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 × 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 × 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 HMGA2rearrangements, 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.

DR. HANS PRAKASH SATHASIVAM, PROF. PHILIP SLOAN, DR. RALF KIST, 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.

DR. JESSICA LISSETE MALDONADO MENDOZA[A], DR. VELIA RAMIREZ-AMADOR[A], DR. GABRIELA ANAYA SAAVEDRA[A], DR. ERIKA RUÍZ GARCÍA[B], DR. HÉCTOR MALDONADO MARTÍNEZ[B], DR. EDITH FERNÁNDEZ FIGUEROA[F], DR. ABELARDO MENESES GARCÍA[B]. [A] UNIVERSIDAD AUTÓNOMA METROPOLITANA XOCHIMILCO, [B] NATIONAL CANCER INSTITUTE OF MEXICO, [F] COMPUTATIONAL GENOMICS, NATIONAL INSTITUTE OF GENOMIC MEDICINE

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 NRASQ61K, BRAFV600E, CKITL576P, K642E, MITFE318K and PTENR130;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 (Q1-Q3 = 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 BRAFmutation, 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.

DR. AMBER KIYANI[A], DR. HASSAN AQEEL[B], MR. ASJID TANVEER[B], MR. WAJAHAT NAWAZ[B], DR. SYED ALI KHURRAM[C]. [A] RIPHAH INTERNATIONAL UNIVERSITY, [B] NATIONAL UNIVERSITY OF SCIENCE AND TECHNOLOGY, [C] 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 × 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.

DR. RANIA YOUNIS[A], DR. SONIA SANADHYA[B], DR. IOANA GHITA[C], DR. INGY H. ELKOMARY[A], DR. HAIYAN CHEN[A]. [A] UNIVERSITY OF MARYLAND, SCHOOL OF DENTISTRY, [B] UNIVERSITY OF MARYLAND BALTIMORE, [C] UNIVERSITY OF MARYLAND

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.

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. 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.

DR. RASIKA ILLEPERUMA[A], MR. KASUN BANDARA[B], DR. DO KYEONG KIM[C], PROF.