

# Oral Abstract Sessions

# = Oral Abstract Number, \*Presenter

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

## Oral Abstract Session I Thursday, 04/06/2017, 1:00-2:30pm

### #1 – 1:00pm

#### **ANALYZING TASTE THRESHOLDS OF A PATIENT WITH DYSGEUSIA**

\*Yuko Yamazaki, Yoshinori Jinbu, Hidetada Noguchi, Yoshiyuki Mori, Jichi Medical University, Japan

**Objectives:** Although dysgeusia is a frequent complaint, the features of patients do not always match the complaint. The present retrospective study aimed to determine the taste thresholds of persons with dysgeusia.

**Methods:** This study included 28 (male, n=17) patients with a complaint of dysgeusia that was not complicated by any other symptoms of taste disorders. Taste functions in all patients were measured using electrogustometry (EGM), filter paper discs (FPD), and the whole mouth test (WMT). Levels of serum zinc, copper, and iron were examined and saliva flow was assessed using a gum test. Cultures were tested for *Candida* species. The patients were assigned to either a group that had difficulty recognizing all tastes (DRA, 18/28), or one that had difficulty recognizing some tastes (DRS, 10/28), and data were statistically analyzed.

**Results:** DRA group – The WMT technique showed that the ratios of tastes with higher thresholds than normal were respectively sweet, 22.2%; salt, 33.3%; sour, 38.9%; and bitter, 33.3%. Only one patient in this group had higher thresholds for all tastes measured using the WMT. The FPD technique revealed increased thresholds for all tastes except bitter in the area supplied by chorda tympani. The thresholds for all of tastes were increased in the area supplied by the glossopharyngeal nerve. DRS group – The most frequent complaints were decreasing sensitivity to salt alone (4/8) and to salt and sweet (4/8). Although decreasing sensitivity to sweetness tends to be inconsistent with taste thresholds, the complaints and thresholds of patients with difficulty recognizing a salty taste mostly matched both the WMT and FPD findings.

**Conclusions:** Complaints and thresholds do not always match in patients with dysgeusia. Therefore, the taste sensitivities of each individual should be precisely assessed to ensure the appropriate choice of treatment.

### #2 – 1:10pm

#### **AWARENESS OF MEDICATION RELATED OSTEONECROSIS OF THE JAW AMONGST DENTISTS AND DOCTORS IN THE UK**

Nikki Tanna, \*Clare Steel, Sami Stagnell, Eastman Dental Hospital - UCLH, United Kingdom

**Objectives:** Recent evidence reveals that as well as bisphosphonates, other anti-resorptive agents such as Denosumab and anti-angiogenic drugs such as Sunitinib and Bevacizumab are implicated in the development of Medication Related Osteonecrosis of the Jaw (MRONJ).

There are currently several specialties, both medical and dental that interact with patients at-risk of developing MRONJ. The aim of this study was to assess the awareness of MRONJ amongst both general dental practitioners (GDPs) and medical practitioners in the UK.

**Methods:** Surveys were circulated to 150 GDPs, 50 medical consultants and 20 general medical practitioners (GMPs) in the UK. This was carried out through a combination of online surveys and face-to-face surveys.

**Results:** A total of 129 GDPs completed the survey. Results indicated that more than 90% of GDPs were unaware of medications other than bisphosphonates that could contribute to MRONJ. Approximately 60% of GDPs stated that they were not confident to carry out dental extractions on patients taking oral bisphosphonates. Reasons for this included lack of clear guidance, the need for second opinion or litigation concerns. 26 medical physicians and GMPs responded and results showed that haematologists and rheumatologists were amongst the highest prescribers of bisphosphonates. 36% were aware of or using other medications such as Denosumab. 42% of these prescribers warned patients of 'jaw problems' as a potential risk, but stated that this was a rare problem. Only 20% referred for a dental assessment prior to prescribing bisphosphonates.

**Conclusions:** An emphasis needs to be placed on further education for all healthcare providers involved in treating at-risk patients. A multi-disciplinary team approach should be encouraged so that prevention of MRONJ is an integral part of management. Current guidance which is often fragmented and inaccessible needs to be standardised so that all health care professionals are working within the same framework.

### **#3 – 1:20pm**

#### **CERVICAL MUSCLE TENDERNESS IN TEMPOROMANDIBULAR DISORDERS - THE IMPACT OF DIAGNOSIS, DISEASE-RELATED OUTCOMES AND CO-MORBID PAIN CONDITIONS**

\*Galit Almoznino, Avraham Zini, Yair Sharav, Yaron Haviv, Doron J Aframian<sup>1</sup>, Rafael Benoliel, The Hebrew University-Hadassah School of Dental Medicine, Israel

**Objectives:** To measure and compare cervical tenderness scores (CTS) in patients with various Temporomandibular Disorders (TMD) and controls and examine associations with demographic and clinical parameters.

**Methods:** This case-control study included 192 TMD patients and 99 controls, diagnosed based on a questionnaire and a clinical examination following RDC/TMD guidelines.

**Results:** CTS differed between TMD and controls ( $p < 0.001$ ). Across TMD sub-groups cervical tenderness was notable only in those with a myogenous component to their TMD diagnosis but not in patients with solely an arthrogenous diagnosis ( $p = 0.014$ ). CTS was positively associated with: female sex ( $p = 0.03$ ), whiplash history ( $p < 0.001$ ), increased pain on opening ( $p < 0.001$ ), reduced mouth opening ( $p < 0.001$ ), higher masticatory muscles tenderness scores (MTS) ( $p < 0.001$ ), higher verbal pain scores, longer disease duration, more frequent and prolonged pain episodes ( $p < 0.001$  for all), comorbid headaches ( $p < 0.001$ ) and body pain ( $p < 0.001$ ). Whiplash ( $p = 0.009$ ), body pain ( $P = 0.003$ ) and MTS ( $p = 0 < 0.001$ ) retained significant association with CTS in the multivariate analysis.

**Conclusions:** Although cervical muscle tenderness is not mandatory for TMD diagnosis, it may reflect the complexity and/or severity of TMD, including involvement of remote pain areas. CTS clearly differentiated between TMDs and controls and between TMD diagnoses, noted only in muscular and not in arthralgic conditions. Routine work-up of TMD patients, in particular those with myogenous components, should include assessment of masticatory and cervical region musculature as well as co-morbid pain conditions.

#### **#4 – 1:30pm**

##### **TASTE PATTERNS: TASTE PHANTOMS VS. TASTE CHANGES**

Nan Su, \*Renee Poon, Dewan Crystal, Kao Ching, Darling Mark, Miriam Grushka, Dr. Miriam Grushka, Canada

**Objectives:** Taste changes can range from partial to complete taste loss to taste confusion so that foods no longer taste ‘right’. Taste phantoms, which are often bitter or metallic, may become more intense over the day to unbearable levels. It can be difficult to differentiate patients with taste changes to those with taste phantoms. We conducted a preliminary study to determine if these two patient populations present different patterns in taste.

**Methods:** A retrospective review was conducted. Patients who reported taste changes and had spatial taste testing performed prior to treatment were divided by diagnosis into Burning Mouth Syndrome (BMS) representing phantoms, and taste change including from drug use, oral infection, or systemic diseases.

**Results:** 12 patients with BMS and 11 patients with taste changes were included in the study. Left and right discrepancy was statistically higher in BMS only for sweet ( $p = 0.042$ ) but numerically higher in BMS for salt, sour, bitter and pain (50% ethanol). Taste intensity was significantly higher in BMS for sweet ( $p = 0.002$ ), sour ( $p = 0.002$ ) and pain ( $p = 0.001$ ) but numerically higher in BMS for salt and bitter.

**Conclusions:** BMS patients, who often experience metallic and bitter phantoms, appears to have decreased response to taste stimuli locally as suggested by the greater left and right discrepancy, as well as increased response to pain (ethanol) carried by the trigeminal nerve. This suggests that the change in taste in BMS may be occurring at the peripheral nerve level rather than at taste receptor level. Taste change patients, on the other hand, have decreased sensitivity to all taste as well as pain, suggesting generalized taste loss which may be occurring at the receptor level. Our results suggest that spatial taste testing may be a simple office tool to differentiate those with taste phantoms from those with taste changes.

#### **#5 – 1:40pm**

##### **ASSESSING CLINICAL COMPETENCE AND AUTONOMY OF ORAL MEDICINE**

##### **RESIDENTS: IT IS SIMPL**

\*Revathi Shekar, Brian C. George, Jordan D. Bohnen, Alessandro Villa, Brigham and Women's Hospital/Harvard School of Dental Medicine, USA

**Objectives:** Lack of easy assessment tools have limited the frequency and quality of performance data provided to residents. We piloted a mobile application (SIMPL: System for Improving and Measuring Procedural Learning) developed by a multi-institutional research consortium (PLSC, <http://www.procedurallearning.org>). SIMPL has already been used in General and Plastic Surgery to measure residents' autonomy and performance. The aim of this pilot study was to: 1) evaluate SIMPL to optimize measurement of oral medicine faculty guidance and residents' performance and 2) quantify the degree of agreement for supervision and performance among faculty and oral medicine residents.

**Methods:** Faculty and residents were trained to use SIMPL before gaining access. SIMPL asks raters to use the 5-level “Performance” scale to assess readiness of the trainee for independent practice. SIMPL also asks raters to use the 4-level Zwisch scale to assess faculty guidance during procedures. Faculty and residents used SIMPL to rate procedures performed by residents between

June 2016 and November 2016. Descriptive statistics were used to analyze patterns of faculty supervision and level of autonomy. Performance agreement and level of supervision between faculty and residents was estimated as percentage agreement and measured using Kappa and 95% confidence intervals (CI).

**Results:** A total of 551 procedures were evaluated by five attendings and six residents. Residents were deemed “Practice Ready” or above for 66.3% of cases. They received meaningful autonomy (“Passive Help” or “Supervision Only”) for 56.4% of cases. Faculty-resident concordance for performance was 82% with a kappa of 0.76 [95% CI 71% to 86%] and for supervision it was 87.6% with a kappa of 0.84 [95% CI 80% to 88%].

**Conclusions:** SIMPL is an innovative, user-friendly smartphone-based system that allows real time evaluation of oral medicine residents. Future studies should focus on generalizability of these results as well as using SIMPL to evaluate non-procedural oral medicine skills.

### **#6 – 1:50pm**

#### **TINNITUS AND TEMPOROMANDIBULAR JOINT DISORDER SUBTYPES**

**\*Susee Priyanka Ravuri**

University of Washington, USA

**Objectives:** The purpose of this study was to assess prevalence of tinnitus within a TMD population and to determine an association between the presence of tinnitus and type of TMD diagnoses.

**Methods:** This cross sectional study used raw data, history Questionnaire for self-reported tinnitus, Medical history Questionnaire, Supplemental History Questionnaire, Gold standard Diagnoses from ‘Research Diagnostic Criteria for Temporomandibular Disorders (RDC/TMD) Validation Project. Log linear analysis was performed using Statistical Analysis System

**Results:** At baseline, 614 participants met required criteria for a TMD diagnosis. Prevalence of tinnitus within sample was 41% (253 of 614). 94% (238/253) of participants with tinnitus also had a MPD diagnosis. Among participants without MPD diagnosis, the rate of tinnitus was 12% (15/119). Using log linear regression analysis, risk ratio for tinnitus by number extra oral sites painful to palpation by TMD diagnosis for MPD, DD and DJD groups was 1.03 (95% CI: 0.97, 1.10; p=0.28), 1.24 (95% CI: 1.05, 1.46; p = .0086) and 1.20 (95% CI: 1.01, 1.43; p = .033) respectively when adjusted for age, gender, study site and somatization. 207 participants received a TMD diagnosis and reported headaches. The adjusted risk for tinnitus among these participants was RR=6.20 (95% CI: 0.96, 39.7; p = .054) while those with a TMD diagnosis and no headaches were about a 154 participants with a relative risk of 3.17 (95% CI: 1.18, 8.46; p= .022). Thus the risk of tinnitus with a TMD diagnosis is higher if participant also has a headache than without a headache.

**Conclusions:** These findings suggest higher rate of tinnitus among subjects with myofascial pain than other forms of TMD. Patients with myofascial pain who also report temporal headaches are more likely to experience tinnitus than those with myofascial pain alone the presence of TMD in those reporting tinnitus merits further investigation.

### **#7 – 2:00pm**

#### **HISTOCHEMICAL ASSESSMENT FOR VASCULAR ENDOTHELIAL CELLS AND PERIVASCULAR CELLS DURING ENDOCHONDRAL OSSIFICATION**

\*Erika Tsuchiya, Tomoka Hasegawa, Norio Amizuka, Yoshimasa Kitagawa, Graduate School of Dental Medicine, Hokkaido University, Japan

**Objectives:** Endochondral ossification plays an important role, at least in part, in fracture healing of jaw bone. Chondro-osseous junction of cartilaginous callus and subchondral bone is the site of vascular invasion accompanied with the migrating osteoclasts and osteoblastic cells. However another cell-type, a perivascular cell, also referred to as a septoclast has been reported to partake in endochondral ossification. We have histochemically examined vascular endothelial cells and perivascular cells at the chondro-osseous junction of murine tibiae as a model of endochondral ossification.

**Methods:** Mice at six weeks of age were perfused with aldehyde solution, and then, tibiae were immersed in the same fixatives. The specimens were decalcified with 5% EDTA and embedded into paraffin or epoxy resin. Paraffin sections were employed for histochemistry of CD31, endomucin, MMP-9, F4/80, PDGF-bb and DBA lectin staining. Ultrathin sections were examined under TEM.

**Results:** In the region of chondro-osseous junction, DBA-positive perivascular cells were localized close behind CD31/endomucin-positive vascular endothelial cells. The cytoplasmic processes of the vascular endothelial cells revealed MMP-9 immunoreactivity, and were extended into the transverse partitions of cartilage columns. In contrast, perivascular cells included large lysosomes, therefore indicating the phagocytic ability of extracellular debris. DBA-positive perivascular cells neither show immunoreactivity of F4/80 nor exist in *Rankl*<sup>-/-</sup> mice, suggesting that perivascular cells are not a macrophage/monocyte lineage, but need RANKL signaling in their differentiation. Some perivascular cells and osteoclasts were shown to possess PDGF-bb, which could promote angiogenesis. *Rankl*<sup>-/-</sup> mice lacking both perivascular cells and osteoclasts demonstrated the various height of vascular invasion.

**Conclusions:** The cellular participation of perivascular cells may be necessary for normal vascular invasion into the cartilage, and histochemical assessment on these cellular interplays may provide better understanding for bone healing of the jaw.

## **#8 – 2:10pm**

### **THE RELATIONSHIP BETWEEN RADIOGRAPHIC DENTAL ABNORMALITIES AND AGE AT INITIAL TREATMENT FOR PEDIATRIC CANCER.**

\*Vera Monica Lim, Haley Freymiller, Adi Sax, Adepitan Owosho, Joseph Huryn, Saehee Yom, Cherry Estilo, Memorial Sloan Kettering Cancer Center, USA

**Objectives:** Chemotherapy in the pediatric patient is associated with dental anomalies such as shortened roots, dentin hypoplasia, hypodontia, and microdontia. This study aims to 1) assess the effects of chemotherapy on the developing dentition of patients aged six years and younger and 2) evaluate the distinction between first exposure and radiographic dental abnormalities. We hypothesize that dental abnormalities secondary to chemotherapy are more likely to develop in patients three years or younger at initial exposure.

**Methods:** The records of patients less than eighteen-years old at initial treatment (n=244) treated at Memorial Sloan Kettering Cancer Center between 2000 and 2015 and evaluated in the Dental Service were retrospectively reviewed. Inclusion criteria consisted of the following patient characteristics: (1) diagnosis of leukemia, rhabdomyosarcoma, neuroblastoma, or brain/central-nervous-system cancer; 2) initial chemotherapy treatment  $\leq$  six years of age; (3) at least one evaluable panoramic radiograph (Panorex). Panorex obtained at first visit and follow-up

appointments were reviewed for short/missing roots, dental caries, hypodontia, and microdontia. Patients were excluded on the basis of an indeterminable radiographic examination due to lack of follow-up or poor radiographic quality secondary to patient compliance. A chi-square analysis was performed to assess for association after stratifying patients  $\leq$  three years and four to six years of age at first chemotherapy dose.

**Results:** Of the 244 patients referred to the Dental Service from 2000 to 2015, 59 patients met the inclusion criteria and were selected for analysis. Hypodontia ( $p=0.005$ ) and microdontia ( $p=0.035$ ) were not independent of chemotherapy for all patients. There were more patients  $\leq$  three years who exhibited these conditions ( $n=33$ , 56%) compared to those ages four to six ( $n=26$ , 44%).

**Conclusions:** In a cohort of patients treated at  $\leq$  six years of age, our study shows that dental abnormalities is more prevalent in those treated in the subgroup  $\leq 3$  years at initial treatment

### **#9 – 2:20pm**

#### **WILLINGNESS TO PAY, HEALTH UTILITY AND QUALITY OF LIFE IN ORAL LICHEN PLANUS – A COMPARATIVE STUDY ACROSS HEALTH ECONOMIES**

**\*Richeal Ni Riordain, Christine McCreary, Tim Hodgson, UCL Eastman Dental Institute, United Kingdom**

**Objectives:** To assess the Willingness To Pay (WTP) of patients with oral lichen planus (OLP) in disparate health economies and to explore correlations between disease severities, based upon clinical evaluation and quality of life, and WTP.

**Methods:** Fifty patients were recruited from University College London Eastman Dental Hospital (UCL EDH), UK and a further 50 patients were recruited from Cork University Dental School and Hospital (CUDSH), Ireland with a clinical or histopathological diagnosis of OLP. This was a cross-sectional study in which patients presenting for a review appointment at each Oral Medicine Unit were asked to complete a demographic questionnaire, along with the Chronic Oral Mucosal Diseases Questionnaire (COMDQ) and the generic utilities / quality of life measure EQ 5D. A clinician derived severity score was also recorded. As cost of living and salaries are dissimilar in the UK and Ireland WTP was determined based on relative monetary values, (percentage of monthly income). The question asked of patients was ‘Imagine there is a therapy that could completely free you from oral lichen planus for the rest of your life. At present, what percentage of your monthly income would you be willing to pay each month to receive this therapy?’ Ethical approval was sought from both institutions but not deemed necessary in UCL EDH as this study was considered an evaluation of service.

**Results:** Initial results demonstrate that the average WTP (percentage of income) in CUDSH was 13% whilst in the UCL EDH the average was 4%. The WTP was correlated with the COMDQ and the Numerical Rating Scale (NRS) but not with EQ 5D or the clinician derived severity score.

**Conclusions:** This is the first study evaluating WTP in OLP across two disparate health economies. The initial results indicate a greater willingness to pay in an Irish population.