Oral Abstract Session II
Saturday, 04/08/2017, 10:00-12:00

#10 – 10:00am

ETHANOL-INDUCED MICRO-RNA ALTERATIONS IN ORAL CANCER CELLS.

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Objectives: MicroRNA (miRNA) deregulations in oral cancer have been documented, although their exact roles in mediating the effects of known predisposing factors (such as tobacco and alcohol) in oral malignant transformation remain unknown. Alcohol consumption has been recognized as one of the major modifiable risk factors for the development of oral cancer; however, the mechanisms responsible for the proneoplastic effects of alcohol are obscure. The present study analyzed the effects of ethanol on OSCC miRNA profile, attempting to identify specific dysregulated miRNAs and to correlate them with known OSCC-related target genes.

Methods: An established OSCC cell line (SCC9) was treated with ethanol or control vector. Modifications on miRNA profile were recorded through microarray analysis. All differentially expressed miRNA transcripts with p-value <0.01 were recorded and further studied with regards to their known or predicted target genes, focusing especially on OSCC and ethanol-related pathways.

Results: Analysis of ethanol-treated compared to non-treated control SCC9 cells identified 105 deregulated miRNAs ($p \leq 0.01$). Limiting analysis to miRNAs with more than 2-fold differences, a final list of 29 upregulated and 42 downregulated miRNAs was constructed. Several differentially expressed miRNAs implicated in OSCC-related target genes as well as in ethanol-affected pathways were notified (e.g ethanol induced downregulation of miR-99a that targets mTOR and upregulation of miR-7 that has been associated with ethanol consumption).

Conclusions: Various miRNA molecules with oncogenic or tumor suppressive activities are significantly upregulated or downregulated by ethanol in oral cancer cells. Moreover, ethanol effects on oral cancer appear to involve a number of miRNAs that target genes related with OSCC as well as previously characterized ethanol-affected pathways. These results offer insight into the biologic mechanisms that may govern alcohol pro-carcinogenic effects in the oral mucosa.

#11 – 10:10am

COMPARISON BETWEEN BURNING MOUTH SYNDROME WITH AND WITHOUT PSYCHOLOGICAL PROBLEMS

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Objectives: The purpose of this study was to compare clinical and sociodemographic characteristics between burning mouth syndrome (BMS) patients with and without psychological problems.

Methods: Among 644 patients with oral burning symptoms, 381 patients were classified as the primary type. Of 381 primary BMS patients, 39 patients with psychological problems (62.5 ± 11.5 years) and 185 patients without psychological problems (58.4 ± 11.4 years) were selected by criteria using medical history and symptom checklist-90-revision (SCL-90-R) profiles.

Comprehensive clinical and sociodemographic characteristics assessed by a questionnaire, clinical evaluation, and interview, psychological profiles by the SCL-90-R, and salivary flow rate were analyzed and compared between the two groups.

Results: There were no differences in the male:female ratio, symptom duration, diurnal pattern of symptoms, flow rate of unstimulated whole saliva, and marital status between the groups. The patients with psychological problems showed significantly higher mean age, lower flow rate of stimulated whole saliva, and lower education level. The patients with psychological problems also showed higher rates of symptoms in most parts of the oral mucosal tissues, higher rates and greater severities of various types of oral symptoms including pain, xerostomia, and taste disturbance, higher rates of stress-related systemic symptoms, and greater difficulties in daily activities.

Conclusions: Patients with psychological problems had symptoms in many parts of the oral cavity, higher rates and greater severities of various types of oral symptoms, and greater difficulties in daily activities compared to those without psychological problems.

#12 – 10:20am

ORAL POINT OF CARE TEST TO PREDICT HEAD AND NECK SQUAMOUS CELL CANCER

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Objectives: Head and neck squamous cell carcinoma (HNSCC) is the 6th most common cause of cancer mortality throughout the world affecting some 50,000 people in the U.S. The ability to detect the disease in a potentially malignant phase and earlier stage should have positive impact on outcome. Previous studies demonstrated that a combined salivary CD44, a tumor-initiating marker, and total protein assay was able to aid in the diagnosis of HNSCC. We sought to understand the performance characteristics of these biomarkers in a prospective population using a qualitative, point-of-care assay (POC) for both CD44 and total protein. We also performed comparative studies on the same samples with a quantitative lab-based test.

Methods: Saline oral rinse specimens (~5ml) from 134 patients (84 HNSCC cases; 50 controls) obtained from biorepositories. Samples were thawed, swirled, and 600ul removed for the lab assay prior to POC test. POC cassette submerged in rinse for 20'; levels of CD44 and total protein (TP) were evaluated by two operators. POC results compared between operators and with lab results using Cohen's kappa coefficient and McNemar's test, sensitivity(Se), specificity(Sp), NPV and PPV.

Results: 95% HNSCC patients were mean 60 years, 60% male, 97% white, 74% smokers vs. 43 years, 28%, 96% and 0% controls. POC was positive when CD44 or TP above internal threshold. Weighted kappa was 75% and 72% for CD44 and TP, respectively between operators. Prevalence of 9.27: POC: NPV 94%, PPV 10%; vadjusted TP cut-off: Se71-84% and Sp30%-50%. McNemar and Kappa for both lab CD44 + TP vs POC indicated moderate agreement; independently both POC and lab produced NPV >90%.

Conclusions: Operator concordance of the POC assay and moderate agreement with a quantitative lab assay provides evidence for clinical application of the POC assay as an aid in the diagnosis of HNSCC. Additional studies necessary to confirm these observations.

#13 – 10:30am

EXPRESSION ANALYSIS OF CANONICAL WNT PATHWAY GENES IN ORAL SQUAMOUS CELL CARCINOMA AND THEIR POSSIBLE ROLE AS BIOMARKERS

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Objectives: A null hypothesis was postulated that Wnt pathway plays a significant role in OSCC among South Indian population. The study aimed to analyse mRNA and protein expression pattern of genes in the Wnt pathway and associate the expression pattern of the genes with clinical variables.

Methods: With institutional ethical clearance and consent, a prospective genetic study on 29 OSCC patients was done. Gene and protein expression from cancer and normal tissue samples : WNT-3a ,β-catenin, SFRP-1,-2,-4,-5, c-MYC and Cyclin-D are investigated using qRT-PCR and western blotting. Statistical analyses were performed using GraphPad Prism 6 for validating gene expression. Data were analyzed by the Mann–Whitney test. All tests were two tailed and $p < 0.05$ was considered significant.

Results: Expression levels of SFRP -4, -5, c-myc and Cyclin D1 were statistically significant with *p* values 0.0039, 0.0003, 0.0018 and 0.0071 respectively. The western blot analysis of SFRP-1 and c-MYC were found to be statistically increased in OSCC samples with $p<0.0001$ and 0.0305 respectively. The protein levels of SFRP-1 was found to be higher in low grade tumours when compared with high grade tumours with $p = 0.0412$. The protein expression of WNT-3A, β-Catenin, c- myc and cyclin D1 were higher in the patients with recurrence and mortality whereas SFRP 1 levels were less.

Conclusions: The decreased expression of Wnt and β catenin, with increased expression of the inhibitors and oncogenes gives a consideration that Wnt is not a major pathway involved in oral carcinogenesis among the south indian population. However, the contrasting protein expression levels in deceased samples suggest possible activity in late stages of cancer suggesting them as possible prognostic biomarkers. Further epigenetic studies needs to be done to validate the findings.

#14 – 10:40am

THE ROLE OF PRE-MEDICATION DENTAL EVALUATION IN THE PREVENTION OF MEDICATION-RELATED OSTEONECROSIS OF THE JAW IN CANCER PATIENTS: THE MEMORIAL SLOAN KETTERING CANCER CENTER EXPERIENCE

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Objectives: In this study, we evaluate the role of pre-medication dental visit in the prevention of medication-related osteonecrosis of the jaw (MRONJ) in cancer patients

Methods: The medical and dental records of all patients evaluated in the Dental Service, Memorial Sloan Kettering Cancer Center, New York for pre-antiresorptive/antiangiogenic (A/A) evaluation or post-medication evaluation between 2006 and 2015 were reviewed. A descriptive analysis was performed too identify the incidence and compare the risk factors of MRONJ in patients who received a pre-medication dental evaluation (PMDE) to patients who did not receive a PMDE.

Results: A total of 2216 patients on A/A medications were seen in the Dental Service over the 10-year period. 872 patients were seen for PMDE before commencement of A/A medications. 1344 patients were seen after commencement of A/A medications. Of the patients seen for PMDE (Group I), 8 (0.9%) developed MRONJ and for patients who did not receive a PMDE (Group II), 141 (10.5%) developed MRONJ [$p<0.0001$; Fischer's exact test]. MRONJ was precipitated by trauma in 37.5% of patients in Group I compared to 58.2% of patients in Group II [$p=0.290$; Fischer's exact test]. The oral hygiene status in both groups was similar. No patients presented with Stage 3 MRONJ in Group I while 5.7% presented with Stage 3 MRONJ in Group II. PMDE did not have an effect on the clinical course of MRONJ once it was established following conservative management.

Conclusions: In our study, the use of PMDE as a preventive strategy in the reduction of MRONJ was effective by a factor of 11.6. We recommend dental screening and preventive measures before the initiation of A/A medications and elective dental extractions should be avoided after the commencement of A/A medications.

#15 – 10:50am

16S METAGENOMIC ANALYSIS OF INTRATUMORAL BACTERIAL FLORA IN ORAL CANCER PATIENTS

*Rie Teshima, Takashi Matsumoto, Kenji Kawano, Yoshio Yamaoka, Faculty of Medicine, Oita university, Japan

Objectives: The objective of this study was to characterize the intratumoral bacterial flora in oral sqaumous cell carcinoma (OSCC) patients.

Methods: DNA was extracted from tissue samples of the tumor area and non-tumor area surrounding tumors of 11 OSCC patients (6 females and 5 males) with DNeasy Blood & Tissue kit (QIAGEN). The V3-V4 region of 16S ribosomal RNA gene (16S rRNA) was amplified and was sequenced by using the next-generation sequencer; MiSeq (Illumina). The corresponding Operational Taxonomic Unit (OTU) was assigned with the similarity threshold of 97% with HOMD+GGG reference database. Principal coordinate analysis (PCoA) was conducted based on weighted and unweighted UniFrac distances.

Results: We demonstrated a different structure of bacterial community between the tumor and non-tumor areas based on UniFrac distance. The number of bacterial species was significantly reduced in the tumor area compared with the non-tumor area, suggesting that disbiosis occured in the tumor area. The OTU abundance of *S. maltophilia*, *C. leadbetteri* and *V. atypica* was higher in tumor area than in non-tumor area. Concerning periodontal disease bacteria, relative abundance of *P. intermedia* and *T. denticola* was observed in the tumor area while, that of *P. gingivalis was* in the non-tumor area.

Conclusions: Recently, G. Hajishengallis *et al.* reported that *P. gingivalis* might cause a microbial shift, disbiosis, in periodontal disease patients. In our present study, a similar phenomenon occurred in the intratumoral bacterial flora of oral cancer patients. It suggested that other unknown organisms associated with periodontal disease might also contribute to a trigger of disbiosis in oral cavity, and involved in carcinogenesis of the oral mucosa.

#16 – 11:00am

FREQUENCY AND NATURE OF MEDICALLY COMPLEX CONDITIONS NECESSITATING DEFERRAL OF DENTAL TREATMENT

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Objectives: The aim of this pilot study is to evaluate the most common factors leading to the deferral of clearance for medically complex patients on the day of admission at Penn Dental Medicine. In addition, the most frequent medical conditions encountered by dental students and the associated factors resulting in delay of medical clearance of those patients were assessed.

Methods: A total of298 patient records were reviewed, and patients who were not cleared on the day of admission were identified. We reviewed these patients' demographic data, systemic diseases, ASA classification, the time interval between requesting a consult with a health care provider (HCP) and receiving the requested consult, and the time interval between receiving the requested consult and medically clearing the patients.

Results: Of the total patients reviewed, 88 (30%) patients were not cleared on their admission day. Of these patients, 43% were ASA II and 56% were ASA III. The most frequent medical morbidities necessitating referral to a HCP were cardiac disease (64%), uncontrolled diabetes (39%), and cancer (23.8%). We also noted that the mean duration needed to receive a response from a HCP was 28 days, and the mean duration required to medically clear a patient after receiving the outside consultation was 22 days. This variable was affected by the number of consults sent to various physicians based on the case severity. There was no statistically significant difference in the time it took physicians within the Penn medicine system and outside of it to respond to consults.

Conclusions: Many factors can contribute to the delay of the medical clearance process for medically complex patients leading to deferral of elective dental treatment. The factors influencing time to treatment need to be reevaluated and addressed in order to expedite the medical clearance process and help facilitate timely dental care for this group of patients.

#17 – 11:10am

IMPACT OF SALIVARY FLOW RATE ON FUNGAL INFECTIONS ASSOCIATED WITH STEROID TREATMENT FOR ORAL LICHEN PLANUS

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Objectives: Our purpose was to determine if salivary flow rates impact the incidence of fungal infections after steroids are used for the treatment of Oral Lichen Planus (OLP). We hypothesized lower salivary flow will increase the incidence of fungal infections after steroid use.

Methods: We conducted a retrospective study of patients with inclusion criteria: diagnosis of OLP; treatment for at least 2 weeks with steroids, salivary flow measurements, and a follow-up visit within 5 weeks of steroids being prescribed. Data collected included steroid agent and the presence/absence of clinical fungal infection at the follow-up visit(s). Associations between clinical variables were assessed by Fisher's Exact Test.

Results: The stimulated salivary flow criteria was dichotomized into "low" salivary flow ≤0.7ml/min and "normal" salivary flow >0.7ml/min. At the first follow up visit, 10 patients had an oral fungal infection (9 had low salivary flow and 1 had normal). 37 patients did not get an oral fungal infection at the follow-up visit (14 had low salivary flow and 23 had normal). (p-value: 0.0044). Eleven patients developed an oral fungal infection at any of the follow up visits (6 patients had normal salivary flow and 5 had low). Thirty patients did not develop an oral

fungal infection at any of the follow up visits (15 had normal salivary flow and 15 had low.) (p-value: 1.0).

Conclusions: There was a significant increase in oral fungal infections in OLP patients with low stimulated salivary flows following steroid treatment. There was no significant difference in rates of oral fungal infections at future visits for normal vs low stimulated salivary flow rates.

#18 – 11:20am

ORAL PARANEOPLASTIC MELANOSIS (OPM) AS A RARE PRESENTATION OF NEOPLASTIC AND NON-NEOPLASTIC DISEASE

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Objectives: The combination of oral melanosis and paraneoplastic syndrome is rare with limited literature. Pigmented lesions may be traumatic, reactive, inflammatory associated hyperpigmentation, melanocytic (focal, multifocal, diffuse), vascular, neoplastic (melanoma) or associated with systemic disease such as Addison's disease or genetic diseases such as Peutz-Jeghers syndrome. On the other hand, malignancies and/or systemic diseases are usually preceded by the presence of various paraneoplastic syndromes (PNS), which could be the indirect and/or remote effects of the metabolites produced by neoplastic cells. (PNS) include endocrine, metabolic, dermatological, haematological, neurological, rheumatological and ocular abnormalities.

Methods: We present 32 cases of oral melanosis diagnosed with neoplastic and non- neoplastic disease. These include (8) oral squamous cell carcinoma, (4) Non- Hodgkin's lymphoma, (3) Multiple myeloma, (2) Osteosarcoma, (2) Fungoid mycosis, (2) Kimura's disease, (5) HIV patients, (3) Neurofibroma and (3) Pemphigus Vegetans. Screening included physical examination, complete blood profile, Image scanning and antibody profiling for (PNS). Incisional biopsy was performed with routine and special stains to rule out malignant melanoma.

Results: Pigmentation ranged from 2.5cm – 10cm in both diffuse and linear patterns and include the tongue, buccal mucosa and retromolar region. In cases of tumours, pigmentation was unrelated to metastasis or invasion and rather a biological distinct local reaction.

Conclusion: It is important to differentiate (OPM) from symptoms directly related to the invasion of normal tissue by a tumour, by distant metastases or drug induced changes. We present cases were (OPM) is a presenting feature, particularly head and neck tumours and preceded or came in emergence with malignancy. Diagnosing this relationship early my lead to better outcomes of therapy and (OPM) often resolves with treatment. Multicenter studies are required to further investigate pathogenesis and mechanism of (OPM).

#19 – 11:30am

CHITOSAN IN THE TREATMENT OF RADIOTHERAPY INDUCED ORAL MUCOSITIS IN HEAD AND NECK CANCER PATIENTS: A RANDOMISD CLINICAL TRIAL

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Objectives: To assess the effectiveness of combining Chitosan with Zinc Sulphate as compared to that of using plain Zinc Sulphate in the prevention and treatment of radiotherapy induced oral mucositis. Response to treatment was assessed by objective and subjective scoring.

Methods: 38 Head and Neck cancer patients were randomly divided into 2 groups , Group A and B(n=18 in each). The patients were blinded. All patients were treated with conventional fractionation radiotherapy (50 Gy in 30-40 cycles). Few patients were under 40-60mg cisplatin

with or without 5-fluorouracil Chemotherapy course. Group A was control group treated with plain zinc sulphate while Group B was the treatment group subjected combined Chitosan- Zinc sulphate. Both groups were asked to apply the respective agents during the entire course of radiotherapy. Mucositis grading was assessed by WHO mucositis scale thrice week, pain was assessed by VAS pain scale, level of dysphagia and quality of life was measured by Oral Mucositis Weekly Questionnaire (OMWQ) once a week. Also the pain medications taken and breaks in radiotherpay treatment due to mucositis was noted. The patient and treatment related variables, the primary objective measures were analysed using Cramer's V test.

Results: There was no significant change in the time of onset of mucositis, it was around the 12th day in both the groups. The severity in mucositis did not show significant changes in early stages, but during the 6th week there was a significant decrease in severity levels in group B(p=0.08), pain levels (p=0.029) reduced and dysphagia levels (p=0.005) also showed significant decrease in last week of radiotherapy.

Conclusions: Chitosan when added to zinc sulphate reduces the severity levels of mucositis , decreasing pain and dysphagia levels significantly and provides good healing from radiotherapy induced mucositis.

#20 – 11:40am

QUANTIFICATION OF BLEEDING DURING DENTAL EXTRACTION IN PATIENTS ON DUAL ANTIPLATELET THERAPY

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Objectives: In view of the scarcity of clinical researches that show bleeding complications during dental extractions in patients on dual antiplatelet therapy acetylsalicylic acid (ASS) and clopidogrel, the aim of this study was to make a quantitative assessment of intraoperative bleeding and postoperative complications after dental extractions in these patients.

Methods: A case control study was conducted in patients on dual antiplatelet therapy (SG - Study Group, n=38) and in patients who did not use these medications (CG – Control Group, n=35). The following exams were requested: complete blood cell count, blood coagulation tests and platelet aggregation by Verifynow® (SG) and by turbidimetry (CG). In the intraoperative period, the quantity of bleeding was measure by collection of aspirated blood. Comparisons between means of continuous variables were performed by the Student's-*t* test and Mann-Whitney test. Comparisons between categorical variables and the groups were evaluated by the Chi-square test. For the main outcome (bleeding) a generalized linear model was adjusted with Gama distribution and log link.

Results: During the surgical procedure, the mean volume of blood lost in CG was 6.1 mL, and in SG, 16.07 mL (p=0.002), with maximum bleeding being 100 mL (SG). The time of surgical procedures was longer in SG than in CG (p=0.036). The mean volume of blood lost per minute was 0.6 mL/min (CG) and 1 mL/min for SG (p=0.001), with local hemostatic methods being sufficient to control bleeding, and there was no postoperative bleeding complication in any case.

Conclusions: Patients on dual antiplatelet therapy presented a larger volume of bleeding, but this could be controlled by means of local hemostatic measures. Therefore, there is no need to suspend any of the two dual antiplatelet therapy medications before dental extractions.

#21 – 11:50am

PRESCRIPTION OF POTENTIALLY INAPPROPRIATE MEDICATIONS TO GERIATRIC PATIENTS AT A DENTAL SCHOOL

Jessaca York, *Arwa Farag, Bhavik Desai, Tufts University School of Dental Medicine, USA

Objectives: The Beers Criteria for potentially inappropriate medication use in older adults and the Screening Tool of Older Persons' Potentially Inappropriate Prescriptions (STOPP) are consensus-driven lists of potentially inappropriate medications (PIMs) in geriatric patients. The objective of this investigation is to determine the frequency of PIMs prescribed for geriatric patients by clinicians and trainees at the Tufts University School of Dental Medicine (TUSDM) over a three year period.

Methods: Beers Criteria and STOPP list were studied to determine which medications were used in dentistry and dental specialties. PIMs thus identified included opioids, muscle relaxants, tricyclic antidepressants, benzodiazepines, and non-steroidal anti-inflammatory agents (NSAIDs). A retrospective chart review of patients at TUSDM aged 65 and above was performed for calendar years 2013, 2014 and 2015 on axiUm, the electronic health record system for TUSDM. Search queries were generated for new prescriptions of medications identified as PIMs.

Results: Out of 15569 geriatric patients studied over a 3-year period, 895 (5.75%) and 840 (5.4%) received new prescriptions for opioids or NSAIDs respectively at TUSDM. New prescriptions for muscle relaxants, benzodiazepines and tricyclic antidepressants were given to 65 (0.42%), 44 (0.28%) and 38 (0.24%) geriatric patients respectively. Muscle relaxants and tricyclic antidepressants were prescribed exclusively by oral medicine and orofacial pain providers. Prescription of opioids, NSAIDs and muscle relaxants was distributed across various postgraduate and undergraduate providers at TUSDM. Statistically significant difference in prescription of these medications across the calendar years 2013, 2014 and 2015 were not noted.

Conclusions: PIMs are prescribed at low percentages to geriatric patients in a dental academic setting. Prescription of opioids, benzodiazepines and NSAIDs across undergraduate and postgraduate clinics may necessitate appropriate training on use of these medications in dental curricula. Oral medicine providers who routinely prescribe PIMs should use them cautiously in geriatric patients.