the gene expression and gene polymorphism of PI3K gene.

The present study was a prospective preliminary study, which was carried out in 20 patients of confirmed ameloblastoma cases. 5 tooth germs were taken as control to compare. Biopsy was taken with patient’s consent. Genomic DNA was extracted to assess the polymorphism of PI3K gene gene sequencing method in exon 9 and exon 20 in association with immunohistochemical analysis respectively.

Findings:
Insertion of AA is noticed as the most common variation among 12 samples out of 20 identified at Exon 9 near to the splice site of PIK3CA (g.24751_24752insAA) (chr3:178890652_178890653insAA). However, no variation at Exon 20 was observed. Variant was neither found in ExAC nor 1000G. No differences were noted in the frequency and type of mutations analyzed by sex, age, or histologic features. The gene expression of PIK3CA was significantly higher in tumor epithelial cells. Such genetic polymorphisms are vital because they can be used as biomarkers that indicate for prognosis of tumor and its biological behavior.

Conclusion: These results suggest that common genetic variations in these pathways may modulate risk and clinical outcomes of ameloblastoma. Further replication and functional studies are needed to confirm these findings. It will be of benefit to the patient, if we target the mutation or aberrant protein products at the appropriate time by intervention of précised therapy.

Keyword- Ameloblastoma, Immunoexpression, mutation, PI3KCA.
Plasma cell gingivitis (PCG) is a rare lesion found on the attached and free gingiva, often extending to the mucogingival junction. Clinically, PCG can appear as sharply delineated erythematous lesions which can be accompanied by edema. We present a case of PCG in a 13 year old female patient which clinically presented as generalized desquamative gingivitis involving the facial aspects of the attached and marginal gingiva that persisted despite substituting to a non flavored dentifrice and failure to elicit any suspected drug or food allergies. Dermatologic patch testing proved positive for Iodopropynyl Butylcarbamate (IPBC), a water based preservative or biocide used in personal care products. Microscopically, there was an intense inflammatory infiltrate in the lamina propria composed predominantly of mature plasma cells. Immunohistochemistry and in situ hybridization showed marked unrestricted cytoplasmic positivity for kappa and lambda light chains. IPBC is used in personal care products comprising lip balms, moisturizers, sunscreens, concealers and body washes due to its effectiveness at preventing fungal growth in topical products. The maximum level for safe use in leave on products is 0.1% but cosmetic products continue to use 10 times more than the safe levels. In the differential spectrum it is pertinent to discriminate erosive lichen planus, cicatricial pemphigoid, acute leukemia, HIV infection clinically; multiple myeloma and plasmacytoma histologically. Our case highlights the importance of patch testing for IPBC allergies in the oral mucosa. IPBC can lead to sensitization and contact dermatitis due to prolonged exposure; as its use in cosmetics continues to rise, and it is difficult to completely eliminate exposure to products containing IPBC especially in the context of teenaged girls and adult female patients.
RAMAN SPECTRAL STUDY OF SALIVA: A NEW TOOL FOR DETECTION OF MALIGNANT AND PREMALIGNANT ORAL LESIONS

Tuesday, 26th June - 16:54 - Cypress Room 1 & 2 - Oral

Dr. Genecy Calado (Dublin Institute of Technology), Ms. ISHA BEHL (Dublin Institute of Technology), Dr. Marina Leite Pimentel (Dublin Dental University Hospital), Dr. Sheila Galvin (Dublin Dental University Hospital), Dr. Stephen Flint (Dublin Dental University Hospital), Prof. Hugh J Byrne (Dublin Institute of Technology), Prof. Fiona Lyng (Dublin Institute of Technology)

The overall aim of this study is to develop methodologies for analysis of human saliva using Raman spectroscopy with a future applicability for oral cancer diagnosis. Artificial saliva was prepared in different concentrations, aiming to optimise the spectroscopic acquisition protocol. Furthermore, saliva samples were collected from 10 healthy volunteers by a non-stimulated collection method and from 10 healthy volunteers by a stimulated collection method and frozen for further analysis. Also, saliva samples from 20 patients with oral cancer and oral dysplasia were collected for initial characterization and analysis. Centrifugal filtration was performed to concentrate the saliva samples. The optimization of the different parameters required for Raman spectral acquisition using a HORIBA Jobin-Yvon HR-800 confocal Raman microspectrometer was carried out. Raman spectra were recorded using different wavelengths (532nm and 785nm), various objectives (x10, x50 and x60) and a diffraction grating of 600g/mm using both upright and inverted geometries and different substrates. Following pre-processing, spectra were subjected to principal component analysis (PCA) and principal component-linear discriminant analysis (PC-LDA). The 532nm source, inverted geometry, 10x objective and 96 well plate produced the best spectral quality and may be considered readily adaptable for clinical applications. Centrifugal filtration using a 3K device improved the spectra of the concentrate. PCA-LDA could discriminate between the healthy volunteer samples collected by stimulated or non-stimulated methods with resonable accurancy (83%). Furthermore, a specificity and a sensitivity as high as 91% and 94%, respectively, could be achieved when differentiating healthy volunteer samples from patient samples. In this study, methodologies for the analysis of saliva by Raman spectroscopy have been developed to demonstrate the applicability of Raman microspectroscopy for providing molecular level insights from human saliva samples. The study also indicates the future potential for screening of saliva samples for oral pre-cancer and cancer.
Non-habit related Oral squamous cell carcinoma: possible etiologic factors and probable prevention in Indian scenario

Tuesday, 26th June - 17:06 - Cypress Room 1 & 2 - Oral

Prof. Susmita Saxena (Oral Pathology, ESIC Dental College, Rohini, New Delhi), Prof. Sanjeev Kumar (Oral Surgery, ITS Dental College and Research Centre, Muradnagar, Uttar Pradesh)

Introduction- India has the highest number of oral cancer cases in the world. Approximately 130,000 people succumb to oral cancer in India annually. Habits such as tobacco and alcohol consumption are well established etiologic factors in causing oral cancer. However, in recent years oral cancer cases are in the rise which do not have any known causative factors and studies have associated nutritional status, Human Papilloma Virus or poor oral hygiene as the probable cause.

Objectives- This paper aims at finding the possible etiologic factors in non-habit associated oral cancer through an extensive literature search keeping in view the incidence of reported cases in the Indian sub-continent. Studies reveal that 4-6% of oral cancer cases are not associated with any oral habits. It is important to be aware of the possibility of other factors contributing to the occurrence of oral cancer and aim at its prevention.

Findings- Significant number of studies and reported cases in India have shown that incidence of oral cancer in women without the exposure of any potential risk factors is alarmingly on the rise. The age range is lower as compared to habit associated cases where middle aged men are predominant. Other etiologic factors correlated with OSCC are viral infections like EBV, HPV, immunosuppression, familial factors, genetic predisposition, chronic mechanical irritation, dietary factors and hormonal factors.

Conclusions- OSCC is more prevalent amongst the lower socio-economic strata of the society in India where oral deleterious habits are common. The rising trend of oral cancer affecting people, especially women, without exposure to potentially harmful irritants should motivate researchers in identifying the possible etiologic factors. HPV virus association, genetic counselling, hormonal and dietary factors are to be considered to correlate cause and effect of such non-habit associated OSCC and adequate measures taken towards its prevention.
Investigation of foreign materials in gingival biopsies: a clinicopathologic, energy-dispersive x-ray microanalysis, and in vitro study

Tuesday, 26th June - 17:18 - Cypress Room 1 & 2 - Oral

Dr. Leticia Ferreira (University of the Pacific Arthur A. Dugoni School of Dentistry), Dr. Hsin-Hsin Peng (Center for Molecular and Clinical Immunology - Chang Gung University), Dr. Darren Cox (University of the Pacific Arthur A. Dugoni School of Dentistry), Dr. David W. Chambers (University of the Pacific Arthur A. Dugoni School of Dentistry), Mrs. Avni Bhula (University of the Pacific Arthur A. Dugoni School of Dentistry), Dr. David Ojcius (University of the Pacific Arthur A. Dugoni School of Dentistry), Dr. John D. Young (Center for Molecular and Clinical Immunology - Chang Gung University), Dr. Erivan Ramos-Junior (University of the Pacific Arthur A. Dugoni School of Dentistry), Dr. Ana Morandini (University of the Pacific Arthur A. Dugoni School of Dentistry)

Foreign body gingivitis (FBG) has been previously described as a localized inflammatory reaction associated with the presence of foreign material in gingival tissues. However, among the gingival biopsies submitted to the Pacific Oral Pathology Laboratory (POPL) for diagnosis, we have identified foreign material in lesions that are markedly keratinized and described clinically as white plaques rather than inflamed lesions.

Objectives: To evaluate the clinical and histopathological features of 86 gingival biopsies containing foreign material retrieved from the POPL archives and to identify the composition of these particles by energy-dispersive x-ray spectroscopy (EDX). Further, primary human gingival fibroblasts (HGF) were stimulated with silica (SiO2) microparticles to investigate the production of COL-1, MMP2 and inflammatory cytokines.

Findings: Foreign material was most commonly found in women (61%), in the 6th or 7th decade of life, and the clinical lesions were most frequently described as white plaques involving posterior mandibular gingiva. Interestingly, histopathological examination identified verrucous hyperplasia in 60.5% of the cases and epithelial dysplasia in 28.5% of the cases. EDX microanalysis revealed that Si (94%) followed by Ca (85%) and Al (66%) were the most frequently detected elements in the foreign particles. Silica microparticles induced higher COL-1 expression and increased MMP-2 activity in HGF, and higher levels of pro-inflammatory cytokines such as IL-6, IL-8 and TGF-β in a microparticle-concentration-dependent manner.

Conclusions: Our study demonstrates that there is a strong association between the presence of foreign material in gingiva and clinically and microscopically demonstrable hyperkeratotic verrucous plaques. Moreover, we found that the most common element in the foreign material is Si which is usually found in the Earth’s crust as silica. Our in vitro findings demonstrate the importance of silica-mediated effects on gingival fibroblasts, suggesting that the presence of silica in gingival biopsies could modulate the host inflammatory response and should be further investigated.
Odontogenic keratocyst - The role of PTCH1 and Hedgehog signaling in its pathogenesis

Tuesday, 26th June - 17:30 - Cypress Room 1 & 2 - Oral

Prof. Tiejun Li (Peking University School of Stomatology), Mr. Jianyun Zhang (Peking University School of Stomatology)

Objectives: Mutations in PTCH1 gene, a receptor in the Hedgehog (Hh) signaling, are responsible for Gorlin syndrome (GS) and are related in tumors associated with this syndrome. The aims of this series of studies were to determine the role of PTCH1 mutation and misregulation of the Hh signaling in the pathogenesis of GS-related and sporadic odontogenic keratocysts (OKCs).

Findings: Based on screening of 73 sporadic and 30 GS-related OKCs, we identified PTCH1 mutations in 35.6% (somatic, 26/73) of sporadic cases and 83.3% (germ-line, 25/30) of GS-related OKCs. However, a much higher mutation rate (79%, 30/38) in sporadic OKCs was detected by analyzing epithelial samples separated from the fibrous capsules. The previously underestimated mutation rate in sporadic cases might be due to the masking effect of the attached stromal tissues. Mutations in other genes of the Hh signaling such as PTCH2, SUFU, and SMO were rare and their pathologic roles in OKC were uncertain. Using whole-exome sequencing (WES), we further characterized the mutational landscape of 5 OKC samples lacking PTCH1 mutation and revealed 22 novel mutations, among which two significantly altered genes (CDON and MAPK1) were predicted to affect Hh signaling activity in two cases. However, no recurrent mutations were identified in the WES samples and validation cohort of 10 OKCs. Functional analysis revealed that PTCH1 mutations activated Hh signaling and resulted in aberrant cell proliferation via both classical and non-canonical Hh pathways. Conclusions: Our data confirmed the high PTCH1 mutation rate in both GS-related and sporadic OKCs. In PTCH1-negative cases, other genetic alterations were rare, but could also be related to Hh signaling. These results suggested that an inhibitor of the Hh pathway may be effective for the treatment of OKCs.
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Clinical Pathologic Conference

Thursday, June 28, 2018
8:00am – 12:00pm

Dr. Mark Lingen
AAOMP Moderator

Dr. Edward O’Dell
IAOP Moderator

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CPC Case Histories

Case #1 - Male patient, age 74 years with a tumour on the dorsum of the tongue.
Case #2 - Female patient aged 10 years with bleeding gingival overgrowth of 3 months duration. The right lower first molar is carious, mobile with buccal and lingual bone loss. Enlarged bilateral submandibular lymph nodes are palpable bilaterally. The patient has learning disability.
Case 3 - Male patient aged 51 years, who stated that he drank what he thought was “mouldy” Crystal Lite beverage 10 weeks earlier. At that time, he noticed a tickling sensation in the back of his throat, and on inspection, he identified what he described as “an enlarged taste bud” on his posterior dorsal tongue. No response to antibiotics or anti-fungal medication.
Case #4 - Female patient aged 54 years, 2 years history of an asymptomatic radiolucency with cortical expansion, noticed after tooth extraction.
Case #5 - A 57 year old female presented to her oral surgeon with recurrence of an asymptomatic, slowly enlarging, firm swelling involving the anterior maxillary gingiva. There have been several previous biopsy specimens. The maxillary teeth that are not root filled are vital.
Case #6 - Female patient aged 42 years with bilateral parodontal swelling in the maxillary area.
Case #7 - Female patient aged 2 years with multiple tumors affecting skull, orbits and maxillary sinuses. There is bilateral exophthalmos.
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