



# **Oral Abstracts Session II**

## **Friday, 05/24/2018, 1:00pm-3:10pm**

# = Presentation Number, \*Presenter

To conserve space, we list only the institution and the country submitted as 1<sup>st</sup> organization.

Abstracts Committee:  
Chair: Kentaro Ikeda, DDS, MPH  
Co-Chair: Bhavik Desai, DMD, PhD

**1:00PM**

**#1:**

**Whole Saliva And Residual Mucosal Saliva In Patients With Burning Mouth Syndrome: A Case-Control Study**

**\*Sumeia Gamal Werfalli**, Mark Drangsholt, Michael Martin, Linda LeResche  
University of Washington, USA

**Objectives:**

Burning Mouth Syndrome (BMS) is a chronic pain condition. Xerostomia is a common complaint among BMS patients. However, previous studies showed inconsistent findings regarding saliva flow rate reduction among these patients. The aim of this study was to examine unstimulated (UWS) and stimulated (SWS) whole saliva flow rates, degree of mucosal hydration and xerostomia in female BMS patients compared with controls.

**Methods:**

Cases were female patients at a university oral medicine clinic diagnosed with BMS (ICD-10 code K14.6). Controls were similarly-aged women without BMS. Collection of salivary samples and other data took place during a 1-hour session between 9:00am and 12:00pm. UWS was collected under resting conditions by passive drooling into a plastic tube for 10 minutes; to assess mucosal hydration, residual mucosal saliva (RMS) was collected using filter paper strips from four mucosal sites-- anterior hard palate, buccal mucosa, anterior tongue and lower lip. Strips were placed in a microcentrifuge tube and weighed. SWS was collected while chewing on gum base for 5 minutes. Low UWS was defined as  $\leq 0.1$  ml/min and low SWS as  $\leq 0.7$  ml/min. Participants completed the Short-form of the Xerostomia Inventory (SXI-D). We used chi square to assess association between UWS, SWS and BMS and t-tests to assess differences in RMS levels.

**Results:**

56 women (27 cases and 29 controls) participated in this study. Mean age was 61 years for cases and 58 for controls (n.s.); the majority in each group were post-menopausal. 66% of cases vs. 38% of controls had low UWS ( $p=0.03$ ). 48% of cases vs. 34% of controls had low SWS ( $p=0.06$ ). Compared to controls, BMS cases had lower mean levels of tongue RMS (0.007 gm vs. 0.01 gm,  $p=0.03$ ). 55% of the cases vs. 7% of controls reported xerostomia ( $p < 0.001$ ). UWS and SWS were not related to xerostomia report, but RMS on the tongue was significantly lower among women with xerostomia ( $p=0.002$ ).

**Conclusions:**

BMS patients had statistically significant reductions in UWS, tongue RMS, and a higher prevalence of xerostomia. Low hydration of the tongue should be further investigated as a possible trigger of xerostomia sensation.

## **#2:**

### **Mandibular And Palatal Tori Exposed By Trauma Are Risk Factors For Medication Related Osteonecrosis Of The Jaws. A Report From The Copenhagen ONJ Cohort**

**\*Morten Schiødt**

Copenhagen University Hospital, Aarhus University Hospital, Denmark

#### **Objectives:**

Mandibular and palatal tori are usually considered anatomical risk factors for the development of medication related osteonecrosis of the jaws (MRONJ/ONJ). However, trauma may also be involved in the pathogenesis. To examine the prevalence and characteristics of MRONJ related to tori within the Copenhagen ONJ cohort and to evaluate trauma as a possible risk factor.

#### **Methods:**

The patient material consists of 391 consecutive patients with MRONJ included into the Copenhagen ONJ Cohort between Jan 1st, 2010 and Dec.1st2018. All patients had a systematic recording of demographic data, clinical examination and radiographic imaging. The type and duration of antiresorptive treatment was recorded. All patients had ONJ staging, and stage 2 and 3 as well as some stage 1 were operated, including removal of the tori.

#### **Results**

Twenty-nine patients had tori related to MRONJ (7.4 %). Of these, 27 had mandibular and 2 had palatal tori. The patients included 16 cancer patients, 10 osteoporosis patients and 3 without systemic diseases. Antiresorptive treatment included bisphosphonate (13) and denosumab (12), 1 had methotrexate, whereas 3 cases did not receive any antiresorptives or methotrexate. Onset of MRONJ was associated with trauma in 17 cases (59%), including tooth extraction, impression taking for denture, intubation for general anesthesia, denture ulcer, and hard food items. In 12 cases (41%) no trauma history could be verified/identified. Patients with ONJ and tori were operated in 17 cases (59%). 17 of 17 (100%) healed, two patients are awaiting surgery. Ten were conservatively treated, and of these 4 (40%) exfoliated a sequestrum and healed spontaneously. The remaining 6 patients had either unchanged MRONJ or worsening.

#### **Conclusions**

A series of 29 cases of MRONJ, occurring among 391 consecutive MRONJ from the Copenhagen ONJ Cohort, and related to mandibular or palatal tori is reported. It is documented that 59% of these cases are associated with a trauma, and that some are preventable, eg. trauma from impression taking and intubation. Dentists as well as anesthesiologists should be aware of presence of tori in patients on antiresorptive therapy. Surgical treatment was successful (100%) compared to non-surgical treatment (40%).

### **#3:**

## **Relationship Among Hypoxia, 18F-fluoromisonidazole PET Uptake, And Tumor Angiogenesis In Oral Squamous Cell Carcinoma**

**\*Noritaka Ohga, Jun Sato, Takuya Asaka, Kenji Hirata, Ken-ichiro Sakata, Yohshima Kitagawa**  
Hokkaido University, Japan

### **Objectives:**

Hypoxia is a common feature of cancer and thus is prognostic factor for many type of cancer. Clinically, the prognosis of cancer with low oxygenation level is poor, and there is strong evidence that hypoxia in tumor microenvironment is related with tumor angiogenesis and malignant progression. 18F-FMISO has been used in clinical and pre-clinical studies to provide spatially resolved images for localizing and quantifying tissue hypoxia. 18F-FMISO can detect tumor hypoxia noninvasively. Hypoxia-inducible factor (HIF-1) is a key player in the transcriptional response to low oxygen in many type of cancer. Most transcriptional responses to low O<sub>2</sub> are mediated by HIFs, highly conserved transcription factors that control the expression of various angiogenic, metabolic genes. 18F-FMISO imaging of hypoxia in head and neck cancer remains challenging. It is unclear whether 18-FMISO PET can identify tumor angiogenesis and HIF-1 $\alpha$  expression in oral squamous cell carcinoma (OSCC). We evaluated the relationship among 18F-FMISO PET uptake, HIF-1 $\alpha$  expression, and tumor angiogenesis in OSCC.

### **Methods:**

In this retrospective study, immunohistochemistry were performed for CD31 and HIF-1 $\alpha$  on 40 OSCC specimens. Each patient was evaluated by both FMISO-PET before surgery, and the tumor-muscle ratio (TMR) of FMISO-PET were measured. The threshold for the hypoxic volume based on TMR was set at 1.25 (TMR  $\geq$  1.25: hypoxic tumor and TMR < 1.25: non-hypoxic tumor). The association between CD31 and HIF-1 $\alpha$  expression and 18F-FMISO uptake (TMR ratio) in the tumor was analyzed statistically. The microvessel density (MVD) in tumor was quantitatively analyzed by Image J.

### **Results:**

18F-FMISO uptake in the primary site of OSCC indicates a hypoxic environment with HIF-1 $\alpha$  expression. CD31-positive vessel area was increased in the hypoxic tumor compared with that in a non-hypoxic tumor. The tumor vessel in the hypoxic tumor was morphologically more irregular and tortuous than that in the non-hypoxic tumor.

### **Conclusions:**

We demonstrated a significant relationship between 18F-FMISO TMR and CD31 and HIF-1 $\alpha$  expression in OSCC. In the future, we will perform detailed research on the relationship between tumor angiogenesis and 18F-FMISO uptake.

## #4

### **Taste Is Improved With Reduction in Reported Pain In Burning Mouth Syndrome (BMS)**

Nan Su, Crystal Dewan, Cindy Liu, Renee Poon, Mark Darling, \*Miriam Grushka

Dr. Miriam Grushka, Canada

#### **Objective:**

Burning mouth syndrome (BMS) is commonly associated with complaints of dysgeusia or phantogeusia and a burning pain sensation that typically increases in intensity over the day. Previous studies have documented taste changes in BMS. This study was designed to compare taste perception before and after successful treatment in BMS.

#### **Methods:**

A retrospective study was conducted at a private oral medicine clinic. 32 patients diagnosed with primary BMS, who had spatial taste testing with four supersaturated solutions for salt (1M NaCl), sweet (1 M sucrose), sour (0.032 M citric acid) and bitter (0.001M quinine hydrochloride), and 50% ethanol, and self-rated pain intensity on a gLMS scale at the initial and final visit, were included in the study. Analysis was performed with Wilcoxon signed-rank test, Spearman correlation, and Mann-Whitney test, with a significance of  $p=0.05$ . This study was approved by the Research Ethics Board, William Osler Health System.

#### **Results:**

27 female and 5 male primary BMS patients, mean age  $57.1 \pm 1.5$  years, were included in the study. Treatment duration ranged from 1 month to 22 months. Self-rated maximum ( $60.7 \pm 20.58$ ;  $25.3 \pm 19.1$ ;  $p < 0.001$ ) and minimum ( $15.1 \pm 16.3$ ;  $5.2 \pm 6.1$ ,  $p < 0.001$ ) pain were both significantly reduced. Increased duration of treatment had significant correlation to reduction in maximum ( $r = -0.571$ ,  $p < 0.001$ ) and minimum ( $r = -0.409$ ,  $p = 0.013$ ) self-rated pain. After successful treatment, there was significant increase in perceived intensity between initial visit and final visit for salt ( $18.7 \pm 17.8$ ;  $24.5 \pm 15.5$ ;  $p = 0.024$ ), bitter ( $11.1 \pm 13.8$ ;  $14.9 \pm 13.4$ ;  $p = 0.039$ ), and ethanol ( $36.2 \pm 26.4$ ;  $47.2 \pm 27.2$ ;  $p = 0.029$ ) at the fungiform papillae. At the circumvallate papillae, perceived intensity to salt was also significantly increased ( $27.5 \pm 16.9$ ;  $40.8 \pm 22.8$ ;  $p < 0.001$ ).

#### **Conclusion:**

In this study, it was found that in BMS with reduction in pain, taste improved. This supports the theory that impairment in the taste may be involved in the etiology of BMS, which appears to improve after pain decreases.

**1:30PM**

**#5:**

**Information Needs of Patients with Oral Epithelial Dysplasia**

**\*Abdullah Alsoghier**, Richeal Ni Riordain, Stefano Fedele, Stephen Porter  
UCL Eastman Dental Institute, University College London, London, UK

**Objectives:**

To determine whether the information needs of patients with oral epithelial dysplasia (OED) were met and to explore what information these patients require.

**Methods:**

Patients with OED were invited to complete the newly developed Oral Epithelial Dysplasia Informational Needs Questionnaire (ODIN-Q). ODIN-Q is a 35-item tool developed, by adopting an existing valid and reliable instrument that explores the information need of patients with potentially malignant disease elsewhere in the body, using OED expert input. The questions were then formulated and tested for content validity by clinicians (n=12) and patients (n=5), with unclear, irrelevant, redundant, and unacceptable items omitted. The final 35-item ODIN-Q includes 2 scales: (1) amount of information already received (too much, enough, not enough and none) and (2) degree of importance of the information (very, yes, not very, not at all).

**Results:**

Twenty-four patients (11 male, 13 female) with different degrees of OED (mild, 15; moderate 4; severe, 6) agreed to participate in this pilot study. The analysis showed unmet information needs regarding the potential role of the human papilloma virus, effects on job/career, community/patient support groups, genetic testing where applicable and complementary/alternative treatment options. However, the latter two items were considered less important on the degree of importance scale. All other items were believed by the participants as important. The highest importance was given to items relating to screening and early detection, fear of progression to cancer, OED grades and the risk of developing mouth cancer, and what OED is, respectively. Eight (33%) participants demonstrated unmet information need based on ODIN-Q scores. These patients indicated that one-on-one meeting with health care professional/s and printed materials were the most appropriate means of receiving information to address this unmet information need. A specialist of the management of OED was the favoured professional for such one-on-one meetings.

**Conclusions:**

The newly developed ODIN-Q can help to address the needs and preferences concerning tailored and timely information provision. The psychometric properties of the instrument now will be assessed in a large cohort of patients to confirm its validity and reliability.

## **#6:**

### **Interplay of Leukocytes, Regulatory T cells and IL17+ Cells in the Pathogenesis of Canine Chronic Ulcerative Stomatitis**

\*Jamie Gail Anderson, Amir Kol, Petra Bizikova, Brian Murphy  
Sacramento Veterinary Dental Services, USA

#### **Objectives:**

Canine Chronic Ulcerative Stomatitis (CCUS) is a spontaneously occurring inflammatory disease of the oral mucosa. Lesions present as numerous, often bilaterally symmetrical deep ulcerations of the non-keratinized tissues with an erosive, lichenoid or pseudomembranous appearance. An immune pathogenesis is suspected though not yet proven. A description of the clinical oral findings, histologic appearance, and select leukocyte cell populations were reported in 2017. Additionally, we determined that FoxP3 and moderate numbers of CD3-/IL17+ cells were present in affected tissue. We proposed a similarity to Oral Lichen Planus of people.

#### **Methods:**

Here, we extend these observations by examining 24 dogs with clinical evidence of CCUS through the use of tissue based special stains, immunohistochemical (IHC), immunofluorescence (IF), confocal microscopy and direct immunofluorescence (DIF) techniques. We also used this battery of diagnostic modalities to examine tissues obtained from dogs with periodontitis and oral neoplasia and compared these results to dogs with CCUS. We hypothesized that dogs with CCUS would exhibit a spectrum of pathologic changes and phenotype of infiltrating leukocytes that would inform lesion pathogenesis, prognosis and treatment and would differ from periodontitis and oral tumors.

#### **Results:**

Results confirm that all CCUS leukocyte cell types are present in higher numbers than controls. Differences were found between male and female CCUS lesions, histologic variants and according to periodontal disease stage. FoxP3 was present in all lesions on IHC and variably present on IF. IL17+ cells were frequent, and the majority were CD3-/IL17+. DIF results did not support an autoantibody auto-immune disease process.

#### **Conclusions:**

Leukocyte cell types and IL-17+ cells are important in this chronic disease process. This investigation contributes to the scant body of literature regarding TH17/IL17 involvement in canine idiopathic inflammatory, and/or autoimmune diseases. As such, CCUS may represent a non-mouse model for other spontaneously occurring inflammatory diseases of canines and people.

**#7:**

## **Nuclear Polymorphism Is A Predictive Marker Of Multiple Nodal Metastasis In Oral Squamous Cell Carcinomas**

**\*Kenji Kawano, Ayaka Abe**

Oita University, Japan

### **Objectives:**

Metastasis of multiple regional lymph nodes and extracapsular spread in the metastatic nodes are found to be negative prognostic factors of oral squamous cell carcinomas (OSCC), and many studies have been conducted concerning the prediction of nodal metastasis by clinicopathological and cellular/molecular features of cancer cells. However, studies are not available on factors related with multiple nodal metastasis. In this report, we carried out morphometric analysis of nuclear polymorphism of cancer cells and determined its predictive value for multiple nodal metastases of OSCC.

### **Methods:**

Twenty-six patients with an OSCC were included in this study. Out of 26 patients, 6 had no nodal metastasis, 7 had 1 or 2 metastatic nodes, and 13 had 3 metastatic nodes or more (up to 16 metastatic nodes per patient).

### **Results:**

First, we examined differences in the T category, histological differentiation and invasion pattern of primary tumors among the 3 groups (no metastasis vs 1~2 metastatic nodes vs  $\geq 3$  metastatic nodes). However, we could not find a clear relationship between the number of metastatic node and these clinic-pathological factors. Next, we determined whether or not nuclear polymorphism of cancer cells was related with nodal metastasis. The area and perimeter of 50 nuclei in each tumor were measured by the image analysis software image-J<sup>TM</sup>. Nuclear polymorphism index was given by the formula:  $[(\text{perimeter of nucleus})^2 / (\text{area of nucleus})]$ . The indices of nuclear polymorphism were  $16.49 \pm 0.79$  in 6 tumors without metastasis,  $16.46 \pm 0.69$  in 7 tumors with 1~2 nodal metastases and  $18.46 \pm 1.29$  in 13 tumors with  $\geq 3$  nodal metastases. The tumors with  $\geq 3$  nodal metastases showed a statistically higher value of nuclear polymorphism than other 2 groups.

### **Conclusion:**

The results suggested that nuclear polymorphism be a predictive factor for multiple metastasis of cervical lymph nodes in OSCC.



## **#8:**

### **Dexamethasone solution and Dexamethasone in Mucolox™ for the Treatment of Oral Lichen Planus: Preliminary report on findings**

Alessandro Villa, Vidya Sankar, Gus Bassani, \*Lisa Bennett Johnson, Herve Sroussi  
Harvard University and Brigham and Women's Hospital, USA

#### **Objectives:**

Topical steroid use such as dexamethasone rinses is the mainstay of therapy for oral lichen planus (OLP). Treatment is challenging as it requires multiple daily applications which are easily washed away when in contact with saliva and foods/drinks. Mucolox™ is a mucosal delivery system that prolongs contact time to the mucosa and potentially could improve the efficacy of topical steroid rinses. The objective of this single center open-label randomized, phase II study was to evaluate the safety and efficacy of dexamethasone solution (standard of care) in Mucolox™ (group A) compared with dexamethasone solution alone (group B) for treatment of OLP. The primary outcome measure was to detect a change from pre to post treatment in each subject's subjective sensitivity score (0-10) evaluated at baseline and after 4 weeks of treatment.

#### **Methods:**

Patients with clinical OLP and a VAS sensitivity score  $\geq 7$  were randomized to A or B. REU scores, VAS for sensitivity and Chronic Oral Mucosal Diseases Questionnaire (COMDQ) were completed at baseline and end of treatment (four weeks). The sample size was calculated at 80% power and two-sided alpha of 0.05 to detect a difference of 2.0 points on an 11-point scale. Differences were assessed using Wilcoxon rank-sum test.

#### **Results:**

Sixteen patients (females n=15) with a median age of 64.5 years (range: 45-76) were randomly assigned to group A or B (8 patients each). Two subjects were excluded as they did not return for follow up (one from group A and one from group B [voluntary withdrawal]). Dexamethasone solution in Mucolox™ was significantly more effective in improving self-reported oral sensitivity when compared to dexamethasone solution only (6-point reduction vs. 4;  $p < 0.001$ ). There was a significant improvement in the total COMDQ score in group A compared to group B patients (59% vs. 52%;  $p < 0.05$ ). The pre-treatment mean weighted REU scores for group A and B, were 11.8 and 11.6; post-treatment mean score was 7.9 ( $p = 0.17$ ) and 6.3 ( $p = 0.13$ ) respectively.

#### **Conclusions:**

Topical dexamethasone solution in Mucolox™ appears to be more effective for managing symptoms in patients with OLP than dexamethasone solution only. Larger studies are necessary to confirm these preliminary findings.

**2:00PM**

**#9:**

**Over-Expressed Interleukin-6 Functionally Impaired CD4+CD25+ Regulatory T Cells in Patients With Oral Lichen Planus: An In-Vitro Study**

Qianqian Sun, Wei Wei, \*Guanhuan Du, Yufeng Wang, Guoyao Tang

Ninth People's Hospital, Shanghai JiaoTong University School of Medicine

**Objectives:**

Our previous studies have shown that IL-6 is over-expressed in saliva of patients with oral lichen planus (OLP) and is positively correlated with the severity of the disease. IL-6 may be associated with immune imbalance in patients with OLP. The purpose of present study was to investigate the inhibitory effect of IL-6 on regulatory T cells (Treg) derived from OLP patients.

**Methods:**

The diagnosis of OLP was acquired based on both clinic and pathological manifestations. Peripheral blood and its cultured supernatants of patients were detected by Cytometric Beads Assay. The expression of IL-6 in local lesions was detected by immunohistochemistry. Inhibition efficiency of OLP-derived or healthy-derived Treg on proliferation of T effector cells (Teff) was detected by flow cytometry; The OLP-derived Treg inhibition efficiency was detected after up-regulating or neutralizing IL-6.

**Results:**

Plasma IL-6 concentration in 31 OLP patients was  $10660.00 \pm 7205.00$  fg/mL, which was significantly higher than that in healthy control group ( $325.70 \pm 32.28$  fg/mL,  $n=11$ ,  $P<0.05$ ). It was also higher in ex-vivo cultured supernatants of patient-derived Teff than that of healthy control ( $133.60 \pm 30.01$   $\mu$ g/mL vs.  $34.94 \pm 11.47$   $\mu$ g/mL,  $n=6$ ,  $P<0.05$ ). IL-6 was also over-expressed in local lesions than that in healthy control. In co-culture experiment, the inhibition rate of OLP-derived Treg against proliferation of autologous Teff was  $36.15\% \pm 4.78\%$ , which was significantly lower than that of the healthy control group by  $57.75\% \pm 6.68\%$  ( $P<0.05$ ,  $n=6$ ). When IL-6 was added in healthy-derived Treg, the inhibition rate decreased to  $32.92\% \pm 5.54\%$ ; While after neutralizing IL-6 in OLP-derived Treg, the inhibition rate went up to  $55.32\% \pm 5.13\%$ .

**Conclusions:**

IL-6 was elevated in peripheral blood and local lesions of OLP patients. In vitro, the inhibition efficiency of Treg on proliferation of autologous Teff in OLP patients was significantly lower than that in healthy controls. This phenotype could be reversed in-vitro when neutralizing IL-6. IL-6 may be an important factor affecting the immune homeostasis in OLP.

## **#10:**

### **The Role Of Vitamin D In Patients With Oral And Oropharyngeal Cancer**

**\*Nancy Lyn Wilson Westmark**, Herve Sroussi, Alessandro Villa

Brigham and Women's Hospital/Harvard School of Dental Medicine, USA

#### **Objectives:**

Vitamin D is an essential hormone involved in calcium and bone homeostasis and has also been shown to modulate critical aspects of innate and adaptive immunity. The associations between HPV infection, vitamin D, and oral and oropharyngeal cancer (OOPC) have yet to be described, a gap of knowledge we propose to address by exploring the relationship between serum vitamin D levels, cancer site, and HPV status in a cohort of OOPC patients.

#### **Methods:**

A retrospective chart review of patients seen at the Dana-Farber Cancer Institute from January 1999 to December 2017 was conducted. Data collected included patient demographics, vitamin D serum levels, oncologic history, and HPV-16 status (PCR and IHC for p16). Patients with a vitamin D serum level within 1 year before and after OOPC diagnosis were included in this analysis. A vitamin D level < 20 ng/mL and < 30 ng/mL were considered deficient and insufficient, respectively. A logistic regression was conducted to assess the relationship between vitamin D serum levels, HPV-16 status, and site of cancer. A p value of <0.05 was considered significant.

#### **Results:**

One hundred and twenty-three patients were included (70.7% males, n=87) with a median age of 62 years (range: 27-91 years). Eighty-nine patients were diagnosed with OPC (72.3%) and 34 (27.6%) with oral cancer (OC). The most prevalent sites were base of tongue (34%, n=42) and tonsil (28.4%, n=35). Of the tumors tested for HPV-16 (n=64), 78.1% were positive. The median vitamin D serum level was 30 ng/mL (range: 6-82 ng/mL); 19.5% (n=24) of individuals were deficient, 30% (n=37) were insufficient, and the remainder of subjects had sufficient serum vitamin D levels. Neither OC or OPC as well as HPV-16 status in OPC were significantly correlated with vitamin D serum level in this cohort (p>0.05).

#### **Conclusions:**

In our cohort vitamin D serum level did not seem to play a role in HPV positive OPC, OC or OPC in general. Further larger studies are needed to evaluate the potential association of Vitamin D deficiency and head and neck cancer risk.

## **#11**

### **Oral Health in Hematopoietic Stem Cells Transplantation (HSCT) Survivors**

\*Paolo Junior Fantozzi, Corey Cutler, Alessandro Villa

Harvard School of Dental Medicine

#### **Objectives:**

Complications of stem cell transplantation (HSCT) are common and may negatively impact the quality of life of patients. The aim of this study was to characterize the oral health status of a cohort of HSCT survivors.

#### **Methods:**

A retrospective medical record review was conducted for a selected group of HSCT survivors seen at the Oral Medicine Clinic at Dana Farber Cancer Institute from July 2014 until October 2018 as part of the HSCT survivorship clinic. Data included past medical history, information on HSCT, and oral health status pre-HSCT, and in survivors. Graft versus host disease (GVHD) was graded according to the NIH Oral Mucosal Score. The Fox questionnaire was used to assess the severity of dry mouth. Descriptive statistics were used to summarize the data.

#### **Results:**

A total of 89 patients were included (53.9% males; median age: 58). All patients received a dental evaluation and the necessary treatment in the three months prior to HSCT to achieve optimal oral health. Acute myeloid leukemia was the most frequent diagnosis (39.3%, n=35) followed by myelodysplastic syndrome (19.1%, n=17). All patients underwent allogeneic SCT, and 12.3% (n=11) received TBI. On exam (performed 339 days post-HSCT; range: 262-566) 55 (61.7%) patients had oral cGVHD (mild: 55.3%; moderate: 28.6%; severe: 16.1%) with lichenoid features (92.8%) and erythema (64.3%) and 42.8% had extraoral GVHD. Topical steroids were prescribed in 45 patients (50.5%). A median pain score of five (range: 1-9) was reported by 21.3% of patients; 46.1% (n=42) needed to avoid certain foods because of oral pain/sensitivity. Sixty-one patients had dry mouth (68.5%; median dryness score: four [range: 1-10]); 34.1% (n=31) had difficulties swallowing food and drinks because of dryness, and 44.0% (n=40) needed to sip liquids to swallow. Jaw tightness and taste changes were reported by nine (9.9%) and 33 (36.2%) patients, respectively. Sialagogues were prescribed in nine patients (10.1%). Caries were identified in seven patients.

#### **Conclusions:**

Oral complications in HSCT survivors are common and may include GVHD, dry mouth and taste changes. All patients must be screened prior HSCT and followed up by a dentist periodically to assess their oral health status and modify treatment if needed.

## **#12:**

### **Modulation of EPS8 Functions by Phosphorylation**

\*Linah Shahoumi, Andrew Yeudall

Dental College of Georgia, USA

#### **Objectives:**

EPS8 (Epidermal growth factor receptor pathway substrate 8) is a scaffolding protein involved in regulating cell proliferation, actin dynamics and receptor trafficking in human cells. EPS8 expression is increased in a range of human cancers including head and neck squamous cell carcinoma (HNSCC). Previous studies have indicated that overexpression of EPS8 enhances mitogenesis and migration of tumor cells and is sufficient to convert non-tumorigenic cells to a tumorigenic phenotype. The non-receptor tyrosine kinase Src is reported to phosphorylate EPS8 at four tyrosine residues, although the impact of this on EPS8 function is unknown. The purpose of this study was to investigate the role of tyrosine phosphorylation of EPS8 at Src target sites in modulating biochemical functions, cell growth and motility in HNSCC.

#### **Methods:**

Expression plasmids encoding EPS8 with amino acid substitutions to phenylalanine (F) at the four putative Src phosphorylation sites (Y485F, Y525F, Y602F, Y774F), and all four combined (4F), were prepared by site-directed mutagenesis. To evaluate the effect of unphosphorylated EPS8 on downstream signals and biological behavior, plasmids were transduced into a model cell line expressing a normal endogenous level of EPS8. Additionally, cells were treated with dasatinib, a Src inhibitor, to block phosphorylation of Src substrates. Expression of downstream targets was evaluated by western blotting. Wound closure and proliferation assays were used to investigate the impact of these mutations on cell motility and growth.

#### **Results:**

FOXM1, AURKA and AURKB levels were decreased in cells expressing the non-phosphorylatable 4F and Y602F EPS8 mutants, while cells harboring the Y485F, Y525F and Y774F EPS8 mutants showed no differences in the expression of these proteins compared to controls. Moreover, dasatinib treatment resulted in a significant decrease in the expression of EPS8 downstream targets. In addition, both Y602F and 4F mutants elicited a significant reduction in tumor cell proliferation and migration.

#### **Conclusion:**

The non-phosphorylatable Y602F-EPS8 and 4F-EPS8 mutants decreased the expression of EPS8 downstream targets as well as reducing tumor cell growth and motility, implying a crucial role for phosphorylation of EPS8, principally at Y602, in mediating pro-tumorigenic signal transduction.

**2:30PM**

**#13:**

**A Comparative Study Between Oral Zinc Therapy With or Without Steroid Application In Symptomatic Oral Lichen Planus - A Randomized Controlled Trial**

Pundarikakshaiah Deveneni, Suvarna Chintada, \*Chaitanya Nallan CSK, Kavya Alluri, Sourab Abhyankar, Jaya Surya Kondapaneni

Panineeya Mahavidyalaya Institute of Dental sciences and Research center, India

**Objectives:**

Lichen planus is a autoimmune inflammatory disease affecting the buccal mucosa, tongue & gingiva. Zinc due to its effect on Matrix metalloproteinase, useful for treating the lesions and preventing their recurrences. This study was aimed to compare the efficacy of oral Zinc acetate 50mg tablets and 0.1%triamcinolone acetonide ora-base, with 0.1%triamcinolone acetonide ora-base in the healing process of symptomatic OLP.

**Methods:**

40 subjects were randomly included in the study, who were categorized into two groups, Group A and B attending the Department of Oral Medicine. Group A (control group) and Group B (case group) comprised of 20 patients each with clinically and histo-pathologically confirmed cases of OLP and symptoms of burning sensation. Group A received 0.1% triamcinolone acetonide ora-base, BID. Group B received 50 mg zinc acetate tablets and 0.1% triamcinolone acetonide ora-base BID for 8 weeks. Steroid ora-base was discontinued after one week of application in case group whereas Zinc acetate tablets were continued throughout the treatment period. The follow up period was 2 months. The lesion size and burning sensation were measured at initial and weekly visits till the cessation of treatment using the Thongprasom scale and Visual Analogue scale

**Results:**

A decrease in the pain intensity from the first to follow up visit which was statistically significant in both the groups ( $p=0.000$ ). Group B showed mean higher pain intensities from initial to follow up visit than Group A. The mean difference between the first and follow up in the study group showed there was a gradual decrease in the pain intensities whereas, the control group showed minimal difference than the study group, not statistically significant ( $p=0.498$ ). Statistically significant gradual decrease in the lesional size till the follow up period between the size of the lesion and visits of the patients in both the groups ( $p=0.000$ ).

**Conclusion:**

Oral zinc therapy was found to be an adjunct in reducing the burning sensation and lesion size in the symptomatic OLP.

## **#14:**

### **Association of Pre-operative Dental Screening Approach with 90-day Mortality after Cardiac Valve Surgery**

**\*Naman Rao**, Nathaniel Treister, Andrea Axtell, Jillian Muhlbauer, Puhon He, Agnes Lau, Lcyda Ross, Elbert Heng, Daniel Rinewalt, Siobhnan McGurk, Tsuyoshi Kaneko, Duke Cameron, Herve Sroussi  
Harvard Medical School, USA

#### **Objectives:**

Preoperative dental screening (PDS) prior to valvular surgery has been adopted widely by cardiac surgeons to prevent poor outcomes associated with infections of oral origin. However, there is limited evidence to guide PDS protocols. This study was designed to compare a focused versus a comprehensive approach to PDS for its association with 90-day mortality.

#### **Methods:**

A retrospective cohort analysis was performed on 1835 adult patients who underwent elective valvular surgery and PDS at MGH and BWH from January 2009 to December 2016. Patients with a history of intravenous drug abuse were excluded. At MGH (n=692), PDS involved a detailed dental examination including diagnostic radiographs and definitive therapy for teeth with active and/or chronic disease (comprehensive protocol). At BWH (n=1143), PDS consisted of minimal diagnostic radiographs limited to symptomatic teeth and intervention only when active signs of disease were observed (focused protocol). Univariate and multivariable analysis were performed to compare 90-day mortality after surgery with the two different approaches.

#### **Results:**

There were no differences in demographics and baseline comorbidities between the two sites. At MGH 340/692 (49.2%) patients received dental clearance at the initial visit with 94.2% (n=652) receiving radiographs. Dental findings included carious teeth (n=250,36.2%), root tips (n=118,17%), periodontically hopeless teeth (n=48,6.9%), and periapical infections (n=149,21.6%); 40 patients (5.8%) were symptomatic. Extractions were performed in 151 patients (21.8%), and 15 (2.2%) had post-operative complications. At BWH 1097/1143 (96%) patients received dental clearance at the initial visit with 3.3% (n=38) receiving radiographs. Dental findings included carious teeth (n=197,17.2%), root tips (n=135,11.8%), periodontically hopeless teeth (n=27,2.4%), and periapical infections (n=20,1.7%); 16 patients (1.4%) were symptomatic. Extractions were performed in 38 patients (3.3%), and 4 (0.4%) had post-operative complications. There was no significant difference in 90-day mortality between the two sites (10% vs 8.4%, p=0.317). This was unchanged in a multivariable model after adjusting for demographics and baseline comorbidities (OR focused vs comprehensive:1.32 (95%CI:0.91-1.93), p=0.14).

#### **Conclusions**

Despite the difference in PDS protocols at both sites, there was no significant difference in 90-day mortality after valvular surgery. Further randomized comparative prospective studies are needed to validate and expand on these findings.



## **#15:**

### **PD-L1 Conjugated All-trans Retinoic Acid Nanoparticles for Targeted Treatment of Oral Dysplasia and Oral Squamous Cell Carcinoma**

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#### **Objectives:**

The present study conjugated all-trans retinoic acid (ATRA) with PLGA-PEG nanocarriers, and combined with anti PD-L1 antibody to achieve targeted therapy for oral squamous cell carcinoma (OSCC) and oral dysplasia.

#### **Methods:**

The molecular mechanism of ATRA and PD-L1 was studied by CCK8, flowcytometry, Western Blot and immunohistochemistry. The effect of ATRA on OSCC and oral dysplasia cell proliferation inhibition, apoptosis induction and PD-L1 downregulation was significantly enhanced after STAT3 signaling blockade. PD-L1 was highly expressed in human OLK and OSCC patients compared with normal control. By the measurement of dynamic light scattering, the average particle size and zeta potential of ATRA-PLGA-PEG and ATRA-PLGA-PEG-PD-L1 was 97 nm and -3.6 mV, 105 nm and -5.7 mV, respectively. The release of ATRA in nanoparticles reached 55% within 36 hours. The maximum encapsulation efficiency and loading capacity of ATRA into the nanoparticles reached 76.29% and 12.18%, respectively. PEG-PLGA nanocarrier had almost no cytotoxicity, and the nanomedicine significantly inhibited cell proliferation of DOK and CAL27 cells by in vitro cytotoxicity test. After 1 h incubation, the Nile red group showed few fluorescence intensity, while the two nanoparticle groups were readily detectable under the confocal microscopy. Moreover, the nanoparticles enhanced anticancer activity and reduced side effects compared to free ATRA in C3H tumor-bearing mice. Furthermore, ATRA-PLGA-PEG-PD-L1 nanoparticles could target the tumor more effectively as compared to control group according to the whole animal fluorescence imaging. The multicolor immunohistochemistry revealed effective regulation of the related proteins expression after nanoparticle treatment.

#### **Results:**

The mechanism of ATRA and PD-L1 downregulation was closely associated with STAT3 signaling inhibition in both OSCC and oral dysplasia. PD-L1, which was highly expressed in human OLK and OSCC tissues, was proved to be a specific target site for cancer therapy. The ATRA-PLGA-PEG-PD-L1 nanoparticles had lower toxicity, higher biocompatibility, and targeted the tumor more specifically compare to free ATRA both in vitro and in vivo.

#### **Conclusion:**

These findings suggested that ATRA induced anti-tumor effects via STAT3 signaling inhibition in oral dysplasia and OSCC. ATRA-PLGA-PEG-PD-L1 nanomedicine was an effective and non-toxic targeted therapy for oral dysplasia and OSCC both in vitro and in vivo.