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BOOK OF ABSTRACTS

14th Biennial Congress of the European Association
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on Oral Medicine VII



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INDEX OF ABSTRACTS

1. Crispian Scully Lecture, Thursday	2
2. EAOM Position Papers, Friday	3
3. Parallel Session 1 Prediction of cancer development and prognostic evaluation, Friday	6
4. Parallel Session 2 Case Presentations, Friday	9
5. The barrier functions of the mucosa, Friday	17
6. Parallel Session Slemhinneförändringar (In Swedish), Friday.....	19
7. Immunomodulating treatments of oral conditions, Friday.....	20
8. Posters, Friday	21
9. The World Workshop on Oral Medicine VII, Saturday	83
10. From lab to patient, Saturday.....	84
11. Oral Scientific Presentations I, Saturday.....	85
12. Oral Scientific Presentations II, Saturday.....	90
13. Posters, Saturday	95

Sjögren's Syndrome: A disorder expanding from benign to malignant lymphoproliferation

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Sjögren's Syndrome (SS) is an ideal model to study the pathogenesis of autoimmune disorders, as well as the pathogenesis of lymphoid malignancy, because: a) the affected tissue (labial minor salivary glands) is easily accessible without significant morbidity, b) the syndrome has a wide clinical spectrum expanding from organ-specific (exocrine glands) to systemic (kidneys, liver, lungs, vessels) autoimmune disorder, c) can be associated with every other autoimmune disorder and d) in a considerable number of patients (5-10%) evolves to B lymphocyte malignancy. In today's presentation we will explore (1) the cellular and molecular aspects of the labial minor salivary gland pathologic lesion, (2) the risk markers (clinical, laboratory and molecular) that can predict the development of lymphoid malignancy in SS patients, (3) the clinical and pathologic characteristics of lymphoma in SS, and (4) effective therapeutic interventions for high-grade lymphoma malignancy in SS.

EAOM Position Papers: an introduction

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Two of the fundamental aims of EAOM are to promote education and improve clinical care in the field of Oral Medicine. Position papers are tools that have been used successfully in other fields to express professional opinions and recommendations on various issues. Several international medical and dental societies have produced position papers on a number of diseases, but they remain a relatively uncommon endeavor in Oral Medicine. During the last bi-annual EAOM meeting in Turin, a group of members, led by the incoming President, met to discuss the best way to produce recommendations on the diagnosis and management of some key oral diseases, in a way that could reflect the EAOM consensus without necessarily implying unanimity. It was chosen to develop position papers on 4 common oral disorders (namely oral lichen planus, oral leukoplakia, recurrent aphthous stomatitis and burning mouth syndrome), for which systematic reviews on treatment were already available. A devoted sub-committee was established, and leaders for the different working groups were identified, who in turn invited international experts to join them. Before publication, the drafts they produced will be presented in Gothenburg and circulated to EAOM members for comment.

Oral lichen planus

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Oral lichen planus and lichenoid lesions (OLP/OLL) include a group of chronic inflammatory conditions of the oral mucosa of different etiopathogenesis, management and prognosis. OLP/OLL have the potential of affecting the quality of life of affected individuals, as they can cause notable long-standing painful symptoms and in some instances increase the risk of oral cancer development. Some OLP/OLL represent oral manifestations of systemic disorders and adverse effects to medications, therefore requiring comprehensive investigations and sometimes suspension of relevant agents. The group of OLP/OLL continues to expand, with the most recent addition being lichen planus-like mucosal lesions as an immuno-related adverse effect (IRAE) of cancer immunotherapy. There remains no consensus regarding the classification of OLP/OLL, as well as their diagnosis and management. This position paper presents a summary of current knowledge utilizing both published data and expert opinion, with the aim of providing a comprehensive classification of OLP/OLL and recommendations on diagnosis and treatment options.

Leukoplakia

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There is substantial and concerning lack of agreement on diagnosis and management of oral leukoplakia. The EAOM has commissioned this position paper to be developed by an expert panel, to be guided by the literature and to represent the consensus view of members of the EAOM on the diagnosis and management of oral leukoplakia. The methodology for preparation of the position paper included an initial literature search which focused on published meta-analyses and systematic reviews. Grading of the evidence and recommendations followed the Grading of Recommendations Assessment, Development and Evaluation (GRADE) and the Scottish Intercollegiate Guidelines Network (SIGN) which also include provision for “Good Practice Points” which are recommended best practice based on the clinical experience of the position paper development group. Parallel to the review, a survey was developed by the expert panel and circulated to all members of the EAOM to gauge their opinion on the topic. This presentation will highlight the conclusions of the review, the recommendations of the expert panel, the level of evidence, and the findings of the EAOM-commissioned survey on the diagnosis and management of oral leukoplakia.

Recurrent aphthous stomatitis

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Recurrent aphthous stomatitis (RAS) is the most frequent form of inflammatory oral ulceration. It presents as intermittent episodes of oral aphthous ulcers in otherwise healthy individuals. Incidence varies between different population groups. It often presents in late childhood and ameliorates into early adulthood. Diagnosis of RAS is based on history, clinical examination, and exclusion of potential contributory systemic or medical conditions. A presentation of RAS in association with a variety of systemic disorders and medications is usually referred to as Aphthous like Ulceration (ALU). The history and presentation of ALU is almost indistinguishable from RAS. There is currently no cure for RAS and treatment is aimed to palliate symptoms, and reduce the number and severity of episodes. The evidence base available to guide clinicians in their management of this condition is of a low quality. RAS is initially managed with conservative measures and a variety of topical therapies are available. Systemic treatments are usually reserved for more extensive or recalcitrant cases. This paper will summarise the current clinical experience of diagnosis and management of RAS.

Burning mouth syndrome

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Usually, to define the oral disorder characterized by an intraoral burning sensation for which no medical or dental cause can be found, the community of oral medicine experts applies the expression burning mouth syndrome (BMS). Albeit BMS is a common and chronic problem that has a negative impact on quality of life, unfortunately no treatment seems to offer assured results for the majority of the patients. Several aspects of BMS are uncertain: probably, what we know on BMS is less than what we do not know on it. But, for the same reason, it is necessary to share experience, research and knowledge in order to improve the management of patients suffering from this elusive disease.

The aim of this presentations is to stress the uncertainties and the doubts about BMS. In particular, we have to consider that, to date, (i) we lack a proper and largely accepted definition of BMS; (ii) we don't know the real epidemiology of BMS; (iii) despite recent advances in understanding peripheral and central nervous system changes related to the pathogenesis of the disease, it is not clear what exactly is triggering them; (iv) we lack a diagnostic test for BMS; (v) the clinical interpretation of VAS or other multidimensional pain scales is still under debate.

Probably, considering what we don't know on BMS could improve our research.

3. Parallel Session 1 Prediction of cancer development and prognostic evaluation, Friday

Molecular biology, micro-RNA, epigenetics, predictive markers and diagnostics

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The clinical risk classification and the classical histological assessment looking for epithelial dysplasia still represent the common practice for clinicians facing oral mucosal lesions. Even if molecular biology offers several tools in order to explore predictive biomarkers related to the progression of potentially malignant disorders, they have not entered the routine clinical practice yet.

Cancer is a genetic disease related to both damages to DNA sequence and dysregulations in gene expression, which are equally if not more important than DNA mutations in oncogenesis and tumour progression.

Gene expression is regulated by epigenetic mechanisms with a high level of interaction, where the non-coding RNA transcripts have a paramount role. All these mechanisms are reversible, modulated by environmental factors and tissue specific. Therefore, they could offer reliable objective data to be used for prognostic analyses only if cases are fully characterized in order to avoid confounders.

Facing to epigenetics, multiple and interconnected steps imply huge data requiring a bioinformatic approach not only to investigate potential networks originating from single events, but also to create panels able to improve the diagnostic/prognostic accuracy.

To date, most of potential biomarkers were reported only once in cross-sectional studies and they lack any further validation. Prospective longitudinal studies are needed to develop validated panels able to accurately discriminate premalignant conditions from reactive and inflammatory lesions.

Medical imaging compared to conventional techniques, advances in diagnostic optical imaging

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Advances in medical and optical imaging have impacted the way we diagnose, stage and manage oral squamous cell carcinoma (OSCC) and oral potentially malignant disorders (OPMD) of the oral cavity. Soft tissue optical imaging is a reasonably new approach to assessment of OSCC and OPMD. These optical imaging modalities cover a wide variety of approaches including reflectance, fluorescence, and spectroscopy, with inherent strengths and weaknesses for each category. The intersection between optical imaging and molecular pathology has facilitated the understanding of optical imaging approaches, but has also spurred a deeper understanding of the molecular surgical margin and complete ethical resection of lesions and tumours. This presentation will discuss optical imaging approaches as they relate to OSCC and OPMD, with particular emphasis on clinical and surgical approaches to patient care, with underlying supportive molecular studies that bridge the gap in our knowledge but also guide the way forward for wider adoption of adjunctive imaging devices. Diagnostic and surgical algorithms will be highlighted to facilitate incorporation of optical imaging into routine clinical practice.

3. Parallel Session 1 Prediction of cancer development and prognostic evaluation, Friday



Biological markers for risk prediction of early premalignant lesions

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Entry to the “Big Data” era provides an opportunity to globally expand our population of study to evolve new, more comprehensive strategies to answering the “who-, when-, and how-to-treat” trio of questions that underlie decision-making for individuals seen in clinic with premalignant lesions. Loss of heterozygosity (LOH) analysis (Zhang *et al.*, 2012) is a genetic archetype of such studies – used to sort patients with mild or moderate oral dysplasia into low-, intermediate- and high-risk groupings in a reproducible fashion, with an aim to guiding intervention decisions. This presentation will discuss the evolution of this paradigm, with an examination of its utility within different sub-groups (e.g., smokers and non-smokers), and the exploration of alternate and/or complementary ways in which to stratify risk, looking at underlying biological change. This evolution includes the development and validation of stratification based on quantitative tissue phenotype (QTP) to provide a means of examining the consequence of genetic damage at a tissue and cellular level, and the integration of QTP to genetic (LOH) markers to better sort cases and to provide greater confidence to support intervention. Finally, it will look at new frameworks that pull “omic” and other biological data into the analysis of data from repeated visits of patients in longitudinal cohorts. The aim of such analyses is to define biological states of such lesions and their association with lesion behaviour over time. The goal is to facilitate the evolution of new concepts and risk patterns that will guide the next generation of risk

3. Parallel Session 1 Prediction of cancer development and prognostic evaluation, Friday

Chromosome translocations and fusion oncogenes in the genesis of salivary gland tumors

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Salivary gland cancers constitute a clinically and histopathologically heterogeneous group of lesions that are often diagnostically and therapeutically challenging. Because of the limitations in what surgery and radiotherapy can provide for these patients, there is an urgent need for new knowledge about the molecular pathogenesis of these tumours. However, recent discoveries of a translocation-generated gene fusion network in salivary gland cancers have provided new possibilities for both improved diagnosis and development of new therapies. The fusions encode novel fusion oncoproteins or ectopically expressed oncoproteins. The key targets of the translocations are transcription factors, transcriptional coactivators, and tyrosine kinase receptors involved in e.g. cell cycle regulation and growth factor signalling. Examples of clinically significant gene fusions that will be discussed are the *CRTC1-MAML2* fusion in mucoepidermoid carcinoma, the *MYB-NFIB* fusion in adenoid cystic carcinoma, and the *ETV6-NTRK3* fusion in secretory carcinoma. In addition to being key driver events, these fusions have proved to be useful as diagnostic and prognostic biomarkers. Importantly, several fusions or pathways activated by the fusions are druggable, thus providing the basis for the development of new therapeutic strategies for these patients.

Management of facial deformity (orofacial granulomatosis) and parental concerns of bullying - a report of two cases

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Bullying in childhood and adolescence is known to cause psychological distress, can be the cause of physical self-harm, and can affect mental health in later life. With the evolution of technology and increased use of social media by school children, the ways in which bullying can occur has changed. Schools have anti-bullying policies, and numerous anti-bullying charities exist.

A physical appearance or disability which is different from the norm is often the cause of bullying. Facial deformity is obvious to peers, and can be difficult to hide, and this is often of concern to parents. As well as orofacial granulomatosis (OFG), disorders such as Moebius syndrome, Treacher-Collins, port-wine stains and cleft lip & palate all have elements of facial deformity and can result in teasing or bullying.

We report 2 cases of facial deformity due to OFG, one in a patient with Down's Syndrome. In both cases, the obvious lip swelling and inflammation associated with OFG was of great concern to the parents as being a cause of possible bullying for their child. The first-line management of dietary modification/avoidance did not have the desired effect on the lip swelling, therefore it was decided to provide active intervention in the form of intralesional steroids. This produced a good clinical outcome, with which both children were pleased.

Both children's parents were overjoyed and relieved at the clinical outcome; they explained that the reduction in lip swelling had greatly reduced their concerns for their child's future risk of bullying and psychological distress.

Jacob's syndrome. Presentation of three clinical cases

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Introduction:

Objective: To present three new clinical cases of Jacob's Syndrome, a rare entity that is characterized by the formation of a pseudoarticulation between the coronoid process of the mandible and the internal face of the malar bone (body and/or zygomatic arch). Up to 2013, 39 adequately documented cases had been published.

Material and methods: Three cases of this syndrome diagnosed between 2011 and 2017 are presented. Clinical information, imaging studies (panoramic radiography, magnetic resonance and computerized tomography), anatomopathological study, treatment and evolution are included.

Results: In addition to the intrinsic rarity of the process, the three cases presented the following singularities: diagnosed in males (ratio male/female 2: 1 in the bibliographic review -BR-); bilateral (unilateral/bilateral ratio 2: 1 in BR); severe limitation of the mandibular opening without any

other clinical manifestation (60% of patients with facial asymmetry in BR); long evolution time (none of the patients was able to specify it but in all three it was not less than 10 years); treated with bilateral coronoidectomy by intraoral approach without intervention on the malar body or zygomatic arch and subsequent physiotherapy. After an improvement of the mandibular opening in the immediate postoperative period, all three presented a severe restriction of mobility between 1 and 3 months after the intervention, which was gradually resolved until reaching mandibular opening values in the range of normality.

Conclusion: Jacob´s Syndrome should be included in the differential diagnosis of patients with severe limitation of the mouth opening, especially if it is longlasting and asymptomatic.

Same PTEN gene mutation found in two relatives with Cowden Syndrome

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Introduction: Cowden Syndrome (CS) is an autosomal-dominant genodermatosis usually diagnosed during the I-II decades of life, with an estimated prevalence of 1:200,000.

In 85% of cases a mutation of PTEN gene (chromosome 10) can be found.

The most important clinical implication related to CS is an increased risk of malignancies.

Objectives: Two relatives (mother and son) with CS related to the same mutation of PTEN gene are described.

Material and Methods: A 25 year-old male was referred to our department for the presence of multiple verrucous lesions involving multiple oral mucosal subsites and the lips. He mainly complained of lesions involving the upper and lower vermillion. At admission he was accompanied by his mother. A potentially similar clinical aspect was noticed and the following full examination confirmed the presence of widespread oral papillomatous lesions. Her past medical history was positive for endometrial cancer. In both patients an incisional biopsy was performed, showing features consistent with CS (papillomatosis and chronic inflammation).

Both the patients fulfilled the clinical diagnostic criteria for CS and they were referred for adjunctive genetic assessment which revealed the same mutation on PTEN gene.

Results and Conclusions: Cowden Syndrome implies the almost invariable presence of mucocutaneous lesions, so that the presence of diffuse oral papillomatosis can well be the first sign suggesting a potential diagnosis of CS. A correct interpretation of such signs is of utmost importance for the increased neoplastic risk associated to CS.

Localized juvenile spongiotic gingival hyperplasia: report of two cases

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Introduction: Localized juvenile spongiotic gingival hyperplasia (LJSGH) is a recently described distinct oral entity of unknown etiology. It affects young patients, most commonly as a solitary reddish mass located on the anterior maxillary gingiva. Even though its clinical appearance is frequently characteristic, it may exhibit variations and mimic other conditions.

Objective: The presentation of two cases of LJSGH showing differences in their clinical and histopathologic characteristics.

Material and Methods: The first patient was a 9-year-old boy referred for evaluation of a painless red plaque of granular surface on the labial gingiva of the upper right lateral incisor. Biopsy and histopathologic examination revealed a non-keratinized hyperplastic epithelium with extended intercellular edema (spongiosis) and inflammatory exocytosis. In the second case, a 10-year-old female patient presented with a red papillary, pedunculated and hemorrhagic nodule on the facial gingiva of the upper right central incisor. The lesion was excised and microscopic examination showed papillary morphology of the epithelium with areas exhibiting spongiosis and exocytosis of neutrophils. A microscopic diagnosis of LJSGH was rendered in both cases, further supported by immunohistochemical reactivity for CK19.

Results and Conclusion: LJSGH is a benign lesion showing a spectrum of clinical characteristics, which may be reminiscent of other gingival growths. Microscopic examination establishes the diagnosis, while positivity for CK19, a marker expressed in the junctional epithelium, may be useful in equivocal cases. Simple surgical excision with proper follow-up is recommended.

Oral lichen planus and thymoma. Report of two cases

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Background: Arising from the thymus epithelial cells, thymoma is a mediastinal neoplasia frequently associated with autoimmune diseases, especially myasthenia gravis. But a relatively rare association is encountered between thymoma and oral lichen planus (OLP). OLP is a chronic inflammatory pathological condition caused by autoreactive lymphocytes T which targets keratinocytes. In the literature, there are about 30 reports of lichen planus associated with a thymoma. Most of the reported OLP cases were erosive clinical types.

Clinical cases: We report 2 cases with OLP associated with thymoma. The patients were referred to our clinic in one or two months after the surgical removal of a mediastinal tumor diagnosed as thymoma type A, respectively type AB. The OLP diagnosis was established by clinical and histological findings in both cases. One patient (UL) was a 63 year-old male, diagnosed with reticular OLP who accused reduced oral discomfort. During the clinical evolution, the oral lesions reduced and eventually, after 5 years, they remitted completely. The other patient (BN) was a 61 year-old who presented an acute ulcerative OLP and an affirmative onset of 2 years duration.

Extended oral ulcers involved dorsal tongue, labial, and bilateral buccal mucosa. In this case, the oral lesions presented a slight response to topical corticosteroid treatment. For 4 years follow-up there were periods of outbreaks and remission.

Conclusion: To date, the correlation between thymoma and OLP is not completely understood, but the dysregulated functioning of thymus-derived regulatory T cells may play a role in triggering OLP with a variable clinical aspect.

Oral aphthous-like ulcers associated with a selective PI3K inhibitor

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Introduction: Inhibitors of the PI3K/Akt/mTOR signaling pathway represent novel antineoplastic agents controlling cell cycle and metabolic processes of cancer cells. mTOR inhibitors have been associated with various toxicities, including mTOR-inhibitor associated stomatitis (mIAS). Copanlisib is a pan-class I PI3K inhibitor, recently used for the management of patients with relapsed or refractory lymphoma.

Objective: To report a case of multiple oral aphthous-like ulcers in a patient receiving Copanlisib for lymphoma.

Case details: A 69-year-old man was referred for evaluation of multiple aphthous-like ulcers in the oral mucosa of 2 weeks duration. He was diagnosed with non-Hodgkin's splenic B-cell marginal zone lymphoma 2 years ago, initially treated with rituximab. Due to lymphoma relapse, he was managed with Copanlisib (on 28-days cycles) for the last 6 months. For prevention of treatment complications, he was also on allopurinol, valacyclovir, trimethoprim sulfamethoxazole and omeprazole. Clinical examination revealed scattered, painful, aphthous-like ulcerative lesions of various sizes; the lesions were covered by grayish-white pseudomembranes and exhibited irregular margins with perihelal erythema. The patient was treated with topical corticosteroids, along with miconazole gel and chlorhexidine rinses, with complete remission of the lesions within two weeks. Considering the clinical similarity of the lesions with mIAS and the fact that mTOR and PI3K inhibitors target the same signaling pathway, it is suggested that the oral ulcers may be a direct effect of Copanlisib treatment.

Conclusions: New generation PI3K inhibitors, such as Copanlisib, may provoke oral toxicities, which, similar to previously described mIAS, might present as aphthous-like ulcers.

Oral ulceration with bone sequestration: report of eight cases

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Introduction: The term oral ulceration with bone sequestration (OUBS) describes an intraoral ulcer with no evident etiologic cause accompanied by jawbone sequestration. Anatomic sites involved include the mylohyoid ridge, tori and exostoses, and almost all of the 24 cases reported in the English literature developed in the mandible.

Objectives: To report eight new cases of OUBS.

Material and Methods: This is a retrospective study of 8 patients with OUBS, diagnosed during the years 2007-2017. Inclusion criteria comprised the presence of an oral ulceration without evident etiologic cause, exposed bone and no past or present use of drugs known to induce osteonecrosis.

Results: There were 5 males and 3 female patients, aged 27 to 75 years. Four cases involved the mandibular mylohyoid ridge and one the mandibular anterior labial gingiva. The maxillary, posterior buccal or palatal gingiva were affected in two and one patients, respectively. Six patients reported pain, swelling and difficulty in mastication. The medical history in all cases was non contributory. Radiographic evaluation was within normal limits. In all cases the exposed bone was removed under local anesthesia, followed by topical application of chlorhexidine or hyaluronate-sulcralfate gel. Microscopically, fragments of lamellar bone with empty bone lacunae, no osteoblastic/osteoclastic activity, and bacterial colonization were observed.

Conclusions: The recognition of an oral ulcer with jaw sequestration in areas of thin covering mucosa, i.e. exostoses, tori or the mylohyoid ridge, in the absence of any evident etiologic cause is suggestive of OUBS. Sequesterum removal results in complete healing.

mTOR inhibitor-associated stomatitis breakthrough in a kidney recipient patient

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Introduction: The mammalian target of rapamycin inhibitors (mTOR) are potent agents with both antineoplastic and immunosuppressive properties, represented by sirolimus, everolimus and temsirolimus. Oral mucosa toxicity, the mTOR inhibitor-associated stomatitis (mIAS), is frequently seen in patients during mTOR inhibitors therapy, and described as well circumscribed single or multiple, shallow, ovoid-shaped and painful ulcerations, resembling either aphthous stomatitis or herpetic lesions.

Objective: To present the case of a kidney-recipient who developed multiple mIAS after antifungal therapy.

Material and methods: A 52-year-old Caucasian man was referred for the diagnosis of persistent multiple ulcers. Medical history revealed the use of the immunosuppressants

prednisone, leflunomide, everolimus and the current use of voriconazole for the treatment of aspergillosis, resulting in high serum levels of everolimus. During physical examination, dermatitis (angioedema, pruritus, ulcers), were identified on lower and upper limbs. Multiple mIAS lesions located on lips, tongue and buccal mucosa, were identified during oral examination. Prompt everolimus dose adjustment was made in order to reduce the associated toxicity, however, mIAS lesions and dermatitis were persistent. We managed mIAS with the association of topical corticosteroids and low-level laser therapy, with good results.

Conclusion: mIAS were observed even when the therapeutic dosage of everolimus was achieved and the withdraw of voriconazole was made, demonstrating the long-lasting nature of these lesions.

Orofacial granulomatosis post haematopoietic stem cell transplantation

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Introduction: Granulomatous inflammatory diseases such as sarcoidosis are infrequently reported after haematopoietic stem cell transplantation (HSCT). To date there are no published case reports of orofacial granulomatosis (OFG) in the post-HSCT patient population.

Objectives: To present a case of OFG in a post-HSCT patient.

Case report:

A 35 year old female reported a 1 year history of episodic facial swelling involving the cheeks and upper lip. This was initially unilateral, became bilateral and each episode lasted for up to one month. There were no obvious triggers. She reported no other significant systemic symptoms. There was no response to antihistamines.

She had received a myeloablative matched unrelated donor allograft for acute myeloid leukaemia 6 years previously, with an uncomplicated post-transplant course, and has no manifestations of chronic graft-versus-host disease.

On examination there was diffuse swelling of the upper lip and over the mandible bilaterally. Rubbery masses were palpated within the inferior aspect of both cheeks. There was granulomatous-appearing tissue on the buccal mucosa bilaterally.

Histopathology of an incisional biopsy of the buccal mucosa demonstrated non-necrotising granulomata. Staining for acid-fast bacilli was negative. Investigations including chest imaging showed no significant abnormalities.

The swelling resolved rapidly with oral prednisolone. A cinnamon and benzoate-free diet was commenced, as well as topical therapy with tacrolimus 0.1% ointment. Review of response to treatment is ongoing.

Conclusions:

To our knowledge this is the first published case report of OFG in a post-HSCT patient.

Epithelial haemangioma of the buccal mucosa: a case report

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Introduction: Epithelioid Haemangioma is an uncommon benign neoplasm which usually manifests as red-brown papules or subcutaneous nodules in the head and neck region. It is rarely reported as lesions of the oral mucosa.

Materials and Methods: A 23 year old white british male presented with a 2 month history of swelling in his left buccal mucosa, distal to tooth (FDI) 28. It was asymptomatic and had gradually increased in size during this time. On examination there was a firm, round, sessile lump covered in oral mucosa with variable ulceration. It was firm beyond the depth of oral mucosa into deeper connective tissue. An incisional biopsy was taken and the diagnosis of pyogenic granuloma was made based on clinical and histopathological findings. Surgical excision was subsequently arranged coincidentally with the removal of teeth (FDI) 18 and 28 under general anaesthetic.

Results: Definitive pathology sampling showed proliferation of plump endothelial cells (CD31, CD34 and ERG positive) with variably sized vesicular nuclei and prominent nucleoli. These formed vascular channels on a background rich in neutrophils. The histopathology and immunohistochemistry confirmed a diagnosis of Epithelioid Haemangioma. Clinical review at 3 months showed no evidence of recurrence.

Conclusions: This case highlights the importance of the complete excision of benign abnormalities of the oral mucosa. The definitive diagnosis may have been missed following the initial incisional biopsy due to indeterminate clinical information provided on the pathology request or an inadequate depth of sample.

Swelling in the zygomatic region as a first sign of non-small cell lung cancer: presentation of two cases

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Introduction: The head and neck region is an uncommon site for distant metastasis of primary tumors. It comprises approximately 1-2% of all malignancies found in this area. The zygomatic region is a rare location for distant metastases and only a few cases have been described in literature.

Cases: We present two patients with a swelling in the zygomatic region as an initial presentation of metastasized non-small cell lung cancer (NSCLC).

Discussion: The unusual feature in both cases is the atypical location of the metastasis in the zygomatic region. Only a few single case-reports have described previously. Both patients had NSCLC with an activating epidermal growth factor receptor mutation.

Conclusion: An atypical lesion in the zygomatic region may be the first presentation of a metastasized primary tumor located outside the head and neck region.

Oral amelanotic melanoma: a silent killer

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Introduction: Melanomas are malignant neoplasms of melanocytes.

The occurrence on the mucosal regions of head and neck is extremely rare accounting for less than 1% of all melanomas, half of them in oral cavity.

Objectives: Our aim is to describe the clinical characteristics, diagnostic approach, histopathologic findings and management of an amelanotic melanoma.

Material and Methods: A 72 years old female was referred in our clinic with a lesion on the left side of the hard palate and the alveolar ridge mucosa, which was covered completely by a full denture. The lesion was nearly asymptomatic, reddish, of irregular shape, relatively well circumscribed and presented an exophytic region with rough and irregular ulceration surface. Differential diagnosis included oral squamous cells carcinoma (OSCC) and trauma/reactive lesion denture related, whereas the initial diagnosis based on the clinical characteristics of the lesion was OSCC.

Results: Histopathological examination of the incisional biopsy specimen revealed a malignant neoplasm with large or medium size cells, either epithelioid or spindle-shaped, whereas there was no demonstration of melanin production. Positive immunohistochemical investigation with HMB-45 and S-100 established the diagnosis of an amelanotic oral malignant melanoma.

Conclusions: Less than 15% of the oral mucosa melanomas produce evident pigmentation and are known as amelanotic melanomas. Generally they present an asymptomatic period, and thus they are diagnosed late. Melanomas especially when amelanotic, can histologically mimic a variety of undifferentiated or poorly differentiated neoplasms. In such cases, immunohistochemistry provides a valuable tool for distinguishing such melanomas from other malignancies.

Mouth, lung and gastrointestinal tract; mucus and mucins

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The MUC5B and MUC7 mucins are two important components of saliva and are important in protecting and cleaning the mouth and teeth. This mucus system will be compared structurally and functionally to that of the lungs and gastrointestinal tract. In the normal lung, the MUC5B mucin forms long mucus bundles that sweep and clean the respiratory tract surface. The MUC5B mucin likely forms similar type of bundles when produced in the salivary glands. Upon infection or chronic disease of the lung, the mucus system is converted to an attached mucus layer similar to what is found in the large intestine. Here the mucin forms a stratified and attached mucus layer that protects the underlying epithelial cells. This is similar to what happens in the lungs at acute and chronic diseases. Such lung mucus has to be coughed up as sputum. The mucus systems of these locations have similar functions in that they all clean and protect the epithelium and in the mouth the surface of the teeth.

Gastrointestinal tract; mucosal microbiome in health and disease

Greiner Thomas

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The human gut is inhabited by trillions of bacteria, the microbiota, that have co-evolved with us for the benefit of both man and microbe. The microbiota colonize the host at birth and gradually develops into a complex ecosystem. The collective microbial genome, the microbiome, carries more than 100 times more genes than the human genome, providing us with functions that the human genome never needed to acquire. It interacts with dietary compounds to produce a large number of bioactive compounds that affects the host in many ways. The microbiota benefit the host by providing energy through the digestion of dietary fibers, it protects the host from pathogenic infection and it contributes to maturation of the host immune system. In recent years, changes in gut microbiota composition has been associated with a vast number of diseases such as intestinal inflammation and colon cancer, Type 2 Diabetes (T2D) and cardiovascular disease and even behavioral abnormalities. In previous studies we have identified oral bacteria in atherosclerotic plaques and shown that we can classify T2D based on microbiota composition. Here I will discuss the different ways in which the microbiota can affect host physiology and how we have identified causal relationships between microbiota and several aspects of metabolic disease and how signals from the gut microbiota may contribute to disease.

Oral biofilm - friend or foe

Svensäter Gunnel

Malmö University, Malmö, Sweden

Mankind and microorganisms have co-evolved intimate together during millions of years. The resultant superorganism is composed of equal number of eukaryotic and prokaryotic cells where the microbial part is indispensable for our health and well-being. For example, the natural microbiome confers resistance to colonization by true pathogens, provide anti-oxidant properties and supports host defense functions. Despite the closeness to the nose and the pharynx, the mouth harbors several distinct microbiomes due to the special local environmental conditions. Using 16S ribosomal RNA gene community profiling over 600 different microbial species have been identified of which 100-200 can be found in a single individual. Together these microbial communities have become the experts in exploiting saliva or plasma glycoproteins as the sole nutrient source and surviving huge fluctuations in carbohydrate levels. In the oral cavity, as well as on other surfaces of the body the, biofilms are the natural habitat of the microorganisms. They live exclusively in complex multi-species aggregates embedded in self-produced matrix and salivary or gingival exudate proteins give rise to quite stable and stress resistant communities.

In this talk I will present acquisition of the normal oral microbiome, essential biofilm interactions at biosis and oral health and how environmental perturbations of the ecosystem can give rise to dysbiosis and oral diseases. Furthermore, I will introduce different views of the cause of biofilm-mediated oral diseases that has occurred over time, elaborate on research strategies to identify novel predictive biomarkers for and how risk assessments for oral disease can be approached in the future. At last – can new treatment methods be found and validated?

6. Parallel Session Slemhinneförändringar (In Swedish), Friday

Oral mucosal diseases you may encounter in everyday clinical practice

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A presentation of common oral lesions that you might encounter in your everyday work as a dentist. How to recognize, diagnose, treat and/or when to refer.

The presentation will bring up clinical examples of some of the most common oral lesions that can be seen in a dental practice. How to recognize mucosal changes and to make the dental practitioner feel more secure in what and when to refer to a oral medicine specialist clinic.

We will also, in short terms, describe the diagnosis in every case presentation and discuss possible etiology, appropriate diagnostic techniques and treatment suggestions. Possible differential diagnoses to all the cases will also be discussed.

Furthermore, we will highlight the importance to be able to recognize alterations in oral lesions.

The case presentations will range from gingival hyperplasia to various white and red mucosal lesions, with or without dysplasia or malignant transformation.

(The presentation will be held in Swedish)

Immunomodulating treatments of oral mucosal diseases

Porter Stephen

UCL Eastman Dental Institute, London, UK

Oral mucosal disease often has an immune-mediated aetiology that may include autoinflammation, autoimmunity, occasionally hypersensitivity and rarely other types of immune dysfunction. As a consequence there is often a need for management of such disease to include the use of immunomodulating therapy.

The present literature has proposed many lines of immunomodulation for the treatment of oral mucosal disease ranging from systemic corticosteroids, purine synthesis inhibitors, calcineurin inhibitors, anti-TNF α agents, anti-leptotics, neutrophil-inhibitors, cytotoxics, anti-malarials and others. In recent years therapeutic antibodies have come into play for disease that is notably severe and/or not amenable to conventional immunosuppressive agents.

The evidence that these agents are truly effective for the majority of oral mucosal disorders is however not notably robust. Yet there will be need for these to be considered for the management of complex disease.

This lecture will provide an overview of the issues that surround the present day use of immunomodulating agents in the management of relevant oral mucosal disease. It will include discussion of the rationale and adverse consequences of such treatment and the need for robust evidence that such therapeutic approaches are likely to be of benefit for future patients.

Systemic effects of local glucocorticoid treatment for oral conditions

Ragnarsson Oskar

Sahlgrenska University Hospital, Gothenburg, Sweden

Glucocorticoids are among the most commonly prescribed drugs world-wide. Glucocorticoid administration suppresses the endogenous cortisol production from the adrenal glands. Thus, patients who have been receiving long-term glucocorticoid treatment are at risk of developing adrenal insufficiency, a potentially life-threatening situation, upon discontinuation. In a recent meta-analysis almost half of all patients on glucocorticoids administered orally were at risk of developing adrenal insufficiency, 8% of patients receiving inhalations and 5% of patients receiving topical applications for dermatological diseases. During the lecture a summary of systemic effects of glucocorticoids will be provided with special emphasis on treatment for oral conditions.

Fri-01

Measurement properties of self-administered health-related quality of life instruments used in recurrent aphthous stomatitis

Wiriyakijja Paswach, Assas Motaz, Fedele Stefano, Porter Stephen, Ni Riordain Richeal

UCL Eastman Dental Institute, Oral medicine, London, UK

Objective: To critically appraise the quality of measurement properties of self-administered instruments assessing health-related quality of life (HRQoL) used in recurrent aphthous stomatitis (RAS).

Material and methods: Systematic electronic searches were conducted in Medline (via Pubmed) and Embase to retrieve original validation studies evaluating measurement properties of self-administered HRQoL instruments for use in individuals with RAS. The methodological quality of selected articles were evaluated by using the Consensus-based Standards for the selection of health Measurement Instruments (COSMIN) checklists. Measurement properties of identified HRQoL instruments were assessed against the quality criteria for measurement properties of health status questionnaires and a qualitative evidence synthesis for each HRQoL instrument was then performed.

Results: Of 844 search results, seven original articles relating to five HRQoL questionnaires were identified. The methodological quality of most studies were either poor or fair, particularly owing to small study sample size. Considering available information, the Chronic Oral Mucosal Disease Questionnaire (COMDQ) has comparatively better quality of measurement properties including internal consistency, reliability, structural validity and hypothesis testing for use in the RAS population than other identified HRQoL instruments. None of these instruments performed sufficiently on all important measurement properties as recommended by the COSMIN guideline with data from individuals with RAS.

Conclusion: The majority of existing HRQoL instruments did not have sufficient evidence on their measurement properties for use in recurrent aphthous stomatitis and further validation studies should be prioritized to ensure that these instruments are valid, reliable and sensitive to measure change in HRQoL in this patient population.

Fri-02

Bacterial aggregation in the saliva of patients with recurrent aphthous stomatitis

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Objectives: The oral microbiota composition in patients with recurrent aphthous stomatitis (RAS) differs from that of healthy controls. This may be due to reduced aggregation and clearance of bacteria in the saliva. Studying the functional capacity of saliva could give clues to the aetiology of RAS.

The aims were to evaluate if patients with RAS have saliva with a decreased capacity for aggregation of bacteria and to study if this was related to the severity of their condition.

Materials and Methods: Un-stimulated whole saliva samples were collected from 11 patients with RAS during lesion and lesion-free periods along with samples from healthy controls. *Streptococcus sanguinis* and *Actinomyces naeslundii* strains were added to the samples. Aggregation was examined by spectrophotometry. To evaluate the severity of the patient's condition an Ulcer Severity Score (USS) was used.

Results: Overall, the pattern of aggregation was similar between the groups. However, aggregation of *S. sanguinis* was slightly increased in patients whereas aggregation of *A. naeslundii* was slightly greater for controls. The pattern of aggregation in the patients did not correlate with the USS.

Conclusions: Patients with RAS may not have a decreased capacity for aggregation of bacteria. Furthermore, this capacity seems not to be related to the severity of their symptoms. However, a larger study population is required to make a full assessment.

Relevance: The aetiology of RAS is multifactorial where both endogenous and exogenous factors contribute to the lesions. Studying the properties of local factors in the oral cavity, for example the saliva, are essential.

Fri-03

Vitamin D deficiency among patients with recurrent aphthous stomatitis: a preliminary study from the UAE

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Introduction: Recurrent Aphthous Stomatitis (RAS) is an idiopathic oral mucosal ulcerative disorder which represents a focal immune dysregulation. Several studies show a possible relationship between RAS and hematinic deficiencies.

Objective: The aim of this ongoing study is to investigate the status of vitamin D among RAS patients.

Materials and methods: Thirty-three RAS patients and 19 controls attending the University Dental Hospital, Sharjah, were tested for complete blood count, serum iron, B12, folic acid and vitamin D. Frequencies were compared using Chi square test, with alpha level = 0.05 (two tailed).

Results: The average age of RAS and control patients was 33 (SD: 12.1) and 32 (SD: 9.9) years, respectively. RAS patients had higher rates of iron deficiency with comparison to the controls (N=8 (24%) versus N=2 (1%)), but this difference was not statistically significant. Vitamin D deficiency (values less than 50 nmol/L) was similar between RAS and controls (N=15 (46%)) versus N=9 (47%)). However, RAS patients who reported multiple ulcers during each episode were significantly more likely to have vitamin D deficiency compared to RAS patients who reported a single ulcer during each ($p=0.027$; OR=5.250; 95%CI: 1.515 - 23,937). Vitamin B12 and folic acid assays were normal for all participants in both groups.

Conclusions: Our preliminary results indicate a possible role of vitamin D deficiency in aggravating the ulcerative episodes, but not in causing it. A larger sample is needed to confirm those preliminary results.

Fri-04

Dietary habits among patients with recurrent aphthous stomatitis

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Introduction: Recurrent Aphthous Stomatitis (RAS) is an inflammatory ulcerative condition of the mucosa with periodic repetitions. The presence of chronic /recurrent oral lesions may lead to avoiding different food ingredients, with a potential impact on the patient's health.

Objective: To compare the dietary habits of patients with RAS to patients with other oral mucosal lesions (OML) and those attending dental screening without oral lesions.

Material and Methods: Included were 80 patients with RAS, 50 patients with OML and 100 patients attending dental screening. A nutritional questionnaire was filled by all participants.

Results: The mean age was 24.4 ± 7.0 (RAS 24.9 ± 7.6 , OML 25.9 ± 8.2 , controls 23.3 ± 5.9 ; $p=0.112$). Compared to controls and OML, RAS patients were more likely to avoid smoking ($p=0.001$ and $p=0.007$). Compared to controls, RAS patients were more likely to avoid alcohol consumption ($p<0.001$), fresh fruits ($p=0.021$), citrus fruits ($p=0.018$), eggs ($p=0.041$) and tomatoes ($p=0.008$). Compared to controls, RAS and OML patients were less likely to perform a weight control diet during the previous year ($p=0.024$).

Compared to controls and OML, RAS patients were more likely to avoid: sauce ($p<0.001$ for both), spices ($p<0.001$ & $p=0.001$, respectively), bubble gum ($p<0.001$ and $p=0.003$), hard texture food ($p<0.001$ and $p<0.001$) and fibrous food ($p<0.001$ and $p=0.011$).

Conclusion: The results of this study enable clinicians to establish a therapeutic approach with an emphasis on nutritional counseling and improving the state of the disease, while avoiding nutritional deficiencies that may affect the general health of those patients.

Fri-05

Efficacy study on Bexident AFTAS gel, spray and oral rinse used in aphthous stomatitis treatment

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Introduction: Recurrent Mouth Ulcers (RMU) and minor oral ulcers represent an unpleasant problem that can reduce the patient's quality of life. Topical solutions products are the most used for the treatment of oral ulcers: to be effective they must be in a form that is easy to apply and that allows them to stay on the ulcer location.

Objectives: The aim of the present study is to perform an open randomized trial investigation testing the efficiency of three topical products containing hyaluronic acid in the relief of symptoms of RMU.

Material and Methods: 60 adult patients with oral ulcers were randomly allocated to one of the following three study groups: Bexident AFTAS Gel, Bexident AFTAS Spray and Bexident AFTAS Oral Rinse. Subjects were asked to use the product at least three times per day, after each meal, during a period of seven days. Efficacy was assessed through a questionnaire at day 1, day 3 and day 7 in terms of pain relief and pain relief duration. Tolerance and safety were assessed throughout the clinical trial.

Results: All three products were able to give pain relief within five minutes after their application, with a duration of more than two hours. The majority of the patients considered the tested products as pleasant and convenient to use. No discolorations or side effects were reported during the study.

Conclusions: The gel, spray, and oral rinse tested in this in vivo clinical trial were all able to rapidly reduce pain associated with mouth ulcers presence.

Fri-06

Recurrent aphthous stomatitis: a retrospective study in a group of Thai dental patients

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Background: Recurrent aphthous stomatitis (RAS) is the most common oral ulcerative lesion. RAS can be divided into major, minor and herpetiform type. While the etiology is still unknown, various predisposing factors have been proposed. Although RAS has spontaneous healing, treatment is still necessary in case of painful ulcer or frequently attacked.

Objectives: To determine the prevalence, demographic data, clinical finding, predisposing factors, treatment and clinical outcome of RAS patients.

Material and methods: A retrospective study from chart records of RAS patient during 1989 to 2015. The data were recorded in data collecting table and were analyzed by appropriate statistics.

Results: The prevalence of RAS patients was 3.5% (140 from 3,954). 59.3% were female and 40.7% were male. The large ulcer was predominant in young adult males while the small ulcer was predominant in adult females. Most of the patients had the first episode during teenage years and the frequency of ulcer >12 times per year. The factors as inadequate sleep and stress were mainly reported. The common locations were buccal mucosa and gingiva. Nutritional deficiencies were found in 18% of cases. The treatment strategies were single and combination treatment which topical corticosteroids and nutritional supplements were mainly used with effective outcomes.

Conclusions: This study reveals that RAS mostly attacks in female, but male has tendency to have larger ulcers than female. Inadequate sleep and stress are important predisposing factors. However, further study with larger number of patients is important to gain more information for finding out etiology and improving treatment methods.

Fri-07

Clinical estimation of dental anxiety

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Introduction: Dental anxiety (DA) is treatable and preventable when dental personnel correctly estimate the patient's level of DA.

Objective: To evaluate dental personnel's ability to estimate DA.

Material and method: All public dental clinics in the region of Östergötland, Sweden, were asked to consecutively recruit adult patients returning for their annual examination. The patient rated DA using the Modified Dental Anxiety Scale (MDAS) and a Visual Analogue Scale of dental anxiety (DA-VAS). The patient also recorded gender, age, level of education and confidence in handling DA. After the examination, the dental personnel estimated the patient's level of DA (eDA) on a VAS. The examiner also recorded gender, age, profession, years of experience, country of education, interest in DA, special education concerning DA and confidence in ability to handle DA.

Statistics: Spearman correlation, *t*-test.

Result: 104 examiners from 24 clinics examined 1148 patients. Correlation was found between eDA and both MDAS (0.45***) and DA-VAS (0.47***). Correlation improved with increase in patient's DA***, age*** and examiner's age***. Correlation between eDA and DA was unaffected by examiner's years of experience, gender and country of education. The mean eDA was lower than the mean MDAS and DA-VAS***. It further decreased if the patient was female or the examiner had high confidence. The mean eDA increased with increasing patient age* and patient confidence***.

Conclusion: The studied dental personnel underestimated DA, particularly in female patients. The eDA improved with increasing age of both patient and personnel.

p*<0.01 *p*<0.001 ****p*<0.0001

Fri-08

Characteristics of the patients who perceived dental treatment as a cause of oral mucosal lesions

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Introduction: Dental treatment (DT) causes many oral mucosa stimuli. These stimuli may cause the onset and worsening of oral mucosal lesions(OMLs).

Objectives: To investigate how many patients perceive DT as the cause of OMLs and to compare clinical characteristics of these patients to general OMLs patients.

Materials and Methods: Patients were divided into two groups; 280 patients who perceived DT as a cause of OMLs and 300 patients as randomized control group. The percentage of DT types, clinical characteristics and the ratios of diagnosis and chief complaint (C.C) sites of the patients between two groups were analyzed.

Results: Among 2302 patients, 280 (12.2%) patients thought DT resulted in OMLs. In the study group, the female ratio and the average age was higher than the control group ($p < 0.05$). Total follow-up periods were shorter while visual analogue scale (VAS) at first visit was higher in the study group ($p < 0.05$). Among the diagnosis, allergy reaction (AR) and traumatic ulcer/irritation (TU) were significantly higher ($p < 0.001$) in the study group. The percentages of treatment types were higher in order of implant, denture, and prosthetic treatment in the study group. Patients with TU and candida developed a lot after denture (68–79%), whereas patients with oral lichen planus and AR developed a lot after implant (52–53%). When C.C sites were compared, gingiva was significantly more in study group than control group ($p < 0.001$).

Conclusion: 12.2 percent of the total OMLs patients perceived DT as the cause of OMLs. Thus, it is important to inform the patient of the inconvenience that may occur after DT and the importance of regular maintenance check.

Fri-09

Awareness of oral cancer among adults in Jakarta, Indonesia

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An oral cancer diagnosis during the early stages of the disease is associated with a good prognosis. A lack of public awareness regarding the signs and symptoms of oral cancer is one of key the reasons for delays in diagnosis.

Objective: We investigated the awareness of oral cancer in adults in Jakarta and explored the factors influencing it.

Material and Method: A cross-sectional study using a-previously-tested questionnaire on 1,000 adults in Jakarta was conducted. The data included socio demographic and answers to assess the awareness of oral cancer, early signs and symptoms, risks factors, lifestyles and history of dental visits.

Results: Only 53.2% of the subjects were aware of oral cancer and the level was significantly differed by the level of education, occupation and experience of dental visits. Only 30% of patients had been asked about their tobacco and alcohol habits and been informed about the hazards oral health by their dentists. All smoker subjects knew that tobacco increases the risk for oral cancer. A limited number of subjects considered alcohol, betel quid chewing, UV light exposure, poor diets and genetics may play role in the development of oral cancer. Advertising was the main source of information about oral cancer; the role of health professionals is still quite low and needs to be emphasized.

Conclusion: Oral cancer awareness is still low amongst adults in Jakarta that was consistent with other studies conducted in Asia. Educational material to suit the conditions of a community is needed.

Fri-10

Differences in collagen XVII expression between skin and oral mucosa affect the pathogenicity of pemphigoid IgG

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Introduction: Collagen XVII (COL17), a major basement membrane zone (BMZ) component, is targeted by autoantibodies in pemphigoid diseases including bullous pemphigoid (BP). Although COL17 is expressed at the BMZ of both the skin and the oral mucosa, no research has addressed the differences in COL17.

Objectives: We investigated the differences in COL17 between the skin and the oral mucosa to explain why BP present predominantly as skin lesions.

Material and Methods: We performed qPCR and immunoblotting using oral keratinocytes (OKCs) and skin keratinocytes (SKCs).

Results and Conclusions: The mRNA and protein expression levels of COL17 were significantly higher in OKCs than in SKCs. These results were consistent with those for murine keratinocytes. High COL17 expression levels in OKCs were significantly associated with adhesion strength *in vitro*. When keratinocytes were treated with BP-IgG, COL17 internalized into the cells and was depleted. COL17-depletion was more prominent in SKCs than in OKCs after treatment with the mAb to COL17-NC16A, which has pathogenicity *in vivo*. Interestingly, the mAb to COL17 C-terminus, which is not pathogenic, found to facilitate COL17-depletion in combination with the mAb to COL17-NC16A in both types of keratinocytes. In summary, the greater amounts of COL17 in OKCs than in SKCs are associated with the higher strength of OKC hemidesmosomal adhesion at the BMZ. Our results may explain why BP blistering tends to be more prevalent in the skin than in the oral mucosa.

Fri-11

Chronic oral graft-versus-host disease: salivary cytokines as markers of disease

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Introduction: Biomarkers are an evolving area of research in many inflammatory conditions, including chronic GvHD. To date, few studies have investigated locally derived biomarkers in oral chronic GvHD.

Objectives: To measure and compare the concentration of IL2, IL4, IL6, IL10, INF γ , and TNF, in mouth rinse samples preHSCT and repeatedly across a 9 month follow up period after transplantation to determine if a unique salivary cytokine profile is present in oral chronic GvHD.

Material and Methods: Salivary samples corresponding to the 6 patients who developed oral chronic GvHD within the study period, 6 patients with non oral chronic GvHD and, as controls, six patients who did not develop GvHD, were analysed using cytometric bead array human Th1/Th2/Th17 cytokine kit. Oral symptom profiles were documented via visual analogue scales for oral pain, sensitivity and dryness, xerostomia inventory (XI) and oral-health impact profile (OHIP) questionnaires.

Results: A positive association was observed between the presence oral chronic GvHD and the concentration of both IL6 and TNF ($p=0.007$, $p=0.034$). A negative association with IL17 and IFN ($p=0.001$, $p=0.015$) was observed. IL6 was also found to be associated with the presence of ulceration and erythema ($p=0.003$, $p<0.001$ respectively), oral symptoms of pain, sensitivity and dryness ($p<0.001$, $p<0.001$, $p=0.03$ respectively), XI scores ($p=0.01$) and OHIP scores ($p=0.004$).

Conclusions: These findings support the hypothesis that a unique cytokine profile is measurable in the local environment (saliva) of oral chronic GvHD and is reflective of both the presence of disease and it's symptoms.

Fri-12

The role of immune reactions in the pathogenesis of pemphigus vulgaris of the oral mucosa

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Introduction Pemphigus vulgaris is an autoimmune disease.

Material and Methods In order to achieve our goal a complex clinical and laboratory examination of 30 patients, aged 40-70 years who were divided into two groups the main group (20 people) and control group (10 patients without such pathology) has been conducted. A comprehensive examination included clinical manifestation registration and content exploration of pro-and anti-inflammatory cytokines (IL-1 β , IL-2, IL-6, IL-10, TNF- α) as well as Ig A, M, G in the oral fluid analysis. The study was undertaken before treatment.

Results: Increase of proinflammatory cytokines IL-1 β and IL-6, growth of IL-10 content ($p < 0.001$) is typical for pemphigus vulgaris of oral mucosa. These changes are observed on the backdrop of growth absence in the amount of TNF- α in the oral fluid among this category of patients. When analyzing the results of the study, humoral immunity, supported by immunoglobulins, is in a state of acute inflammatory response that is why a significant increase in the amount of IgM is observed ($p < 0.001$). All these shifts reflect an even greater damage to epithelial cells in patients with pemphigus vulgaris of oral mucosa. The obtained results indicate that patients with pemphigus vulgaris of oral mucosa show imbalance in the immunity system.

Conclusions: The obtained results of the study testify to the pathogenetic role of pro- and anti-inflammatory cytokines and immunoglobulins in the development and outcome of pemphigus vulgaris of oral mucosa that must be taken into account when complexly treating this disease.

Fri-13

A retrospective study of immune dysregulated dermatological disorders and their oral manifestations in the Omani population

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The dermatological disorders are not necessarily limited to the skin. These can also be seen involving mucosal surfaces or oral mucosa and such types of diseases affecting both the skin and the mucosa are commonly called as mucocutaneous disorders. The oral lesions can occur along with the skin lesions or these can be the preceding feature or the only feature of the mucocutaneous disorders. These oro-cutaneous disorders include an array of immune mediated conditions that share the common pathogenesis of immune dysregulation of the host immune system. Some of these disorders are called autoimmune bullous diseases (ABD) and are classified into two groups namely the intraepidermal or subepidermal groups based on the level of blister formation. The ABD's and the other immune dysregulated diseases may have fatal consequences. The early recognition and the examination of oral lesions of ABD's and other immune dysregulated diseases (IDD) may serve as an adjunct to early screening and diagnosis of the disease and their prompt treatment. Moreover this eventually may help in reducing or prevent mortality and morbidity.

There have been no studies undertaken to date to evaluate the prevalence of oral manifestations of the spectrum of ABD's and other IDD's in Omani population. Therefore a retrospective study was carried out with an aim to evaluate the prevalence of the group of IDD's and ABD's and their related oral manifestations among the Omani population. This study was also done to find out the prevalence of the related co-morbidities.

Fri-14

Oral health related quality of life is associated with both disease severity and activity in patients with autoimmune bullous disease

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Objective: The aim of this study was to evaluate whether oral health related quality of life status (OHRQoL) was associated with disease severity and activity in patients with autoimmune bullous diseases (AIBD).

Materials and Methods: In this cross-sectional study, 67 patients with AIBD (Pemfigus vulgaris: 63, Bullous pemphigoid: 4) attending two Dermatology & Venereology Outpatient Clinics were enrolled in the study. The clinical disease severity score was determined by Autoimmune Bullous Skin Disorder Intensity Score (ABSIS). The score was categorized as significant course (≥ 17) and moderate course (< 17). OHRQoL was assessed by oral health impact profile-14 (OHIP-14) questionnaire. High scores indicated poor oral quality of life (0-56 points). Self-reported oral health status with 5-point Likert type scale (1: very bad vs 5: very good) and oral lesion related pain score with 100-mm visual analogue scale (0: no pain vs 100: severe pain) were also evaluated in the study group.

Results: Scores of OHIP-14, self-reported oral health status and pain were 40.0 ± 14.28 , 2.87 ± 0.52 and 6.33 ± 2.78 in patients with AIBD. OHIP-14 score was significantly higher in active patients (42.38 ± 13.66) than inactive ones (29.08 ± 12.25) ($p=0.004$). It was correlated with the pain score ($r=0.409$ $p=0.013$). Moreover, OHIP-14 score was lower in patients with moderate course (36.09 ± 9.73) than significant course (45.18 ± 15.08) ($p=0.010$).

Conclusion: Since OHRQoL was affected by both activity of oral lesions and disease severity, it might help for dermatologists in decision-making process of treatment protocols. The collaborations between dermatologists and dentists may improve the disease management in AIBD.

Fri-15

Mucous membrane autoimmune bullous diseases: a 20-years retrospective study at a tertiary oral medicine unit

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Introduction: Mucous membrane autoimmune bullous diseases (MMABDs) include a group of multiple life-threatening and potentially fatal diseases with no sufficient available data about clinical management and long-term treatment outcomes.

Material and Methods: To retrospectively report long-term results on MMABDs patients treated in our Oral Medicine Unit from December 1998 until March 2018.

Results: We reviewed 154 patients: 118 (76.6%) had Pemphigus Vulgaris, 31 (20.1%) Mucous Membrane Pemphigoid, 3 (2.0%) Lichen Planus Pemphigoides, 2 (1.3%) Bullous Pemphigoid. First-line conventional treatment included corticosteroids and immunosuppressants: 88 patients (57.1%) reached complete clinical remission off-therapy, and 26 (16.9%) partial or complete remission on-therapy.

Rituximab and/or IVIgG were used in 40 (26.0%) cases unresponsive to conventional treatments and/or with contraindications to corticosteroids or severe side effects.

Six patients (3.9%) received Rituximab, eight patients (5.2%) received Rituximab and IVIgG because of the severity of the disease, and eight patients (5.2%) received IVIgG and conventional immunosuppressive therapy.

The following side effects were recorded: one case of aseptic meningitis, and one with deep vein thrombosis in patients treated with IVIgG; two cases of laryngospasm, one with atrial fibrillation and one with dyspnea in patients treated with Rituximab. Approximately 40.0% of patients treated with conventional immunosuppressive therapy experienced one or more relapses. Two relapses were also observed in RTX/IVIgG group.

Eighteen recently diagnosed patients (11.7%) non-responders to conventional therapy are still in treatment with Rituximab.

Conclusion: Future research should be focused on designing sustainable cost first-step biologic protocols to minimize steroid adverse events and producing sustained prolonged remissions.

Fri-16

Paraneoplastic pemphigus associated with tymoma

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Introduction: Paraneoplastic Pemphigus (PNP) is a rare autoimmune mucocutaneous blistering disease determined by the presence of intractable mucositis and polymorphous skin eruptions mimicking Pemphigus vulgaris, pemphigus foliaceus, bullous pemphigoid. Malignant neoplasm associated with PNP are hematologic and lymphomatoid proliferative tumors.

Objective: to show the rarity of PNP and difficulty of diagnosis in non-specialized services.

Material and Methods: A 30 year-old woman was referred to the Department of Dermatology of Botucatu Medicine School, with a 2 months history of pustules in the left jugal mucosa with progressive increase for all jugal mucosa and palate. She was treated with acyclovir, without improvement. After 30 days, pustules progressed to lips and hands. One week ago involvement of conjunctival mucosa. She was treated in another hospital with a diagnosis of syphilis. There is a 1 day presented fever. Physical examination, showed restricted mouth opening, crusted erosions on her upper and lower lips and multiple painful erosions on the buccal mucosa; scaly erythematous plaques and dusky eroded lesions in bilateral palms and soles, erythematous papules in cervical and abdomen and bilateral cervical lymph nodes was observed. Computed tomography of abdomen showed large mediastinal masses. Labial mucosa biopsy revealed: suprabasal cleavage by acantholysis, direct immunofluorescence: intercellular epidermal IgG, and mediastinal biopsy revealed thymoma. She was treated with prednisone (1mg / kg / day) and evolved with hypotension and respiratory failure. Currently she was with tracheostomy, presence of lesions on the lips, jugal mucosa and tongue, and maintains 20mg / day prednisone.

Conclusion: Tymoma treatment was not possible due the worsening of clinical situation.

Fri-17

Is a "punch on the gum" the way you need to diagnose oral blistering disease?

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Introduction: Autoimmune vesiculobullous blistering disorders include a number of disorders with a variety of clinical presentations and pathogenesis. Oral manifestations of these conditions include vesicles, bullae and ulcers that may precede skin lesions. The gingiva is often affected with a clinical appearance described as desquamative gingivitis. The diagnosis is often delayed if there is inadequate tissue taken at biopsy, or if the epithelium is damaged.

Objectives: Our study aim is to determine the biopsy method with the highest diagnostic yield.

Material and Methods: We have retrospectively reviewed 66 cases (124 biopsy samples) presenting with suspected vesiculobullous disease in our department. We have analysed the type, number, and sites of biopsy performed for routine histology and DIF. All patients had at least one biopsy for routine histology and 21% (14/66) had a repeated biopsy. Biopsies for DIF work were taken in 62% (41/66) of cases and repeated in 5% (3/66) of cases.

Results: The most common site for biopsy was the gingiva 46% (57/124). 70% (40/57) of gingival biopsies were taken using a punch biopsy technique. Scalpel incisional biopsy was used for the remainder 30% (17/57). Positive diagnostic yield for punch biopsy was 80% (32/40), for incisional scalpel biopsy the positive diagnostic yield was 47% (8/17).

Conclusion: The traditional incisional scalpel technique and punch biopsy are the most common techniques used to investigate suspected vesiculobullous disease. In our study the 5-6 mm punch biopsy of the gingiva gave the highest diagnostic yield. We propose this is the method of choice to facilitate the diagnosis.

Fri-18

Psoriatic arthritis with tongue manifestations. Report of an unusual case

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Introduction: Psoriasis and psoriatic arthritis are closely correlated since almost a third of psoriatic patients are going to manifest psoriatic arthritis. In the majority of cases, skin manifestations precede the evolution of arthritis.

Objectives: Considering the limited information available about psoriasis/psoriatic arthritis in young patients with oral mucosal involvement, the goal of this presentation is to provide some new insight regarding this rare manifestation of a well-known disease.

Material and Methods: A 24-year-old male was referred for two painless, rounded lesions on the dorsal surface of the tongue at the same location for more than 6 months. The patient had a family history of psoriasis (father), he was diagnosed with psoriatic arthritis and Raynaud syndrome by rheumatologist 2 years ago and is currently receiving secukinumab (anti-IL-17A). Clinically, two circumscribed, erythematous patches with loss of papillae and whitish regular borders were observed. The biopsy showed moderate hyperkeratosis, spongiosis, diffuse inflammatory infiltration of lymphocytes and neutrophils in the stratified squamous epithelium and the lamina propria, Munro's micro abscesses at the superficial epithelial layers, thus suggesting psoriatic related tongue lesions similar to geographic tongue.

Results and Conclusions: Typical geographic tongue is a common finding in psoriasis, observed in roughly 10% of cases. Whether lesions resembling geographic tongue consist separate clinical entities or atypical forms of geographic tongue remains to be established. However, the exclusive manifestation of those lesions in psoriasis/psoriatic arthritis could be a preceding sign of future cutaneous involvement, thus potentially supporting an early diagnosis and monitoring of psoriasis/psoriatic arthritis.

Fri-19

The optimal oral biopsy site: punch biopsy of uninvolved buccal mucosa is equally sensitive to perilesional tissue for diagnosis of oral pemphigus and pemphigoid

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Introduction: Accepted 'standard practice' for diagnosis of immunobullous disease (IBD) is a perilesional sample for direct immunofluorescence (DIF). Our aim in this retrospective analysis was to compare the diagnostic outcome of an uninvolved 4mm buccal punch biopsy (BPB) with a perilesional biopsy (PLB) for mucous membrane pemphigoid (MMP) and pemphigus vulgaris (PV).

Material and method: A retrospective analysis of 274 DIF positive MMP and 75 DIF positive PV patients including intra and extra-oral sites of involvement, histopathology, DIF and indirect immunofluorescence (IIF) was undertaken.

Results: For MMP, a PLB from oral mucosa was positive in 148/162 (88%) patients compared with 132/169 (81%) BPB. In 57 patients undergoing both techniques diagnostic sensitivity was equal ($p=0.54$). 15/21 (71%) negative PLB were from gingival samples while 20/30 (66.7%) negative BPB were taken from pure gingival MMP patients. For PV, a PLB was positive in 41/42 (98%) patients compared with 41/41 (100%) BPB. Histopathology was diagnostic in 90/133 (67.7%) MMP and 36/39 (92%) PV. IIF was positive in 141/217 (65%) MMP and 67/72 (93%) PV.

Conclusion: In the largest series of combined oral DIF results in MMP and PV, we have shown that a BPB from uninvolved oral mucosa is as sensitive as a PLB for diagnosis of PV and MMP, and is superior to histopathology for MMP. PLB from attached gingiva in MMP is the least reliable site and therefore in pure gingival MMP we advocate an additional PLB from reflected alveolar mucosa.

Fri-20

Liver enzyme levels, lipid profiles and cardiovascular risk in patients with oral lichen planus

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Introduction: Many studies have investigated the association between liver disease and oral lichen planus (OLP), but that relationship still remains controversial. Chronic inflammatory

conditions, such as OLP, can lead to prolonged dyslipidaemia and increase cardiovascular risk (CVR). However, there are no available data on the CVR in patients with OLP.

Objectives: The aims of this study were to investigate the liver enzymes, bilirubin serum levels, lipid profiles, and cardiovascular risk in patients with oral lichen planus (OLP) compared to healthy controls.

Material and Methods: The total cholesterol, high-density lipoprotein cholesterol, low-density lipoprotein cholesterol, and triglycerides serum levels were assessed as part of a routine lipid profile. In addition, the levels of aspartate aminotransferase, alanine aminotransferase, γ -glutamyl transpeptidase, and total bilirubin were assessed for 63 OLP patients and 63 healthy control subjects. CVR was calculated for each patient.

Results: We found significantly higher total bilirubin levels ($P=0.04$) and a higher incidence of liver disease ($P=0.04$) in OLP patients than in the control subjects. All tested lipid profile parameters were elevated in more OLP patients than they were in controls, but there were no statistically significant differences. The mean values of calculated cardiovascular risk were similar in both groups.

Conclusions: The exact mechanism that exists between the association of chronic liver disease and OLP remains unclear, and further studies involving a larger number of patients are required to validate this association. Further research on lipid levels and cardiovascular risk in OLP is also required to confirm the findings of this study.

Fri-21

Oral lichen planus and malignancy

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Introduction: Considered as a premalignant condition, oral lichen planus (OLP) is a chronic inflammatory disease which requires long-term treatment and clinical follow-up. The reported OLP malignant transformation rates vary from 0.4% to 12.5%, with an overall average rate of 1.09%. The criteria for a well-documented malignant transformation was established by Krutchkoff and comprise clinical and histological aspect suggestive for OLP, carcinoma arising on the same location, histopathological confirmation of malignancy.

Objectives: To determine the association of OLP and oral carcinoma.

Material and Methods: We revisited all the OLP medical charts which associated oral carcinoma, at the first visit or during follow-up. The OLP new cases were diagnosed from 1979 to 2017 in the clinical department of Oral Medicine, Faculty of Dental Medicine, Bucharest, Romania.

Results and Conclusions: From the overall number of 2000 new cases of OLP diagnosed in our department, the association between OLP and oral carcinoma was encountered in 21 cases, about 1%. These are divided as follows: OLP concomitant with carcinoma - 10 cases, malignization on the same location-true malignization 7 cases, malignization in other oral sites (field cancerisation) -4 cases. We noticed that Krutchkoff diagnostic criteria cannot be fulfilled in all cases. OLP cases with atypical histopathological picture must be especially kept

under control. The main point is that the disease can be healed in very small percentage, a life-long clinical follow-up is imposed and malignant transformation of OLP remains an ongoing controversy.

Fri-22

Assessment of the psychometric properties of the hospital anxiety and depression scale in patients with chronic ulcerating oral mucosal disease

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Introduction: Chronic ulcerating conditions of the oral mucosa are immune-mediated disorders that potentially impact upon the daily lives of affected patients. This interference with life may lead to psychological distress manifesting as anxiety and/or depression.

Objective: To determine the validity and reliability of the Hospital Anxiety Depression Scale (HADS) in patients with chronic oral mucosal diseases.

Materials and Methods: A cross-sectional study was conducted at the Oral Medicine department of the Eastman Dental Hospital. Patients with the following chronic oral conditions were recruited: oral lichen planus (OLP), pemphigus vulgaris (PV), mucous membrane pemphigoid (MMP) and recurrent aphthous stomatitis (RAS). Subjects were asked to complete in the following questionnaires: NRS (Numerical Rating Score) for pain, HADS (Hospital Anxiety Depression Scale) and COMDQ (Chronic Oral Mucosal Disease Questionnaire). Convergent validity was tested by assessing the correlations between HADS and NRS and HADS and COMDQ using Spearman's rho test. Internal consistency reliability of HADS was measured using Cronbach's alpha.

Results: A total of 50 patients were recruited. Thirty-three respondents had OLP, 13 had MMP or PV and 4 had RAS. Spearman correlation coefficients values ranged between 0.31 and 0.71 with good correlation found between HADS and the Social and Emotional subscale of COMDQ. Values of Cronbach's alpha ranging between 0.79 and 0.88 represent very good internal consistency reliability.

Conclusion: HADS may be considered as a valid and reliable outcome measure to evaluate anxiety and depression in patients with chronic oral mucosal disease.

Fri-23

Chronic mucocutaneous ulcerative disorder with SES-ANA: a case report and detailed review of CUS

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Introduction: Chronic ulcerative stomatitis (CUS) is defined as a mucocutaneous immune-mediated disorder characterized by painful, persisting oral ulcers usually refractory to conventional steroid therapy.

In most cases, the clinical appearance resembles erosive OLP, resulting in an overlap which poses a big challenge for the clinician to manage.

Less than 50 cases have been described in the literature.

Objectives: In this study a case report was accompanied by an important literature review, and ended with the proposal of updated diagnostic criteria.

Material and methods: Data about epidemiological, clinical, histopathological, serological and therapeutic aspects of the disease were collected from PUBMED, SCOPUS, WoS and Google Scholar.

Results: The disease often involves middle-aged and older women. The most affected sites are the buccal mucosa, the tongue and the gingiva, but the skin is involved in 25% of cases.

The histological appearance is non-specific and similar to lichenoid stomatitis, with the exception of a high prevalence of a mixed inflammatory infiltrate composed of lymphocytes and plasma cells.

However, a distinguishing feature is represented by a deposition of IgG antibodies directed against ANp63 α , an epithelial variant of p63. The antibodies can be detected by DIF analysis, in the lower third of the epithelium, while IIF is non-specific since other lichenoid pathoses may produce these antibodies.

The disease responds well to treatment with antimalarials.

Conclusions: The literature review shows how the term chronic ulcerative stomatitis appears inadequate and a new definition is needed. Updated diagnostic criteria could prove useful in identifying this often misdiagnosed disease.

Fri-24

Oral lichen planus of the gingiva and its management in a group of Portuguese patients

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Introduction: Oral lichen planus (OLP) is the most common oral mucosal pathology in Southern Europe.

Objectives: Evaluate OLP's gingival involvement, its characteristics and treatment approaches.

Material and Methods: A retrospective study analyzing the clinical records of 9595 general patients attending a Portuguese dental clinic between 2005-2016. Descriptive, inferential statistical analysis (Chi-Square, significance level 5%) were performed.

Results: OLP affected 263 patients (2.7% of study population), 91 of which with gingival involvement (desquamative gingivitis: erythematous/ulcerative/erosive; OLP-DG), 34.6% of all OLP patients. 84.6% of those were females and the median age 64 years. 46.2% of OLP-DG patients had both maxillaries affected and 71.4% had bilateral lesions. 91% of our OLP-DG patients showed lesions in other oral locations, thus in 9% OLP-DG was the only clinical manifestation of disease.

67% (n=56) OLP-DG patients reported symptoms, from mild to severe pain / discomfort or aesthetic problems leading to medication with only topical immunosuppressive drugs (T group, n=29) or associated with systemic steroids (T+S group, n=27).

At the 1st follow-up (n=48; T group:24; T+S group:24), usually after 4 weeks, 83% of all patients were asymptomatic or improved (T group:79%; T+S group:88%); 54% of T group's patients stopped treatment, starting regular follow-ups regimen.

Conclusions: In general after a mean period of 2 months (min=2 weeks – max:20 months) all patients were asymptomatic and without medication (n=45, with 3 drop-outs), with no statistical differences ($p<0.05$) between topical and topical+systemic treatment with immunosuppressives. Our results will be compared with published literature.

Fri-25

Pemphigus vulgaris: a 25 years retrospective study in a Brazilian oral medicine service

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Pemphigus is a term for a group of immune-mediated intraepidermal bubble-forming diseases that threaten life and affect the skin/mucous membranes. Clinically, the disease varies in its presentation and severity and in its epidemiological characteristics in different geographic areas. There are two main types of pemphigus, pemphigus vulgaris (PV) and pemphigus foliaceus. PV is the most common form of the disease, it is infrequent; with a reported incidence of 0.1-0.5 cases per 100,000 inhabitants. PV affects both sexes, and a higher incidence has been reported among women. Generally PV appears in the fourth and sixth decades of life. The authors reviewed the files of patients attended at the Oral Medicine Service (OMS) of the Universidade Estadual Paulista (UNESP) between 1992 and 2017. This sample consisted of 32 patients, 20 of which were female and 12 were male, with a mean aged 46.5 years. The mean time to progress before consultation at OMS was 6 months, and all patients reported oral pain. The main lesions were ulcer (84.4%), vesicle / bubble (34.4%) and desquamation (12.5%). The main anatomical sites were: buccal mucosa (75%), tongue (59.4%), alveolar ridge (46.93%) and hard palate (40.6%). In addition, 3.1% were smokers and 18.8% were drinkers. In this sample, the association between PV and anxiety, depression or stress (32.3%) was remarkable. Psychological factors and trauma can be triggering factors of PV. Oral lesions are the first manifestation of the disease in most cases, it is critical that dentists learn to diagnose PV early.

Fri-26

Undifferentiated connective tissue disease arising in an ectodermal dysplasia patient: a case report

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Undifferentiated connective tissue disease (UCTD) is the disorder characterized by clinical features and laboratory investigations suggestive of systemic autoimmune disease, which do not

definitively fulfil the diagnostic criteria for defined connective tissue disease. Although oral manifestations are frequently reported in several autoimmune disorders, and usually represent early signs of disease or reflect disease activity, they are rarely reported in UCTD.

Ectodermal dysplasia (ED) is rare heterogeneous group of inherited disorders that are defined by defect in the development of tissue derived from the ectoderm. Orofacial involvement is common, particularly dental abnormalities. These include hypodontia or anodontia, conical or pegged teeth, and delayed tooth eruption.

We reported a case of female patient who had ectodermal dysplasia, and complained of oral burning sensation as the presenting clinical symptom. She gave an history of facial rash after sun-exposure. Clinical oral examination revealed erythematous lesion with white striae, compatible with oral lichen planus or oral discoid lesion. Extraoral finding demonstrated sclerodactyly and mild arthritis of fingers and toes. The histopathological result of the oral lesion biopsy was consistent with lichen planus. The results of serologic and immunologic studies showed high titer of antinuclear antibody (ANA), while others were negative. The diagnosis of UCTD was suspected and confirmed by physician. Then, she was treated by systemic corticosteroid and immunosuppressant.

The objective of this case reported is to demonstrate a patient with co-existence of UCTD and ED. A multidisciplinary approach, including a rheumatologist, dermatologist, ophthalmologist, general dentist, and oral medicine specialist, is fundamental to achieve optimal control of disease.

Fri-27

Review of the current international consensus on burning mouth syndrome: treatment options

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Objectives: Burning mouth syndrome (BMS) is a type of chronic orofacial pain, which is difficult to diagnose and treat. The pathophysiology of this disorder is not fully understood. This study reviewed recent international review articles about the treatment options for BMS.

Material and methods: PubMed/MEDLINE and WEB of SCIENCE databases were reviewed to identify review articles about BMS, written in English from 2010 to May 2017. We evaluated the treatment modalities in these articles. With the description of meaning with “effective treatment”, we added +1 point to the modality. On the other hand, the description of meaning of “not effective” added -1 point.

Results: Twenty-nine review articles about BMS were identified. The first authors of eight articles were from USA, with other first authors spread throughout countries in Europe, South America, and Asia. In these reviews, we were able to find 54 types of treatment modalities for BMS, which were 38 systemic treatments and 16 topical treatments, respectively. The total ranking of effective treatments was topical clonazepam with 11 points, systemic clonazepam with 9 points, CBT (cognitive behavioral therapy) with 8 points, and systemic ALA (Alpha-Lipoic Acid) with 8

points. On the other hand, the orders of non-effective treatments were systemic hormone therapy with -4 points, topical aloe vera with -3 points, systemic ALA with -2 points.

Conclusion: This study indicated that BMS is a worldwide disease, and there is still no international gold standard for treatments. The effective treatment modalities may come from the etiology of BMS as neuropathic pain.

Fri-28

The efficacy of fluoxetine in primary BMS

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Introduction: Burning mouth syndrome (BMS) is an intraoral burning or dysaesthetic sensation, recurring daily for more than two hours during a period of more than three months. BMS can be classified into two clinical forms – primary and secondary. Primary BMS represents chronic intraoral burning sensation for which no local or systemic cause can be found and clinical examination shows no pathological changes of oral mucosa.

Objective: The objective was to evaluate and analyze the efficacy of serotonin-reuptake inhibitor fluoxetine on psychological factors, as well as on pain in participants with BMS.

Material and methods: In a 6 month study, 100 participants with primary and secondary BMS were divided into two groups – fluoxetine and control (placebo) and examined by the dentist and the neurologist. Depression was estimated by Hamilton Scale for Depression (HAM-D) and the pain intensity by Visual Analogue Scale (VAS).

Results: Mean age of the participants was 60,33 in fluoxetine group and 67,4 in control group. Most of the participants were female - 74% in the fluoxetine and 78% in the control group. Statistical difference between the fluoxetine and the control group was found in HAM-D results ($P<0.05$). Values of other scales and VAS decreased significantly after the therapy in both groups ($P<0.05$).

Conclusions: Our trial results indicate that fluoxetine therapy not only improves the psychological status of participants with BMS, but also fluoxetine decreases the intensity of pain in these patients.

Fri-29

Treatment outcome of venlafaxine and duloxetine in refractory BMS patients

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Introduction: Burning mouth syndrome (BMS) is a chronic neuropathic pain disorder, and various medications used for neuropathic pain disorders have been applied to BMS patients.

However, these medications are not consistently effective for BMS patients due to complexity of BMS pathophysiology.

Objectives: The purpose of this study was to report the efficacy of venlafaxine and duloxetine on refractory BMS patients.

Material and Methods: Twelve refractory BMS patients who were prescribed venlafaxine or duloxetine were included in this study. These patients did not respond to the prior administrations of clonazepam, alpha-lipoic acid, gabapentin, and nortriptyline. All participants were the primary type of BMS patients who had no local and systemic factors related to oral burning sensation. The intensities of oral symptoms following venlafaxine or duloxetine administration were compared with those before administration and at baseline.

Results and Conclusions: Venlafaxine and duloxetine were prescribed to four and nine patients, respectively. One patient was prescribed both medications in turn. Among them, only two patients showed improvement of oral symptoms without side effects. Other ten patients failed to relieve their symptoms. Six of them reported that drug was ineffective, and four of them stopped taking the medications on their own due to intolerable side effects such as insomnia, constipation, drowsiness, dizziness, and xerostomia. Venlafaxine and duloxetine could relieve oral symptoms in minority of refractory BMS patients. Further large-scale studies are needed to determine the potential clinical factors that could predict the efficacy of venlafaxine and duloxetine.

Fri-30

Usefulness of a cannabis-based medication in patients with burning mouth syndrome: preliminary results of a prospective pilot study

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Introduction: Cannabis extracts have been used in many societies for ages; their extracts contain hundreds of identified compounds but only a few of them target the endocannabinoid system, and there is a rising body of literature that suggests benefit for numerous problems, being medical cannabis accessible in assorted preparations with singular pharmacological and therapeutic profiles.

Objectives: The aim of this pilot study was to test the efficacy and safety profile of Bediol® [*C. sativa* with mean amounts of 6.5% for tetrahydrocannabinol (THC) and 8% for cannabidiol (CBD)], in patients with burning mouth syndrome (BMS). This cannabis oil was prepared and delivered according to a previous publication (*ref.* Romano and Hazekamp. *Cannabinoids* 2013;1:1-11).

Materials and Methods: Ten patients (8 female, mean age = 64.52) were treated and analyzed. Visual Analogue Scale (VAS), McGill Pain Questionnaire, Present Pain Intensity (PPI), and Oral Health Impact Profiles (OHIP-49 and OHIP-14) assessed sensation of pain; whereas Hospital Anxiety, Depression Scale, and Geriatric Depression Scale assessed levels of anxiety and depression.

Results: Patients were treated for 45 days and then followed-up for another 12 months; 70% experienced a decrease in pain sensation reported for all the parameters analyzed ($P < .05$). Levels of anxiety and depression also changed statistically ($p < .05$). Only one subject (10%) dropped out for increased reported pain.

Conclusions: Based on this pilot study, this medication seemed to be capable of reducing the symptoms of patients with BMS with a constant and ongoing effect, but further randomized trials are required.

Fri-31

Influences of systemic oxidative stress levels on therapeutic efficiency of tocopherol in treatment of burning mouth syndrome: preliminary study

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Introduction: The systemic levels of oxidative stress have a role in the development of diverse pain disorders.

Objective: The aim of the present study was to evaluate the level of serum oxidative stress in patients with burning mouth syndrome (BMS) and estimate the efficiency of tocopherol for the treatment of BMS.

Materials and Methods: This prospective single-blinded randomized controlled study included 60 participants with BMS and 30 age and sex matched controls. Serum levels of uric acid and bilirubin were measured as systemic oxidative stress markers. The participants with BMS were divided into two groups: Group 1 ($n = 40$) were prescribed tocopherol and Group 2 ($n = 20$) were administered placebo; both treatments were applied twice daily for 2 weeks. The intensity of pain (assessed using a visual analogue scale [VAS]) and oral quality of life (assessed by means of the Oral Health Impact Profile-14 [OHIP-14]) were determined to estimate therapeutic efficiency of tocopherol in BMS patients at base line and 2 weeks later.

Results and Conclusions: The serum level of uric acid was significantly higher in the BMS patients compared to controls. The intensity of pain (VAS) and quality of life (OHIP-14) were significantly improved in Group 1, but did not show significant differences between two time points in Group 2. The responders to tocopherol showed significantly lower serum uric acid level compared to non-responders. Therefore, the systemic level of oxidative stress may have role in pathophysiology of BMS and could affect therapeutic efficiency of tocopherol in BMS treatment.

Fri-32

Vortioxetine in the treatment of mood disorders associated with burning mouth syndrome: results of an open label, flexible-dose pilot study

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Objectives: Antidepressants may be effective in the modulation of pain perception in patients with Burning Mouth Syndrome (BMS). The aim of this study was to evaluate the efficacy of a new multimodal antidepressant, Vortioxetine (VO) in the management of BMS.

Materials and Methods: Thirty patients were included in the trial and treated with topical clonazepam and a dose of VO (10-20mg). The Numeric Rating Scale (NRS), the Total Pain Rating Index (T-PRI), the Hamilton rating scales for Depression (HAM-D) and Anxiety (HAM-A), the Pittsburgh Sleep Quality Index (PSQI) were performed at baseline (time 0), after 2 (time 1), after 4 (time 2), after 6 (time 3) and after 12 months (time 4) of treatment. Descriptive statistics and the Wilcoxon non-parametric test for two paired-samples were used.

Results: BMS patients showed a statistically significant improvement in the VAS and T-PRI scores from baseline [Median: 10.0 (IQR: 10-10) and 22.0 (IQR: 20-24), respectively] to time 4 [(Median: 0.0 (IQR: 0-0) and 8.0 (IQR: 7-9) ; ($p < 0.001$), respectively]. Similarly, the HAM-A and HAM-D and PSQI scores showed an improvement from time 0 [(Median: 20 (IQR: 15.8-22), 19 (IQR: 16-20.3) and 4.0 (IQR: 4-7.3) respectively] to time 4 [Median: 6.0 (IQR: 6-7), 6.0 (IQR: 6-7) and 3 (IQR: 3-4); ($p < 0.001$), respectively].

Conclusions: VO is efficacious and well tolerated in the treatment of BMS. VO appears to be a valid option as first-line therapy for its best receptor pharmacological profile and in patients who are partially responders or reported adverse effects to previous treatments.

Fri-33

Evaluation of the efficacy of low level laser therapy in the burning mouth syndrome

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Introduction: Burning Mouth Syndrome (BMS) is described as an intraoral burning or dysaesthetic sensation without clinically evident causative lesions. Low Level Laser Therapy (LLLT) has been demonstrated to be useful to reduce pain, inflammation and to improve tissue repair in different pathologies.

Objectives: To determine the effectiveness of LLLT in patients diagnosed of BMS.

Material and Methods: Patients over 18 years attended in the Oral Medicine Postgraduate Degree Program at the School of Dentistry at Complutense University of Madrid (UCM) and diagnosed of BMS according to the International Headache Society (IHS) have been included. We applied to each patient a total of 10 sessions of LLLT (2 sessions per week for 5 weeks) using the laser diode Fox A.R.C. with a wavelength of 810 nm and a power of 600 mW in continuous mode, 10 seconds per point in 56 points. We collected the Visual Analogue Scale (VAS) for pain at the beginning, in each session and 1 month after treatment.

Results: Six patients were included. We obtained a significant decrease in VAS from session 7, decreasing until the 1-month follow up. The VAS previous to treatment was 6.83 ± 2.229 ; at the end of treatment VAS decreased to 4.00 ± 2.00 ($p=0.041$), and 1-month follow-up VAS results was 2.67 ± 1.21 ($p=0.027$).

Conclusion: LLLT could be an effective treatment option in BMS patients, although more quality studies are needed to confirm it.

Fri-34

Thyroid disorders and the burning mouth syndrome etiopathogenesis

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Introduction: Burning mouth syndrome (BMS) is characterized by oral burning, mainly involving the tongue. Examination of the oral mucosa shows no pathological changes and paraclinical investigations are usually negative. BMS may be present in patients with certain general pathologies, such as thyroid disorders.

Objectives: The aim of the study is to evaluate a possible association between BMS and thyroid diseases as well as to analyze the characteristics of the syndrome.

Material and method: The study group consisted of 263 BMS patients diagnosed in the clinical department of Oral Pathology Discipline, Faculty of Dental Medicine, "Carol Davila" University Bucharest, Romania, between October 2012 - October 2015.

Patients underwent a complex assessment. The diagnosis of BMS has been established on oral mucosa burning sensation, without following the neural pathways, present for all the day or only for a few hours, for more than 4-6 months, unchanging or improving symptomatology while eating and drinking.

Results: Thyroid diseases were present in 42 patients (15.97%). By correlating the evolution of BMS symptomatology we found a significant association between the two variables. Thus, with 18 patients with BMS and thyroid diseases (42.86%) the painful intensity increased over time (Test chi2, p=0,005). Another particularity observed was the association between dysgeusia and higher value of pain (VAS scale).

Conclusion: Thyroid disorders can be responsible for changes in the gustatory system. Endocrinological evaluation and specific treatment are absolutely necessary in BMS patients.

Fri-35

Saliva and associated factors in patients with burning mouth syndrome (BMS)

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Objective: The aim of this study was to examine mucosal saliva and unstimulated (UWS) and stimulated (SWS) whole saliva secretion rates, and associated factors, in 56 female patients

diagnosed with BMS and age-matched control women. Additionally, sensory analysis was assessed in these women to account for the taste disturbances.

Material & Methods: Mucosal saliva was assessed using the Periotron® method, SWS by chewing on a piece of paraffin and UWS was assessed using drooling. Sensory analysis was done using duo-trio test for the difference tasting and a line scale for the intensity testing. Diseases, drug usage, and xerostomia were registered using questionnaires.

Results: The BMS-patients had less lingual and whole saliva, and more hyposalivation, xerostomia, diseases/disorders and drug usage, compared to the controls. Only a low SWS and xerostomia differed after adjusting for drugs and systemic diseases. BMS patients were sensitive to sour test at lower concentration but did not differ in terms of sweet and metallic taste. Regression analyses suggested an importance of saliva-affecting drugs for saliva on the tongue and for SWS, and the total number of drugs used for UWS. Lingual saliva and UWS were also associated with systemic diseases in the patients. Xerostomia was significantly associated with drug use and whole saliva for all subjects but not in separate analyses of the groups.

Conclusion: Less saliva in BMS-patients could be related to more systemic diseases and medication and not to the syndrome *per se*. Xerostomia in the patients was not related to any of these factors.

Fri-36

EGFR blockade inhibits uptake of tumor cell-derived exosomes through macropinocytosis in oral squamous cell carcinoma

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Objectives: Exosomes are 30–100 nm-sized membranous vesicles, secreted from a variety of cell types into their surrounding extracellular space. Numerous studies have shown that tumor cell-derived exosomes play important roles in tumor progression. Concerning cellular uptake of exosomes, a variety of pathways were reported. However, the detailed mechanism is still unknown. In the present study, we investigated whether OSCC cell-derived exosomes were taken up by OSCC cells themselves through macropinocytosis by activation of EGF-EGFR signaling pathway. We further explored the effects of anti-EGFR agents on uptake of OSCC cell-derived exosomes.

Material and methods: Uptake of OSCC cell-derived exosomes were analyzed by confocal laser microscopy and flow cytometry in the presence or absence of recombinant EGF and EGFR inhibitors such as erlotinib and cetuximab. The influence of EGFR inhibitors on exosome-induced cell growth, migration, and invasion abilities of OSCC cells was examined by WST-1 assay, wound healing assay, and invasion assay, respectively.

Results: Treatment of OSCC cells with recombinant EGF activated macropinocytosis and significantly promoted cellular uptake of OSCC cell-derived exosomes into OSCC cells themselves time-dependently. On the other hands, the uptake of exosomes by OSCC cells was abrogated in the presence of erlotinib or cetuximab. Both EGFR inhibitors suppressed exosome-induced proliferation, migration, and invasion of OSCC cells via suppression of Akt and ERK pathways.

Conclusions: OSCC cell-derived exosomes are taken up into target cells through EGFR signal-activated macropinocytosis and enhance tumor cell progression. The inhibition of EGFR signal-activated micropinocytosis might be a novel therapeutic target.

Fri-37

Prevention and prognosis of DRONJ : a retrospective study of 37 patients

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Introduction: Few studies deal specifically with denosumab related osteonecrosis of the jaw (DRONJ). The aim of our study was to summarize therapeutic and preventive approaches of DRONJ.

Material and methods: A retrospective single-center study has been undertaken in Strasbourg University Hospital gathering data from 37 patients oncological medical records treated by denosumab mainly for a breast and a prostate metastatic cancer. We compared the occurrence of DRONJ and oral tissues healing regarding denosumab modulation treatment (introduction, suspension or cessation) after medical treatment and/or after a jaw bone surgical procedure.

Results: Concerning DRONJ: tooth extraction is the main trigger factor when denosumab is started prematurely ($p=0,04$); a drug holiday is effective for prevention ($p=0,002$); total dose of denosumab does not seem to affect the onset nor the outcome or healing prognosis; the outcome would be better after surgical treatment.

Discussion: Onset and behaviour of DRONJ seem to be strongly influenced by denosumab pharmacokinetic properties. Denosumab does not seem to present a remanent effect like bisphosphonates, but rather a quite "on/off" effect with a persistent effect about three months after cessation. Surgery should be offered as the first line treatment option but only if denosumab is stopped before. Dental screening is essential before initiating a denosumab treatment in order to prevent and to strongly reduce the incidence of DRONJ.

Conclusion: These results have a strong impact on clinical management of patient under denosumab but need to be confirmed by further animal preclinical models studies and a prospective trial with higher statistical power.

Fri-38

Evaluation of the inhibitory effects of caffeine on human carcinoma cells: a primary study

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Introduction: Caffeine is one of the world's most consumed medications with the vast majority of dietary contributions coming from beverage consumption. Several effects of caffeine have been previously evaluated that most of them shows the inhibitory effects of caffeine on cancer cells.

Objective: However, the influence of caffeine on oesophagus carcinoma squamous cells and head and neck carcinoma cells is still not well understood. Here, we evaluated the association between different doses of caffeine with the proliferation rate of human oesophagus carcinoma squamous cell line KYSE-30 as well as human head and neck carcinoma cell line HN5.

Material and Methods: For this aim, seven concentrations of caffeine were prepared and added to the cells. After 3 and 7 days of incubation, the inhibitory effects of caffeine on the cells were measured using the conventional colometric MTT assay.

Results: The results revealed that caffeine has a significant inhibitory effect on both cell lines at the concentrations of 20, 50, and 70 mM.

Conclusions: This study shows caffeine can inhibit the proliferation of carcinoma cells and thereby an ideal candidate for therapeutic applications.

Fri-39

Ubiquitin specific peptidase 13 promotes cell invasion in head and neck squamous cell carcinoma by interacting with and stabilizing BMI-1

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Objective: The emerging regulatory role of deubiquitinases (DUBs) has been implicated in the processes of tumor metastasis. The aim of this study was to determine the role of DUBs in regulating metastasis-related behavior of head and neck squamous cell carcinoma (HNSCC).

Methods: A non-biased screening of 66 human DUBs based on migration and invasion assays was performed to identify the DUB that facilitate the metastasis-related behavior of HNSCC. Protein complex purification coupled with mass spectrometry and immunoblotting were used to confirm the DUB's protein substrate. Molecular modeling combined with mutagenesis analyses were used to reveal protein-protein interacting mode. Finally, the expression of DUB candidate and its substrate protein were analyzed by immunohistochemical staining (IHC) in the OSCC tissue microarray (TMA).

Results: Ubiquitin Specific Peptidase 13 (USP13) was the most intensive DUB that could facilitate the migration and invasion of UM-SCC-23 cell. BMI-1 was identified as an interacting protein of USP13 and its stability was regulated by USP13 via ubiquitin modification. BMI-1 interacted with USP13 through the HTH domain, in which the pivotal amino acids were L175, K182 and D184. IHC analysis showed that USP13 and BMI-1 protein expression were positively correlated in tumor tissue (Kendall coefficient=0.372, $P<0.05$). Moreover, USP13 protein expression had statistical association with tumor metastasis and prognosis of OSCC patients.

Conclusions: We therefore propose that aberrant USP13, via interacting with and stabilizing BMI-1, promotes cell invasion of HNSCC and may serve as a biomarker in OSCC metastasis.

Fri-40

Oral mucositis and microbial colonisation in oral cancer patients undergoing radiotherapy and chemotherapy - a prospective analysis in a tertiary care dental hospital

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Introduction: Oral mucositis is a common side effect in patients receiving radio and/or chemotherapy for oral or oro-pharyngeal cancer. The ulcerative phase of mucositis colonises bacteria, fungi, viruses. The role of microbiota, specifically bacterial colonisation in oral mucositis is still unclear and there is no existing data that correlates the shift in the bacterial colonisation and expression with severity of mucositis.

Objectives: To assess bacterial colonisation and to study the VIM2, MCR1, TET(K), bla_{KPC} gene expression of isolated facultative anaerobes at 3 time points in patients with oral mucositis during radiotherapy and concomitant radio-chemotherapy.

Materials and methods: A total (n=24) oral cancer patients (squamous cell carcinoma) were divided into 2 groups, A (n=12) undergoing radiotherapy and B (n=12) undergoing radio-chemotherapy. Saliva was collected from all patients at 3 time intervals during treatment (onset, third week and at the end of therapy). The isolated bacterial colonies were subjected to gene expression and analysis.

Results: Staphylococcus aureus, Staphylococcus epidermidis, Pseudomonas aeruginosa, Escherichia coli, Klebsiella pneumonia were the facultative anaerobes isolated from saliva. The mean expression of antibiotic resistant genes (VIM 2, MCR 1, TET (K), bla_{KPC}) of isolated facultative anaerobes was increased during and at the end of therapy than at onset. The Staphylococcus aureus and Pseudomonas aeruginosa was highest among the all (p=0.069, p=0.371) during the entire course of treatment.

Conclusion: Bacterial colonisation and gene expression varies during different stages of mucositis. The presence of antibiotic resistant genes could be one possible reason for the varied severity of mucositis progression and presentation.

Fri-41

Oral cavity condition in patients with acute myeloid leukaemia after allogeneic peripheral blood stem cell transplantation

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Introduction: Acute myeloid leukemias (AML) are a group of clinically and genetically heterogeneous diseases of hyperplasia in the haematopoietic system, characterized by rapid clonal proliferation of progenitor cells in blood, bone marrow and other tissues, in addition to disordered production of normal cells.

Objectives: Evaluation of the state of oral mucosa, teeth, periodontium and rate of xerostomia in patients with AML before and after allogenic peripheral blood stem cell transplantation (allo-PBSCT).

Material and Methods: Sixty patients with AML were assigned to two groups depending on the intensity of conditioning regimens before transplantation: MAC (myeloablative chemotherapy) and RIC (reduced intensity chemotherapy). All patients underwent a full dental examination prior and after allotransplantation, including the evaluation of oral mucosa, teeth (DMFt), periodontium (PI), oral hygiene (OHI-s) and rate of xerostomia.

Results and Conclusions: The most commonly observed pathologic mucosal lesions included: white coated tongue, exfoliative cheilitis, palor, mucositis and petechiae. The frequency of eruptions located labially and buccally increased significantly in the post-transplant patients compared to the pre-transplant subjects. In the majority of patients I grade mucositis was the observed (46%). II grade mucositis was observed in 44% of patients prepared with MAC and in 15,7% of patients with RIC. Subjective xerostomia was reported by 25% of pre-transplant and by 60%- of post-transplant patients. No significant differences were observed in DMFt and PI prior and after transplantation, while the OHI-s increased by 10% in post-transplant group.

AML promotes the development of mucositis. Patients after allo-PBSCT are at risk of xerostomia.

Fri-42

Oral cancer - knowledge and risk perception in the screening population

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Introduction: Oral cancer is one of the ten cancers with the poorest prognosis in humans, mainly due to diagnosis in advanced stages. Apart from being asymptomatic in the early stage, lack of general populations' knowledge contributes to the late diagnosis. According to some studies nearly half of the general population has never heard about oral cancer.

Objective: The aim of the study was to examine oral cancer awareness, knowledge of etiology and risk perception for developing oral cancer in the screening population.

Material and Methods: An anonymous questionnaire was distributed to 230 individuals. who came to free oral screening during the Oral Head and Neck Cancer Awareness Week (OHANCAW) in Zagreb, Croatia.

Results: A great majority (178; 85%) of participants have heard about oral cancer and 110; 47.8% have heard about oral cancer screening. One hundred eighty eight (87%) participants knew that smoking was the main causative factor. The knowledge increased with participants' education. Unfortunately, smokers presented only as a minority of participants (32; 14%). The majority of smokers (18; 60%) were aware of their increased risk for developing oral cancer than the nonsmokers of the same age and sex.

Conclusions: Compared to other studies, our participants displayed high level of knowledge on oral cancer. The results also pointed out that we should more actively approach high risk populations for future oral cancer screening activities.

Fri-43

Oral shedding of human herpesvirus and the association with xerostomia in patients undergoing radio/chemotherapy treatment for squamous cell carcinoma in head and neck region

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Introduction: Radiotherapy is an antineoplastic treatment technique capable of providing high tumor growth control while preserving important anatomical structures. Despite its effectiveness, the radiotherapy treatment for head and neck tumors is accompanied by many complications arising from the involvement of the radiosensitive tissues located close to the tumor. Xerostomia is one of these very important complications. The irradiated oral mucosa can be affected by bacterial, fungal and viral infections.

Objective: The objective of this study was to evaluate a possible association between the oral shedding of human herpesvirus and xerostomia in patients with squamous cell carcinoma of head and neck submitted to radio/chemotherapy.

Materials and Methods: In this study, oral rinse samples were collected weekly from 20 patients during radiotherapy. The samples were submitted to PCR and enzymatic digestion for the detection of herpesvirus. The xerostomia was evaluated according to the Seminars in Radiation Oncology criteria.

Results: There was a higher frequency of grade 1 xerostomia (51.4%), observed first on the 1st. week of radiotherapy. On 4th week of radiotherapy, all patients presented some degree of xerostomia. The analysis of herpesvirus showed the oral shedding of EBV, HHV6 and HHV7, in all weeks. Considering all periods, the highest frequency was of EBV excretion (55.0%), which was significantly higher than the other virus.

Conclusion: We observed that oral shedding of herpesvirus is not affected by xerostomia, since there was a progression in the excretion, even with the evolution of xerostomia, suggesting that there is a local replication independently of salivary excretion.

Fri-44

Oral cancer and potentially malignant lesions: knowledge, attitudes and practices of Portuguese dentists

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Introduction: Oral cancer(OC) treatment success/prognosis depends on early diagnosis with dentists having a primary role. Despite this fact there are very few surveys on dentist's knowledge about this disease in Europe.

Objectives: To assess the knowledge, opinions and clinical practice of Portuguese dentists in relation to OC and potentially malignant lesions(PMLs).

Material and Methods: A 40-item, online, anonymous questionnaire was posted in Portuguese dentist's forums on Facebook. Descriptive, inferential statistical analysis (Chi-Square with significance level 5%) was performed.

Results: Of 317 respondents (69.6% females, 30.4% males), 53.7% were aged between 23-34 years and nearly half graduated after 2011. Tobacco(99.7%), alcohol(93.9%), sun exposure for lip cancer(89.4%), HPV(87.8%), and PMLs(87.8%) were recognized as risk factors while 70.4% also referred trauma. PMLs were acknowledged as leukoplakia(93.9%), eritroplakia(73.3%) and oral lichen planus(49.5%) while 36.7% also referred frictional keratosis. 93% considered non-healing ulceration as OC's primary clinical characteristic. 47.9% identified the tongue as the most frequent location. 82.3% associated the OC cases in younger and non-smoker patients with HPV. 40.2% perform complete intra-oral examination at least every 6 months but only 7.4% look for enlarged cervical lymph nodes. For the last 2 years, 61.2% observed at least one suspicious OC lesion, confirmed in 54.4% cases. Only 21% considered themselves adequately trained to perform OC's clinical diagnosis. Full results will be presented and discussed against international data.

Conclusions: In general, our results are better than most of European studies, probably reflecting our National Oral Cancer Program but Portuguese dentists feel the need of more training in this area.

Fri-45

Prognosis of oral squamous cell carcinoma in association with oral lichen planus

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Objective: To investigate the prognosis of oral squamous cell carcinoma (OSCC) in individuals with and without a history of oral lichen planus (OLP).

Material and methods: A retrospective single-centre case-control study was performed using the database of Head and Neck Cancer and Oral Medicine clinics of the University College London Hospital from 2007 until 2017. Individuals with at least one diagnosis of OSCC were identified. Kaplan-Meier estimates and Cox proportional hazard analysis regression were undertaken to determine the effect of OLP upon the development of second primary OSCC, oral epithelial dysplasia (OED), and survival.

Results: Out of 272 patients with OSCC, 63 (23.16%) had OSCC arising on a background of OLP. Twelve out of 63 OLP patients (19.05%) developed new second primary OSCCs following the initial malignancy compared to 20 individuals without OLP (9.57%). Eighteen (28.57%) and thirty-one (14.83%) patients developed new OED lesions following the initial OSCC in the group with and without OLP respectively. After controlling for traditional prognostic factors, OLP-associated

OSCC individuals had a higher risk of developing second primary OSCCs [HR = 4.84, CI 1.10-21.29] than those without OLP; however, patients with OLP were not at higher risk of developing subsequent OED. OLP was not a significant predictor for reduced overall survival, disease-specific survival and disease-free survival.

Conclusion: OLP was associated with a notable increased risk of developing second primary OSCCs. However, mortality was not increased. Limitations of the present study include its retrospective design and the small sample size. Prospective studies on larger sample size are warranted.

Fri-46

Environmental and behavioral head and neck cancer risk factors

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The high incidence and aetiology of head and neck cancer (HNC), as significantly associated with living environment and behaviour, can be prevented more efficiently. The aim of this study was to evaluate environmental and behavioural risk factors of HNC patients (103 cases, 80% men) in comparison with the control subjects (243 subjects, 80% men) matched by age. The mean age of HNC patients was 63 years. The results of this study showed that smoking and low education were significant risk factors for HNC regardless of sex. Family HNC and breast cancer were significant predictors of HNC, what may have originated from passive smoking or a smoking habit stemming from social environments that support it. Better dissemination programs regarding smoking risks for children and adults are needed in order to improve preventive measures which will have impact not only on individual but also on family and group level.

Fri-47

Polyomavirus JC detected in adenoid cystic carcinoma of trachea, paranasal sinuses and oral cavity

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Objectives: To assess the presence of three polyomaviruses, namely SV-40, JCyV and BKyV, and human papillomaviruses (HPV) in adenoid cystic carcinomas (ACC) of the minor salivary glands (MiSG) in the head and neck region.

Materials and Methods: The study comprised of 68 MiSG ACC patients operated during 1974-2012 at the Helsinki University Hospital, Finland. Medical records and 68 histological samples were reviewed. Polyomaviruses were detected with quantitative PCR and the DNA positive

samples were further analyzed for the presence of viral tumor T antigen (T-ag) with immunohistochemistry. HPV genotyping was performed with a Multiplex HPV Genotyping Kit.

Results: Only JCyV DNA was found in ACC samples, being present in 7 (10.3%) out of the 68 samples. The viral load of JCyV was low varying between 1 to 226 copies/μg DNA. The JCyV-positive samples originated from trachea (two samples), paranasal sinuses (one), and oral cavity (two). Additionally, JCyV positivity was found in one lung metastasis of a tracheal tumor and one local disease failure of an oral cavity tumor. Three JCyV DNA-positive samples showed weak nuclear staining for large T-ag.

Conclusion: Only JCyV but not SV-40, BKyV or HPV were found in ACC from the upper and lower airways. JCyV copy numbers were low which might support its role as a “hit and run agent” in ACC carcinogenesis.

Fri-48

The induction of epithelial-mesenchymal transition in oral epithelial cells by *fusobacterium nucleatum* - preliminary results

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Introduction: Despite the controversy regarding a potential role for oral bacteria in oral squamous cell carcinoma (OSCC), recent metagenomic studies addressing the relationship between OSCC and the human microbiota have found species members of *Fusobacterium* (including *Fusobacterium nucleatum*) to be enriched in OSCC. In addition, growing evidence supports this species involvement in colorectal cancer. Thus *Fusobacterium nucleatum* might also represent a potential key player in OSCC, where its role in carcinogenesis warrants further investigation.

Objective: To assess the ability of *Fusobacterium nucleatum* to induce epithelial-mesenchymal transition (EMT), a process suggested to underline OSCC invasiveness, in oral epithelial cells.

Material and methods: The oral epithelial cell line H357 was treated with different concentrations of culture supernatants of *Fusobacterium nucleatum* for 48 hours. Digital images were taken and morphological changes were assessed visually.

Results and conclusion: After 48 hours of exposing the oral epithelial cells to different concentrations of the culture supernatants, loss of the normal cobblestone architecture with signs of cell-to-cell contact loss were observed. In addition, the presence of extracellular vesicles that masked the cellular background were evident in treated epithelial cells but not in non-treated cells. These changes were dose-dependent and similar to those of epithelial cells treated with a known EMT inducer. In conclusion, the culture supernatants of *Fusobacterium nucleatum* altered the cellular morphology of oral epithelial cells. However, further assessment is still required to determine whether these changes are linked to oncogenic potential.

Fri-49

Targeting MMP2 with monoclonal antibodies in oral squamous cell carcinoma

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Introduction: Matrix metalloproteinase (MMP) family play an important role in tissue remodelling. Expression of MMPs is increased in several types of human cancer and high levels of MMP2 in cancer cells have been associated with metastasis; however, little is known about the role of MMP2 in oral squamous cell carcinoma (OSCC).

Objectives: To assess the role of MMP2 in OSCC using *in vitro* and *in silico* analyses.

Materials and Methods: Two human malignant oral keratinocyte cell lines (H357/H400) were treated with ARP101, a selective chemical inhibitor of MMP2, and MA5-13590, a monoclonal antibody. Cell proliferation was assessed at 0/12/24/48 hours. Cell migration was assessed at 12/24 hours using a Transwell migration assay (CLS3422, Sigma). MMP2 expression was assessed immunohistochemically using a tissue microarray (TMA) of 69 OSCC cases and *in silico* using a database of 544 tissue samples including 400 cancers. Statistical significance was evaluated using unpaired t-tests, ANOVA and Fisher's exact test.

Results: The inhibition of MMP2 with both ARP101 and MA5-13590 significantly reduced cell proliferation in H357/H400 cells in a dose and time-dependent manner. Surprisingly, cell migration in H357/H400 increased at 12 hours, subsequently decreasing at 24 hours when compared to controls. TMA analysis showed that MMP2 expression was altered in OSCC. Analyses of publicly available protein expression data demonstrated MMP2 dysregulation in adenocarcinomas, but not in carcinomas.

Conclusion: The results show that MMP2 plays a key role in OSCC and, for the first time, demonstrate the functional significance of MMP2 in the invasive phenotype of OSCC.

Fri-50

Differential expression of CYP1A1, CYP1B1, CYP2A6 and CYP2E1 in oral squamous cell carcinoma from smokers and non-smokers

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Objectives: The purpose of our study is to evaluate the expression of the main enzymes that metabolize tobacco and alcohol carcinogens on oral squamous cell carcinoma (OSCC) samples.

Material and methods: *CYP1A1*, *CYP1B1*, *CYP2A6* and *CYP2E1* genes expressions were evaluated by RT-qPCR in 32 samples of OSCC (26 smokers and 6 non-smokers) and 15 controls (9 smokers and 6 non-smokers) and correlated with tobacco and alcohol data.

Results: There was a decrease in *CYP1B1* gene expression in OSCC cases compared to controls ($p=0.0018$), smoker OSCC and non-smoker control groups ($p=0.0079$) and smoker OSCC with non-

smoker OSCC group ($p=0.0385$). The difference between the four groups was statistically significant ($p<0.0001$). There was a decreased *CYP2A6* expression in the smoker OSCC group compared to the control group. There was a difference in the gene expression of *CYP2E1* between the smoker control and smoker OSCC groups ($p=0.0424$). There was a greater expression of *CYP1A1* and *CYP2E1* in samples from smokers with OSCC.

Conclusion: This study demonstrated a higher expression of *CYP1A1* and *CYP2E1* in samples of smoking patients when compared to non-smokers OSCC, and a lower expression of *CYP1B1* and *CYP2A6* in the same group. Our study suggests that *CYP2E1*, frequently related to alcohol metabolism, may also be considered a marker of tobacco-derived carcinogens metabolism.

Keywords: Tobacco use disorder. Mouth mucosa. Squamous cell carcinoma. Carcinogenesis. Cytochrome P450

Fri-51

Brush biopsy for HR-HPV detection with FTA card and ai for cytology analysis - a viable non-invasive alternative

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Introduction: Oral cancer accounts for about 800-1,000 new cases each year in Sweden and the ratio of cancer related to high-risk human papillomavirus (HR-HPV) is increasing in the younger population due to changes in sexual habits. The most two frequent HR-HPV types 16 and 18 have both significant oncogenic potential.

Objectives: In this pilot study we evaluate two non-invasive automated methods; 1) detection of HR-HPV using FTA cards, and 2) image scanning of cytology for detection of premalignant lesions as well as eradicate the early stage of neoplasia.

Material and Methods: 160 patients with verified HR-HPV oropharyngeal cancer, previous anogenital HR-HPV-infection or potentially malignant oral disorder were recruited for non-invasive brush sampling and analyzed with two validated automated methods both used in cervix cancer screening. For analysis of HR-HPV DNA the indicating FTA elute micro cardTM were used for dry collection, transportation and storage of the brush samples. For analysis of cell morphology changes an automated liquid base Cytology method (Preserve Cyt) combined with deep learning computer aided technique was used.

Results: Preliminary results show that the FTA-method is reliable and indicates that healthy and malignant brush samples can be separated by image analysis.

Conclusions: With further development of these fully automated methods, it is possible to implement a National Screening Program of the oral mucosa, and thereby select patients for further investigation in order to find lesions with potential malignancy in an early stage.

Fri-52

Podoplanin as a potential predictive biomarker of malignant transformation in oral leukoplakias

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Introduction: Oral Leukoplakia (OL) is one of the most common oral potentially malignant disorders (OPMD) associated with an increased risk of malignant transformation.

Objectives: Our aim was to evaluate the expression of podoplanin in OL and to assess their potential value for predicting malignant transformation (MT).

Material and Methods: We analysed the immunoexpression of podoplanin in 57 biopsies of OL, including 9 cases with oral dysplasia. Mean follow-up period corresponded to 34.1 months. We compared the immunoexpression of the protein with clinical-pathological factors and also with the malignant transformation. Univariate (Kaplan-Meier/log-rank test) and multivariate (Cox regression method) analysis were performed to evaluate the association of variables with malignant transformation.

Results: Membranous expression of podoplanin was observed in 66.7% cases (n=38/57) with high expression in 14% (n=8) especially in the basal and suprabasal epithelial layers. Podoplanin was positively associated with the presence of epithelial dysplasia ($P < 0.001$). In multivariate analysis, in addition to the dysplasia grade, oral leukoplakias with podoplanin high expression showed an increased risk of developing an oral squamous cell carcinoma (HR 6.3; 95% CI 1.1-35.8; $P = 0.023$).

Conclusion: Podoplanin expression was present in OL and was related with dysplasia grade. Podoplanin could act as a useful predictive marker of malignant transformation in oral leukoplakias.

Fri-53

Loss of occludin is indicative of poor survival in oral squamous cell carcinomas

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Introduction: Oral cancer is a major public health problem worldwide. Despite advances in detection and therapy survival rates remain low. Occludins are tetraspan transmembrane proteins encoded by the OCLN gene that act at tight junctions (TJ) in the oral epithelium with an important role in regulating cell adhesion, maintaining cell polarity and acting as paracellular barrier.

Objectives: Our aim was to evaluate the expression of occludin in oral squamous cell carcinomas (OSCC) and analyse its role in the prognosis of patients with these tumours.

Material and Methods: We analyzed the immunohistochemical expression of occludin in 57 tissue microarray samples of OSCC. Univariate and multivariate analysis were conducted to inspect its influence on survival.

Results: Occludin expression was observed in 39 (68.4%) OSCC tissue microarrays. High levels were detected in 25 (43.9%) of tumours. Besides treatment modality ($p = 0.031$), and histological differentiation grade ($p = 0.026$) no significant correlation was found between occludin levels and the clinicopathologic factors. In multivariate analysis for cancer-specific survival (CSS), we found an independent prognostic value for occludin expression where tumours with low expression of occludin had lower CSS ($p = 0.006$; HR of 0.12; 95% CI 0.03-0.55) in addition to advanced T stage ($p = 0.01$; HR of 5.34; 95% CI 1.45-19.86). Low expression of occludin was also related with poor disease-free survival ($p = 0.005$; HR of 0.15; 95% CI 0.04-0.57).

Conclusion: Our data is one of the first reports of occludin acting as a potential prognostic biomarker on OSCC.

Fri-54

Metastatic tumors to the jawbones - report of 10 cases

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Introduction: Metastatic tumors to the jaw bones are rare and usually develop during the final stages of cancer. Some cancers such as lung, breast and kidney cancers are prone to the jaw metastases.

Objectives: To analyze clinical and epidemiologic characteristic of patients with metastatic tumor to the jawbones.

Materials and Methos: We retrieved patients' charts from 4478 patients with metastatic tumor during the period of 15 years who were treated in the Clinical Hospital Centre Dubrava in Zagreb, Croatia. A retrospective analysis was made of patient age, gender, primary tumor location, localization and clinical presentation of the jaw metastasis, time interval from diagnosis of primary tumor and oral metastasis and time interval from diagnosis of oral metastasis to death.

Results: There were 4 male and 6 female patients (mean age, 56.7 years). Out of 10 patients diagnosed with jaw metastases, the most common primary tumours were kidney ($n=5$), lung ($n=2$), breast ($n=1$), colon ($n=1$) and unknown primary tumor ($n=1$). The mandible was more often

affected (n=7) than maxilla (n=3). The most common histological type was adenocarcinoma (n=6). In the most of the patients (n=7) the primary tumor was diagnosed before the oral metastatic lesion. Jaw metastasis was the first sign of metastatic tumor in 3 patients and 1 was diagnosed at the same time as primary tumor. Most of the patients had some oral difficulties. Follow up period varied between the patients.

Conclusion: Due to the rare presentation, the diagnosis of a metastatic lesions in the oral region remains challenging.

Fri-55

Interventions for preventing and/or managing radiation-induced-fibrosis to the head and neck

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Introduction: Soft tissue fibrosis (trismus and dysphagia) is a common and irreversible adverse effect of radiotherapy to the head and neck. It can negatively affect quality of life (QoL) and increase mortality of affected individuals.

Objectives: We have undertaken this systematic review in order to estimate the effectiveness of available interventions to prevent and/or treat radiotherapy-induced fibrosis.

Material and methods: We searched the following databases up to April 2018: MEDLINE, Cochrane Central and EMBASE. We included prospective controlled trials of therapeutic and preventive interventions for radiotherapy-induced trismus and dysphagia. The primary outcome was the mean change in maximum interincisal opening (MIO) for trismus and swallowing function for dysphagia. The secondary outcomes included changes in QoL.

Results and conclusions: Thirteen studies were included in the systematic review. The overall quality of the studies was low, and the risk of bias high. All preventive (N=3) and therapeutic studies (N=3) for trismus focused on rehabilitation exercises. We found no evidence of beneficial effects of rehabilitation exercises in the preventative setting, whereas there was weak evidence of an improvement in the MIO for patients with established trismus. Preventive studies for dysphagia (N=3) showed weak evidence that swallowing exercises during radiotherapy could lead to improved swallowing function after radiotherapy completion. Therapeutic studies included trials of rehabilitation exercises (N=1) and neuromuscular electric stimulation (N=3) in individuals with established dysphagia post-radiotherapy, and showed no evidence of improvement in dysphagia. In conclusion, there remains no convincing evidence that available interventions can prevent or treat radiotherapy-induced trismus and/or dysphagia.

Fri-56

Analysis of salivary cytokines and chemokines in early and late stages of oral squamous cell carcinoma (OSCC)

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Introduction: OSCC is the sixth most common neoplasia worldwide and it accounts for 80-90% of Head and Neck Cancer (HNC). Sometimes it is diagnosed late, with a 5-year survival rate ranging between 50-55%. Accumulating evidence indicates the possibility of using salivary biosensors for diagnosis of oral disorders. Multiple studies reveal elevated secretion of inflammatory proteins in OSCC patients. However, to date, no reference indicates differences in salivary cytokines and chemokines between early and late stages of oral cancer.

Objective: Detection and quantification of salivary cytokine and chemokine levels in healthy individuals and patients at different stages of OSCC.

Materials and Methods: Immunoassay based on xMAP technology for protein analysis and biomarker screening was used to analyse saliva samples from 16 controls, 8 early and 10 late OSCC cases. To validate statistical significance ($P < 0.05$) Kruskal-Wallis non-parametric test was performed.

Results: A significant trend towards a growth of salivary IL-6, IL-10, TNF- α , HCC-1 and MIP-4 was observed according to the cancer progression. Besides, IL-8 and PF4 also showed a tendency for increasing levels though larger scale of samples are required to confirm notability.

Conclusion: The identification of salivary biomarkers aims to provide an accurate and non-invasive approach facilitating the early diagnosis and therapeutic outcomes of OSCC patients, with a valuable application in the clinical practice and research.

Fri-57

Acute oral complications in patients undergoing radio/chemotherapy treatment for squamous cell carcinoma in the head and neck region

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Introduction: Despite its effectiveness, radio/chemotherapy treatment for malignant neoplasms in the head and neck region is accompanied by acute oral complications such as: oral mucositis, dysphagia, xerostomia and disgeusia, resulting from the involvement of radiosensitive tissues located close to the tumor.

Objective: The aim of this study was to report the frequency and evolution of acute oral complications during radio/chemotherapy in patients undergoing treatment for squamous cell carcinoma in the head and neck region.

Material and Methods: In this study, we analyzed the oral complications of 20 patients, weekly, during the radio/chemotherapy treatment for squamous cell carcinoma in the head and neck region. Oral mucositis was evaluated according to WHO criteria. Dysphagia and dysgeusia were evaluated according to the the National Cancer Institute Common Toxicity Criteria (NCIC) and Xerostomia was evaluated according to the parameters of Seminars In Radiation Oncology.

Results: Mucosites was first seen during the 2nd week of radiotherapy, and the highest frequency was of grade 2 (43.3%). Dysphagia, was first observed in the 1st week of radiotherapy,

and the highest frequency of grade 1 (31.6%). Xerostomia starts also during the 1st week of radiotherapy, and the highest frequency was of grade 1 (51.4%). Dysgeusia was observed first in the 2nd week of radiotherapy and the predominant degree was grade 1 (42.7%).

Conclusions: Acute oral complications due to radio/chemotherapy can be observed throughout the treatment, however some of them, begin earlier, in the first week, and worsen throughout the treatment, which ends up diminishing the patient's quality of life.

Fri-58

Human papillomavirus infection and sexual habits in a population of young Italian adults

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Introduction: Despite oral squamous cell carcinoma (OSCC) is mostly diagnosed in adults in their fifties to seventies, a significant number of OSCC cases occur in young subjects who often do not present the traditional risk factors (tobacco smoke and alcohol abuse). Human Papillomavirus (HPV) infection gained recent attention in oral carcinogenesis, but evidence is still lacking in supporting its role in young OSCC patient.

Objectives: To investigate the prevalence of HPV infection in a group of OSCC young patients and the sexual habits of the same individuals.

Material and Methods: Patients who received a diagnosis of OSCC before 45 years old were recalled. During the visit, each patient received a questionnaire on sexual behaviour (NHANES 2008), and the oral mucosa cytological scraping. Histological sections of original cancer specimens were recovered. Multiplex Polymerase Chain Reaction (PCR) for HPV was performed on both scraping and histological sections.

Results: 16 patients were enrolled (mean age: 35.1 years; 43.75% teetotallers and not drinkers). Multiplex-PCR analysis could not detect any HPV+ sample, at scraping and histological level. The mean age at the first sexual intercourse was 17.5 years; at the first oral sex was 19.25 years. Before having OSCC, the mean number of partners was 11.7. Four patients reported history of a sexually-transmitted disease (chlamydia, gonorrhoea, herpes, or vaginal HPV).

Conclusions: Within the limitations of this pilot study, our findings suggest tobacco, alcohol and HPV might not be considered major risk factors for young OSCC cases. Further research is needed to elucidate this issue.

Fri-59

Nutritional status assessment of head and neck cancer patients: a cross-sectional study

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Introduction: Most head and neck cancers show hypo/malnutrition associated with weight loss and nutritional deficiencies, due to an impaired masticatory function and anorexia, with negative consequences on their social relationships and quality of life.

Objectives: Assessment of nutritional status and food habits in head and neck cancer patients, to identify the impact of cancer therapies on patient's diet.

Material and Methods: Cross-sectional study of head and neck cancer patients, after treatment (surgery, radiotherapy and/or chemotherapy). Each patient received a complete oral cavity examination (oral mucosa, dental and periodontal status, sialometry), and two questionnaires were administered: Mini Nutritional Assessment (MNA) and Performance Status Scale for Head and Neck Cancer (PSSHN). The patient was also instructed to complete a 7-day diet diary.

Results: 25 patients were enrolled. All received surgical therapy, which, in 6 cases, was combined with radiotherapy, in one case with chemotherapy, and in 4 cases with both of them. MNA revealed 10 patients malnourished, 13 at risk of malnutrition and 2 with normal nutritional status. PSS-HN showed just 3 patients having a diet without restriction; 8 ate only at home, in the presence of selected people. Five diaries were accurately completed; overall, they indicated that patients should diversify their meals, limiting carbohydrates and favouring animal and plant proteins.

Conclusions: The treatment of head and neck malignancies causes relevant changes at functional and psychological levels, affecting patient nutritional status. These findings encourage a support for patients and their families for a correct and healthy diet.

Fri-60

FASN and GLUT-1 expression in the malignant transformation of the pleomorphic adenoma

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Introduction: The increase in lipogenesis is a feature of the cancer cells and it is characterized by the increase of fatty acid (FA) synthesis, an essential constituent of cell membranes and an important substrate for energy metabolism. This way, the overexpression of the enzyme Fatty Acid Synthase (FASN) has been correlated to several neoplasms. Carcinoma ex-pleomorphic adenoma (CXPA) arises in Pleomorphic Adenoma (PA) and is supposed again in lipogenesis during its malignant transformation. In the same way, the increase of glycolytic metabolism in neoplastic cells is due to the high expression of glycolytic enzymes and glucose transporters (GLUTs). GLUT-1 facilitates the transport of glucose through plasma membranes.

Objective: The aim of this study was compare the FASN and GLUT-1 expression between CXPAs and PAs samples.

Material and Methods: Forty PA and forty CXPA were analyzed by immunohistochemistry with FASN and GLUT-1 antibody. The proportion of positive neoplastic cells was assessed according to a two-tiered scale: >10% to 50%, and >50% positive cells.

Results: Fifteen PA (37.5%) and thirty CXPA (75%) were FASN positive. Twenty PA (20%) and twenty nine CXPA (70%) were GLUT-1 positive.

Conclusion: The present results suggest that FASN and GLUT-1 overexpression are associated with the malignant transformation of the PA. This way, the increase of the lipogenesis and glycolytic metabolism should be collaborative factors for carcinogenesis, since cancer requires a highest demand of energy for survival and progression (Grant: FAPESP: 2015/07304-0 and 2017/00831-0).

Fri-61

HMGA2 expression in pleomorphic adenoma, recurrent pleomorphic adenoma and carcinoma ex-pleomorphic adenoma

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Introduction: HMGA2 is correlated to carcinogenesis and tumor progression and has been considered as a tumor biomarker in Pleomorphic Adenoma (PA). PA is an indolent neoplasia with favorable prognosis, except when it progresses to Recurrent Pleomorphic Adenoma (RPA) or to Carcinoma Ex Pleomorphic Adenoma (CXPA).

Objective: To evaluated if HMGA2 is present in RPA as well to evaluate if HMGA2 is associated with CXAP.

Material and Methods: Twenty-eight PA, twenty-six RPA and forty CXPA were analyzed by immunohistochemistry with HMGA2 antibody. The proportion of positive neoplastic cells was assessed according to a two-tiered scale: >10% to 50%, and >50% positive cells. The CXPA group was classified according histopathological subtype and invasiveness degree.

Results: Nine PA (32.2%), eight RPA (31%) and twenty CXPA (50%) were positive for HMGA2. According CXPA group: minimally and frankly invasive cases, Adenocarcinoma NOS and Salivary duct carcinoma showed the highest level of HMGA2 expression.

Conclusion: The HMGA2 expression is similar in PA and RPA showing the same morphological and genotypically features. However, HMGA2 should not to be considered as biomarker in PA and RPA. HMGA2 expression increases when PA undergoes malignant transformation and seems to be present mainly in high grade carcinomas and in cases with advanced phase of invasion. In CXPA, HMGA2 expression was associated with myoepithelial and epithelial differentiation. When in epithelial cells, the staining was present in cytoplasm indicating a non-coding RNA due a high expression (Grant: FAPESP 2015/07304-0 and 2017/00831-0).

Fri-62

Measurement properties of patient-reported outcome measures in radiotherapy-induced trismus

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Introduction: Trismus or lockjaw is the reduction in mouth opening. Many aetiologies cause trismus, Radiotherapy-Induced Trismus (RIT) occurs when the masticatory muscles are within range of radiation while treating head and neck cancer (HNC), resulting in muscular fibrosis and trismus.

Objective: To assess the measurement properties of available patient-reported outcome measures (PROMs) relevant to RIT in HNC patients.

Material and Methods: Systematic electronic searches were performed in MEDLINE and EMBASE databases to identify validation studies evaluating measurement properties of PROMs measuring RIT based on predefined eligibility criteria, up to January 2018. Two reviewers independently rated the methodological quality of included studies, utilizing the consensus-based standards for the selection of health status measurement instrument (COSMIN) checklist. Strengths of evidence for measurement properties were then summarised based upon pre-defined criteria.

Results: Only one of the 280 retrieved studies was deemed fit for inclusion. The study, which is relevant to the Gothenburg Trismus Questionnaire (GTQ), was assessed and found to have good methodological quality of measurement properties except for reliability, which was poor. There was moderate level of evidence supporting GTQ's internal consistency, content validity, structural validity and hypothesis testing. The evidence for test-retest reliability remains unknown in the population of interest.

Conclusion: The GTQ is the only PROM, in the field of RIT, showing some good measurement properties and it may therefore represent a useful instrument for the assessment of RIT in head and neck cancer patients. However, further validation studies are needed with respect to the reliability, measurement error and responsiveness of this instrument.

Fri-63

Retrospective study of oral dysplasia and squamous cell carcinoma developed in patients with graft versus host disease

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Introduction: Few studies have been published on oral dysplastic lesions (DL) and oral squamous cell carcinoma (SCC) in patients with chronic Graft Versus Host Disease (cGVHD).

Materials and methods: Retrospective study including 13 patients with DL, SCC and previous cGVHDc was performed. The patients were found from an exhaustive list of biopsy reports (2004-2016). Data were collected from medical hematology and odontology departments.

Results: 7 DL and 6 SCC were diagnosed. DL and SCC appeared mostly in men (sex ratio 5.5: 1), with average at 52.6 years. 70% of the patient were pre-conditioning with irradiation. 50 % had a history of acute GVHD and 85% severe or moderate cGVHD. 100% of the patient had immunosuppressive drugs. 62% of the patients were non smoker and 85% didn't have alcohol abuse. DL and SCC were diagnosed 6.5-6.7 years after the allograft. 57% of DL were severe, 29% moderate and 14% mild. The SCC were diagnosed at stage 1. DL and SCC were located on previous cGVHD lichenoid lesions. 43% of DL were on the lip, 43% on the tongue and 14% on oral mucosa. For SCC, 33% were on the lip, 33% on the gingiva and 34% on the tongue. DL appeared as white, red, white and red patch. SCC were ulceration, red patch and tissue proliferation. The 2-year malignant transformation rate of dysplastic lesions was 20%. 50% of SCC cases had recurred. The net survival rate at 5 years of patients with SCC was 56%.

Conclusion: DL and SCC in cGVHD seems to be more aggressive than those observed in general population.

Fri-64

Salivary cytokines and chemokines in patients affected by oral squamous cell carcinoma. A case-crossover study

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Introduction:

Salivary biomarkers for the early detection of oral squamous cell carcinoma (OSCC) could be tested through non-invasive sampling performed by practitioners without clinical experience.

Objective:

The present study aims at evaluating potential variations in the salivary concentration of cytokines in presence of OSCC.

Material and methods:

Patients diagnosed with primary OSCC surgically treated were prospectively enrolled. The salivary concentration of cytokines has been assessed in a case cross-over setting, thus eliminating the bias related to inter-individual variations. The concentration of 27 salivary cytokines was evaluated with suspension immunofluorescence array. Samplings were performed at diagnosis and 2 months after surgery in cases with free margins, no indication to adjuvant treatments and absence of residual disease. In cases of relapsing/recurrent disease a third sample was obtained. In order to address potential intra-individual variability, repeated samplings before surgery were performed.

Results:

21 patients were enrolled in the study. The comparison between samples obtained in presence or in absence of the disease showed that OSCC lead to an increase in concentration of IL-8($p = 0.004$), IL-6($p=0.005$), VEGF($p=0.014$), MIP-1 β ($p=0.033$), IP-10($p=0.047$), IL-1 β ($p=0.049$) and to a reduction in the concentration of IFN- γ ($p=0.036$) and IL-5($P=0.048$). In cases with

relapsing/recurrent disease IL-5(increased), IL-6(decreased) and MIP-1 β (decreased) reflects the presence of the carcinoma.

Conclusion:

The present results confirmed previous literature citing significant variations of IL-6, IL-8, VEGF, and IL-1 β and highlight molecules never addressed. Before using such test for early detection of carcinoma, further studies are needed to confirm these results and to determine reference values indicating presence or absence of the disease.

Fri-65

Melanoma of the oral mucosa. Clinical case

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Objective: To present a clinical case of oral mucosal melanoma in which the intraoral lesions did not show any sign suggestive of malignancy. Oral mucosal melanoma is rare: 0.5% of oral malignant tumours, incidence of 1.2 cases/10 million people/year.

Clinical presentation: A 34-year-old man with a history of hiatus hernia consulted for a painless right cervical tumour of 2 weeks evolution. He had a 2cm diameter mass of hard-elastic consistency on right side of the neck, slightly painful on palpation.

In the intraoral examination a small tumour in the palatal gingiva between the teeth 1.7 and 1.8 and with normal covering mucosa was present; there was also a 1 mm pigmented lesion on the distal mucosa to tooth 1.8.

Imaging study: Panoramic radiography without alterations. CT showed two adenopathies 2 cm in diameter, regular contour and heterogeneous content on the right side of the neck.

Histopathological study: Metastasis of melanoma in the lymph cervical nodes with capsular rupture and extension to soft tissues; this was a nodular melanoma of 4x2mm with 5 mitosis/mm² in the intraoral lesion. IHC: S-100 +, HMB-45 +, Melan A + and mutation B-RAF -.

Extension study: (PET-CT) without further lesions.

Definitive diagnosis: Nodular metastatic melanoma. Stage III.

Treatment: Surgery (right posterior partial maxillectomy, right radical and left functional neck dissection), radiotherapy and chemotherapy.

Evolution: After 4 months of the treatment he presented with bilateral brain metastasis. The stage was modified (Stage IV) and treatment was started with fractionated stereotactic radiotherapy and immunological therapy (Ipilimumab, Nivolumab).

Fri-66

Diffuse large B-cell lymphoma of the oral cavity

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Introduction: Oral cavity lymphoma is rare, and accounts for only 3 to 5% of all lymphomas. Although rare, it is the third most common malignancy in the mouth.

Objective: To report a case of a challenging oral diagnosis involving a primary diffuse large B-cell lymphoma of the oral cavity.

Material and Methods: A 43 year-old female was referred for ulceration in the lower left gingiva for three months. She was a smoker of 10 cigarettes a day, with no significant medical history. Her dentist had performed dental extractions, but the lesions had not healed. She referred numbness on the left side of her lower lip. An incisional biopsy was performed. The histopathological exam showed a diffuse large proliferation of atypical large lymphoid cells. The tumour cells expressed immunopositivity for CD20, CD79a, BCL6 and BCL2, Ki67 (90%). Also negative expression for EMA, ALK, CD30, CD5, CD10, and CD23. The diagnosis was diffuse large B-cell lymphoma stage IV-A. She was treated with 6 three-weekly cycles of chemotherapy R-CHOP: rituximab (R) cyclophosphamide, doxorubicin, vincristine, and prednisone (CHOP), which produced marked improvement in the outcomes.

Conclusion: Lymphomas of the oral cavity are rare and may have non-specific clinical features that mimic other lesions. Therefore a detailed clinical evaluation associated with histopathological and immunohistochemical analysis should be performed to enable early and accurate diagnoses in suspected oral lesions.

Fri-67

Colon adenocarcinoma metastasis to the mandible: a case report

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Introduction: Malignant tumours rarely metastasize to the oral cavity, representing approximately 1% of all oral tumor lesions. When they do, such metastases may arise from various locations, especially the lung, breast and kidney, but also prostate and colon. Oral metastases are usually a finding of late-stage disease and poor prognosis.

Objectives: To present a case report of a colon adenocarcinoma metastasis in the mandible.

Case report: A 71-year-old man was referred to the Department of Stomatology and Maxillofacial Surgery, Valencia University General Hospital (Valencia, Spain) with a chief complaint of the rapid growth of a soft tissue mass in the last two weeks. The patient suffered from hypertension. He had no known allergies and the patient's medical history reported a previous diagnosis of colon carcinoma a few years ago. Physical examination revealed an exophytic mass located in the alveolar ridge of the mandible that spread to the floor of the mouth. The surface of the tumour was ulcerated and presented some areas of necrosis. No significant cervical lymphadenopathy was noted. A CT scan highlighted an osteolytic lesion in the jaw with poorly defined limits and mandibular cortex fracture. The lesion was biopsied and the histology of the

mass revealed to be an intraoral metastasis from a colon adenocarcinoma that had relapsed after the treatment. The patient was referred to the Oncology Department.

Conclusion: Metastasis of the oral cavity may constitute the first manifestation of a still unidentified primary malignancy or manifest a recurrence of the primary tumor as in our patient.

Fri-68

Clinical case: multiple myeloma with initial manifestations in the oral cavity

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A 73-year-old female patient, habitual smoker of 10 cigarettes a day, with high blood pressure, type II diabetes and osteoporosis. In treatment with Ideos (calcium carbonate + cholecalciferol), Valsartan and Omeprazol. She received Bonviva (risandronic acid) for six months. Total edentulous and carrier of implant-supported complete prostheses. She goes to the hospital for oral bleeding and radiolucent mandibular lesion. The TC shows various radiolucent mandibular lesions and the biopsy confirms the diagnosis of multiple myeloma. After the conventional chemotherapy treatment, the total remission of the lesions is achieved.

Fri-69

Protective effects of metformin, statins and anti-inflammatory drugs on head and neck cancer: a systematic review

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Introduction: Due to their mechanism of action, metformin, statins and non-steroidal anti-inflammatory drugs (NSAIDs) could have a potential beneficial effect on head and neck cancer (HNC) outcomes when administered as coadjutants in cancer treatment.

Objectives: Assess the effect of metformin, statins and NSAIDs on HNC outcomes.

Methods: A systematic review was conducted following PRISMA guidelines. MEDLINE, IBECS, LILACS and the Cochrane Central Register for Controlled Trials databases were electronically searched. Two researchers performed study selection and one author extracted the data from the included studies. Data synthesis and meta-analyses were performed using a random-effects model using the Review Manager software.

Results and Conclusions: 10 studies met the inclusion criteria and so underwent qualitative synthesis (six studies for metformin and four for NSAIDs). No studies were found for statins. Meta-analyses showed that metformin exerts significant beneficial effects on HNC risk (RR=0.71 95% CI 0.61-0.84) and overall survival (RR=1.71 95% CI 1.20-2.42). The pooled analyses yielded an almost null effect of celecoxib on recurrence-free rate of HNC (RR=0.96 95% CI 0.47-1.95) although some evidence was found for a potential decrease in the incidence of oral squamous cell carcinoma and improved overall survival in patients receiving chemotherapy. Metformin has beneficial effects on HNC risk and overall survival. No definitive conclusions can be reached for NSAIDs, as the evidence was not of adequate methodological quality and presented inconsistent results. Further research is needed to determine firm clinical implications. Standardized

assessment methods for HNC outcomes should be established and account for known confounding factors.

Fri-70

Current approaches to early diagnosis of oral squamous cell carcinoma: case series

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Introduction

Oral cancers are malignant neoplasms affecting tissues in the mouth. Generally, oral squamous cell carcinoma (OSCC) is a malignant tumor that begins with dysplasia of the multilamellar flat epithelium with oral cavity and neoplastic cells invade the subepithelial area beyond the basal membrane. It may be a primary lesion, or it may be seen as lesions affecting the oral tissues from distant regions through metastases or extending from neighboring structures.

Cases

Oral carcinogenesis is a multi-step process modulated by endogenous and environmental factors. Among the etiologic factors, human papilloma virus infection plays an important role besides getting regular tobacco and alcohol. In this presentation, we aimed to present 10 cases of OSCC. In all patients' anamnesis information long-term use of tobacco is noteworthy, and all patients are over 40 years old except one patient. All patients' incisional biopsy, MR and PET results were evaluated. All of the tumors are primary lesions in the oral area without metastases. Nine patients have responded favorably to the treatment, the follow-up of the patients is ongoing. One patient died due to metastasis after surgical operation.

Conclusion

The incidence of OSCC is increasing, and due to its high mortality rate, it has become an important public health problem both as an individual and as a socio-economic group.

Fri-71

The role of computer guided implantology during complex dental treatment under general anesthesia

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Oral medicine specialists that provide dental treatment under general anesthesia are often challenged with medically complex patients presenting severe dental conditions. Moreover, they are also met with the need for a comprehensive dental treatment performed in a single appointment. All of this advocates a meticulous planning and predictable treatment methodology.

We present two complex cases treated under general anesthesia using computer guided implantology which enabled successful treatment, preceded by a careful planning and reliable implementation. The first case is of a 47 year-old male suffering from severe ischemic heart disease and dental phobia which led to drastic deterioration of his dentition while presenting functional and esthetic problems. The second case is of a 31 year old male with complicated

facial trauma who previously required a comprehensive jaw reconstruction at the oral and maxillofacial surgery department. Both patients underwent a complete dental treatment under general anesthesia using computer guided implantology.

In conclusion, we demonstrate the use of computer guided implantology as an appropriate method for successful treatment of patients with complex medical and dental conditions who undergo general anesthesia.

Fri-72

Importance of eliminating potential dental focal infection before hematopoietic stem cell transplantation: a retrospective cohort study in Japan

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Introduction: Patients with hematologic malignancies are more susceptible to systemic infections, particularly those undergoing immunosuppressive therapy. Many dentists find it difficult to select an approach for dental focal infections in these patients. This study aimed to explore the oral adverse events (OAEs) and the risks or safety of tooth extraction in patients undergoing hematopoietic stem cell transplantation (HSCT).

Material and methods: We retrospectively reviewed the medical records of patients with hematologic malignancies who visited the Department of Oral and Maxillofacial Surgery at our institute over a 6 year period. This was to study the incidence of OAEs where dental problems were treated before the first HSCT. All the patients were required to receive appropriate oral health care and treatments including tooth extractions. The observation period was 30 days from the HSCT.

Results: We identified 85 HSCT patients (52 men, 33 women) with a median age of 54 (range 19-69) years, of which 33 (38.8%) patients experienced some OAEs after HSCT. OAEs seen consisted of oral mucositis (n=24, 72.7%), oral mucosal edema (n=4, 12.1%), aggravated periodontitis (n=3, 9.1%), and oral candidiasis (n=1, 3.0%). Notably, none of the 20 tooth extraction cases showed any OAEs, regardless of the type of transplantation (autologous or allogeneic). Dental focal infection-associated sepsis caused a HSCT delay in one case that did not receive tooth extraction because of the HSCT schedule.

Conclusions: Dental focal infection may adversely affect patients with hematologic malignancy undergoing immunosuppressive therapy. Thus, dental infections should ideally be identified and eliminated before initiating the HSCT.

Fri-73

Should we assess TAVI patients the same as valve surgery patients

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Introduction: One of the major updates in the 2017 AHA/ACC guideline for the management of patients with valvular heart disease is the recommendation of antibiotic prophylaxis prior to specific dental procedures for transcatheter aortic valve implantation (TAVI) patients the same as for surgical AVR.

However while international guidelines advocate dental screening prior to heart valve surgery, there is no reference to whether such screening should be done as well in TAVI candidates.

Objective: As our institutional policy is to routinely evaluate the dental status in TAVI candidates in the same way as with surgical valve candidates, we analyzed retrospectively and compared the dental findings in both groups of patients.

Material and Methods: 71 TAVI candidates and 104 surgical valve candidates were all screened prior to their intervention by the Oral Medicine unit team and were treated to eliminate any oral, dental or periodontal infections. All patients were scored for dental findings which required intervention.

Results: Association between the oral/dental/periodontal status and the valve procedure was evaluated by chi-square test, showing no significant difference between the two groups.

Conclusion: As oral and dental findings are similar in TAVI and surgical valve candidates; it may call for the same level of vigilance in screening and treating TAVI patients in a similar way to the standards of surgical patients.

Therefore, dental and oral medicine practitioners should be familiar with the TAVI procedure, and relate to it in similar manner as with any other heart valve patient who is a candidate for surgery.

Fri-74

Impact of oral health on outcomes of renal transplantation

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Introduction: Dental evaluation and treatment before solid organ transplantation has become a common yet controversial standard of care. There is insufficient evidence-base concerning the impact of elimination of oral disease on the success of renal transplantation or complications in the post-transplantation period.

Objectives: To evaluate the impact of oral disease and the incidence of odontogenic complications on kidney transplant outcomes.

Material and Methods: This is a prospective observational cohort study on kidney transplant patients in two transplant centers in Brazil. A single dentist evaluated the oral health status of all consecutive transplant patients at 3 time points: 1) within 24 hours before transplantation; 2) 15-20 days after transplantation; and 3) 45-60 days after transplantation. Re-admission or prolonged

hospitalization and signs of graft failure were the primary outcome measurements, whereas odontogenic complications during the follow-up period were secondary outcomes.

Results: Eighty subjects were examined at the first time point, 76 in the second, and 74 in the third. Forty-seven (58.8%) were found to have odontogenic infection; 17 (22.4%) and 18 (24.3%) were hospitalized in the second and third time points, respectively, due primarily to generalized CMV infection. One hospitalization occurred due to odontogenic infection. We observed an association between pre-transplant dental infection and hospitalization in the third time period (Pearson Chi-Square, $p=0.018$), as 34% of patients with oral infection at the first time point were being re-hospitalized.

Conclusion: Hospitalization due to dental infection were rare, but patients with odontogenic foci of infection before transplantation were more likely to be re-hospitalized than those without.

Fri-75

Cross-cultural adaptation and psychometric properties analysis of the European medical risk-related history (EMRRH) questionnaire for use in the Indonesian-speaking population

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Introduction: Medical complications during dental treatment are increasingly predicted, since life expectancy is longer as the illness has been controlled by long term medications. A thorough medical history to measure medical risks that may occur before, during and after dental procedures is required. The EMRRH questionnaire has been used in Europe to detect medical problems and determine the degree of risk. However, such a questionnaire has not been developed in Indonesia.

Objectives: To develop an Indonesian version of EMRRH questionnaire and to analyse its psychometric properties.

Material and Methods: The EMRRH questionnaire was utilised and processed for cross-cultural adaptation according to Beaton guideline. The final version was used after completing all the steps of the cross-cultural adaptation. The psychometric properties analysis was undertaken with measuring validity, reliability, sensitivity, and specificity value when the questionnaire was tested to 172 dental patients in the National Drug Rehabilitation Center.

Results: The content validity was firstly measured by an internist and an anesthesiologist with relevant coefficient of 0.91. The construct validity showed significant association to 5 from 6 global questions ($p<0.05$). Cronbach's alpha coefficient for internal consistency was 0.790. The test-retest reliability results were excellent, based on re-evaluation to 17 patients ($ICC=0.846$) with the sensitivity and specificity values were 69.31% and 92.2%.

Conclusion: The Indonesian version of EMRRH questionnaire is valid, reliable, sensitive, and specific to be used in the population in the study. Further study to explore the use of the questionnaire on the larger population of Indonesia is needed.

Fri-76

The antifungal susceptibility to octenidol and chlorhexidine of candida spp. Oral isolates from patients with denture stomatitis

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Objective: To evaluate the potency of the antifungal effect of two common antiseptic agents: octenidine and chlorhexidine against 25 *Candida oral* isolates from patients with denture-induced stomatitis, with the aim to establish new therapeutic strategies in managing oral candidiasis

Material and Methods: Biochemical CANDIFAST assay provided the species identification of clinical isolates collected from denture wearers with pre-diagnosed oral candidiasis. Two commonly used compounds were assessed: octenidine dihydrochloride (Octenidol mouthwash), 0.1% chlorhexidine gluconate (Eludril mouthwash). Antifungal susceptibility was evaluated by the broth microdilution assay. One reference *Candida* strain ATCC 10231 was also utilized for comparative results.

Results: 18 strains were identified as *Candida albicans*, two as *C.lusitaniae*, two as *C.parapsilosis* and 3 as *C.tropicalis*. Octenidol demonstrated a more prominent antifungal effect in less concentrated solution compared to chlorhexidine (dilutions ranged 1:1024-1:2048 vs dilutions 1:128-1:256 respectively). Chlorhexidine elucidated the much least noticeable inhibitory effect compared to octenidine. Both agents demonstrated fungistatic activity against *Candida* spp. inhibiting growth of all isolates. The reference *Candida albicans* ATCC 10231 strain was also susceptible to these agents.

Conclusions: Recurrent oral candidiasis is a common finding in patients wearing removable prostheses, particularly associated with underlying medical conditions, and repeated antimycotic therapy increases the risk of fungal resistance. New agents to control oral *Candida* spp. would play a pivotal role in the management of opportunistic *Candida*-associated infection. Clinical trials should establish the optimal, clinically effective concentration of these topical measures.

Fri-77

Sino-palatal-vestibular mucormycosis and aspergillosis in a patient with acute b lymphoblastic leukaemia

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We report a case of a 54 year old man who was admitted to the Department of Oral Medicine due to the dark red/brownish lesions on the left side of the palate and vestibular exophytic lesion in the area of the teeth 25-27. Previously he was diagnosed with acute lymphoblastic leukaemia and treated according to HAM protocol. Oral lesions appeared nine days after the second cycle of chemotherapy. Biopsy specimens from the palate were taken and the diagnosis confirmed, finding of *Aspergillus fumigatus* and *Rhizopus* spp. Intravenous posaconazole (300 mg) and lyposomal amphotericine B (375 mg) were given for the next 28 days and inferior maxillectomy was performed. As coinfection with *Aspergillus* and *Mucorales* in the oral cavity is very rarely seen, it leads easily to the diagnostic dilemma.

Fri-78

Close relationship between the palmoplantar pustulosis and dental treatment

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Objectives: Palmoplantar pustulosis (PPP) is a chronic skin disorder that is characterized by numerous sterile pustules in the palms and soles. Although the etiology of PPP has not been elucidated, the triggering factor including odontogenic infection, dental metal allergy and tonsillitis has been reported. In this study, we retrospectively evaluated the effectiveness of odontogenic infection control and removing dental metal allergen for the PPP patients.

Patients and Result: We examined 29 Japanese PPP patients who underwent an oral examination and patch test.

22 of the 29 cases were positive for metal patch tests (palladium, nickel, zinc, etc.). Metallic component analysis by X-Ray Fluorescence Spectrometer confirmed that 14 patients of the 22 patch test positive had concordant metals in the oral cavity (palladium, zinc, etc.). Odontogenic infections (marginal periodontitis, apical periodontitis) were found in 25 of 29 cases. 13 cases had both positive metal and odontogenic infections.

After metal removal, two-third of patients (9/14) with positive metals in oral cavity showed improvement of skin lesion. Among the remaining 15 patients without positive metals in oral cavity, 8 patients underwent odontogenic infection treatment. However, the skin symptoms were not improved solely by the removal of the odontogenic infection in many patients (7/8).

Conclusions: This study showed the improvement of the skin symptoms were observed in many cases by both positive metal and odontogenic infection removal. On the other hand, enough effects were not accepted only by the removal of the odontogenic infection. This study demonstrated the effectiveness of dental treatment.

Fri-79

Self-reported oral and dental experience of patients with scleroderma

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Introduction: Scleroderma is a multisystem immune-mediated disease that by virtue of the notable fibrosis of the orofacial region and hands that negatively impact upon the oral health and

delivery of oral health care of affected individuals. There are however little data regarding the perceived adverse oral health and access to oral health care of individuals with scleroderma in the UK.

Objectives: To explore the effect of scleroderma on dental health and access to dental care in the UK.

Material and methods: An observational cross-sectional study was undertaken to explore the effect of scleroderma on dental health and access to dental care among patients with known scleroderma.

Results: The study group comprised 50 patients with a mean age 62 years. 95.8% were female. 47% of the group considered their oral health status as fair while 69% reported having problems associated with the mouth. Although 98% of patients were registered with a dentist, 22% had encountered difficulties in registration that they believed were the

consequence of having scleroderma. 53% reported that their ability to maintain good oral hygiene might be compromised by lack of manual dexterity and limited mouth opening.

Conclusion: While the majority of this group of patients with scleroderma readily accessed dental health care services and were attempting to maintain oral hygiene there is a need to develop appropriate patient-centred protocols for the oral self-care and to ensure patients with scleroderma have appropriate, ready, access to dental care to lessen the risk of both common and rare oral disease.

Fri-80

Oral and dental findings in Hamamy syndrome

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Introduction: Hamamy syndrome is a rare autosomal recessive disorder first described in 2007 in a Jordanian family. It is caused by missense mutations in the IRX5 gene on chromosome 16q12.2-q21. Clinical findings in Hamamy syndrome include severe hypertelorism, prominent midface, prominent ears, severe myopia, learning disability, and multiple fractures due to bone fragility. Oro-dental findings in Hamamy syndrome are not known.

Objectives: To describe oral/dental findings in patients with Hamamy syndrome

Materials and Methods: 3 siblings with genetically confirmed Hamamy syndrome were examined according to WHO methodology and panoramic X-rays were taken for the three siblings.

Results: The extra-oral examinations revealed characteristic features of the syndrome including severe hypertelorism (mean intercanthal distance=6.8cm), broad nasal bridge, prominent ears with flat helix, and thin lips. Upon intra-oral examination, severe coronal attrition was evident and the remaining tooth structure appeared grey-opalescent in colour. Radiographic examination showed generalized large pulp chambers with a very thin layer of overlying dentine (i.e. shell teeth), and multiple impacted and displaced teeth. Inflammatory gingival hyperplasia was evident in the three siblings, but with variable severity.

Conclusion: This is the first report to describe oro-dental findings in Hamamy syndrome. Recognition of dental abnormalities might help to differentiate Hamamy syndrome from other related disorders such as frontonasal dysplasia, craniofrontonasal syndrome, and Teebi hypertelorism syndrome. Further studies are needed to report the dental abnormalities in patients with Hamamy syndrome.

Fri-81

Current oral surgical approaches to hemophiliac patients: case series

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Introduction

Hemophilia is an hereditary disorder of coagulation which results in deficiency of factor VIII (Hemophilia A) or factor IX (Hemophilia B). Excessive bleeding after oral surgical procedures are one of the most frequent complications occurring in these patients. Most frequent oral surgical applications are extractions, cyst operations, implant surgeries and trauma surgery. In addition implant surgery is very rare for hemophilic patients.

Cases

We have 3 cases including impacted molar teeth extraction, cyst operation and implant surgery on patients with hemophilia. Surgical procedures were carried out under local anesthesia (Articaine) employing a low-trauma surgical technique. All patients received premedication with antibiotic prophylaxis 2 hours before the surgery. All operations applied standardized surgical procedure by the same surgeon.

Conclusion

All surgical operation plans must be discussed with hematologists if they involve the use of prophylactic cover. In addition, antibiotic prophylaxis is mandatory. In this presentation we discuss current surgical procedures oral surgeries on patients with hemophilia.

Fri-82

Impacted canine surgery in a patient with homocystinuria: a case report

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Introduction

Homocystinuria is an inherited autosomal recessive disease caused by a deficiency in cystathionine b-synthase. The disease mainly effects four major organ systems including eye, skeleton, central nervous system and cardiovascular system. It can also effect liver, skin and hair. The disease is associated with high incidence of thromboembolic event. In this report, our aim is to evaluate the clinical and oral surgical approach in a patient with a diagnosis of homocystinuria.

Case

The clinical examination of a 14 year-old female patient with the diagnosis of homocystinuria who was referred from the Department of Pedodontics to our clinic in Istanbul University, Faculty of Dentistry revealed that the right upper permanent canine had not erupted. An impacted

canine was observed on the panoramic radiography. Since the eruption of the canine could not be expected, surgical treatment was planned.

Correcting the biochemical abnormalities, especially to control the plasma homocysteine concentrations and prevent thrombosis before any surgical operation is crucial for the patients with a diagnosis of homocystinuria. The confirmatory test includes analysis of methionine, homocysteine, and cystathionine levels. In our patient, impacted canine surgery was performed under local anesthesia following approval by consultation.

Conclusion

The diagnosis, understanding and treatment of homocystinuria have much improved in the recent years. Complications related to general anesthesia may be prevented or reduced through careful observation. Although there are not any clearly defined protocols regarding anesthetic management, oral surgical operations under the local anesthesia can usually be performed safely in patients with homocystinuria.

Fri-83

Salivary cardiac troponin I as a potential marker for detection of acute myocardial infarction

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Introduction & objectives: Serum Cardiac troponin I is an important tool to detect Myocardial Infarction. Saliva as a biological fluid, can be used as a substitute of serum in detection of MI. Therefore, we planned a study to estimate and correlate the level of cardiac troponin I (cTnI) in un-stimulated whole saliva and serum in acute MI patients and a control group.

Materials & Methods: 60 individuals were enrolled and equally divided into study groups, (group I) and control group (Group II). Informed consent forms were taken from all the subjects. Saliva and blood samples were obtained from the patients with ECG features suggestive of acute MI within 24 hours. Serum and saliva samples were processed further for cTnI. The results obtained were then statistically analyzed.

Results: The mean cTnI level in serum of group I and group II was found to be 4.27 ± 1.79 mg/l and 0.158 ± 0.05 mg/l respectively. The mean cTnI level in saliva of group I and group II was found to be 0.67 ± 0.10 ng/l and 0.160 ± 0.05 ng/l respectively. Serum levels of cTnI were directly associated with saliva levels and demonstrated a highly significant strong positive relation.

Discussion: The saliva levels of cTnI were directly associated with serum levels demonstrating a highly significant strong positive relation and confirms the diagnostic ability of saliva for detection of cTnI

Fri-84

Salivary Extracellular Vesicles microRNAs as a fitting non-invasive source for biomarkers in oral oncology: A prospective study.

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Despite the outstanding improvements in the diagnosis in other cancer fields, oral cancer (OC) still holds a poor prognosis. Knowledge of specific predictive factors could be crucial.

The objective of this study was to detect differences in salivary extracellular vesicles (EVs) microRNA profiling in OC patients and healthy controls.

Vesicles were isolated from saliva samples and characterized by electron microscopy and particle tracking analysis applying NTA techniques. Total RNA was extracted and miRNAs selectively reverse transcribed and pre-amplified. The TaqMan® Array Human MicroRNA was used.

Five miRNAs were significantly up-regulated (miR-412-3p, miR-489-3p, miR-512-3p, miR-597-5p, and miR-603) and six miRNAs expressed only by OC patients (miR-27a-3p, miR-302b-3p, miR-337-5p, miR-494-3p, miR-517b, and miR-520d-3p). Four miRNAs were confirmed to be up-regulated and two miRNAs to be only expressed; they were selected for KEGG pathway enrichment analysis and 8 pathways were found to be significantly enriched for at least two of the tested miRNAs.

The majorities of the published studies related to EVs are still at the stage of particle characterization and performed on healthy donors; sizable data sets are not available for saliva cancer-derived EVs, unlike those isolated from urine or blood. Due to its ready availability and ease in processing, a saliva-based approach would be advantageous in achieving a better understanding of the molecular basis of OC. The study of vesicles secreted by tumor cells via exocytosis into saliva could be an interesting approach for the detection of novel biomarkers.

Fri-85

The expression of insulin-like growth factor 2 (IGF2) in patients with oral lichen planus and diabetes mellitus

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Introduction: Insulin-like growth factor 2 (IGF2) has growth promoting and proliferating effect on different cell types. Increased risk of cancer development was observed in patients with type 2 diabetes mellitus, while oral lichen planus is known as premalignant lesion.

Objectives: The aim of this study was to examine the expression of IGF2 in patients with oral lichen planus (OLP) and type 2 diabetes mellitus (DM).

Material and methods: IGF2 expression was evaluated in paraffin-imbedded biopsy samples of oral mucosa of total of 8 patients with oral lichen planus and diabetes mellitus (OLP+DM) and 8 patients with oral lichen planus without diabetes mellitus (OLP), by comparative semiquantitative immunohistochemistry. IGF2 expression was interpreted according to the literature. A score of 0–5 was considered negative (low expression of IGF2), and a score of 6 was considered positive (high expression of IGF2).

Results and conclusions: All biopsy samples in both groups of patients had negative score of IGF2 expression. Biopsy samples of OLP+DM patients had lower scores of IGF2 expression when compared to OLP group, and the difference was statistically significant (Mann-Whitney test for independent samples; $P = 0,0014$).

Immunohistochemical analysis of IGF2 expression has determined variable immunoreactivity with a significant difference in final scores of IGF2 staining in biopsy samples of patients with oral lichen planus with and without diabetes mellitus, although all results were considered negative. This was a pilot study with small number of patients and further investigation on larger group of samples is required.

Fri-86

Chronic graft-versus-host disease oral mucosal histopathological grading module

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Introduction: Graft-versus-host disease (GVHD), acute(a) and chronic(c), is the major complication in patients post hematopoietic stem cell transplantation (HSCT). Affecting multiple organs, oral lichenoid-like lesions, restricted mouth opening and salivary gland dysfunction arise in about 70% of patients as oral GVHD, but with poorly defined histopathology.

Objectives: We aimed to define oral mucosa cGVHD histopathology and to develop and validate a scoring system in a large cohort to provide improved personalized understanding and diagnoses of this disease.

Material and Methods: HSCT-patient cases ($n \approx 750$) were reviewed and oral mucosal biopsies obtained from patient ($n \approx 100$) collected within Karolinska University Hospital Biobank and Oral Medicine Clinic. Samples including non-GVHD as well as cGVHD at different stages, were stained for prominent re-occurring histological features through Hematoxylin & Eosin and Periodic Acid Schiff to establish the grading module. Three validated independent researchers subsequently blindly graded the cohort to develop the grading module.

Results: Identified histological features included intra-epithelial lymphocytes and band-like inflammatory infiltrate, atrophic epithelium with basal cell degeneration. In the current cohort, histological changes were found in all HSCT patients. Points-based scoring (0-95) of these features, summarised in the grading module (graded 0=non-cGVHD to 4=most severe) in to diagnostics.

Conclusions: The histopathological module provides, a suitable platform to grade oral mucosal cGVHD. Liquefaction degeneration, including apoptosis and basal membrane changes are important findings of oral cGVHD. We highlight the importance of defining the histopathology to weigh against clinical-severity in the formulation of individualised diagnoses and to understand the dynamic pathophysiological in oral cGVHD.

Fri-87

Interim performance of an oral rinse point-of-care assay to aid in the diagnosis of oral squamous cell carcinoma (OSCC) in a German oral-maxillofacial surgery university clinic

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Objectives: Head and neck squamous cell carcinoma (HNSCC) is the 6th most common cause of cancer mortality. To detect HNSCC at an earlier stage could have significant impact on overall outcomes. Previous studies demonstrated a point-of-care (POC) lateral flow assay measuring CD44 and total protein (TP) aid in the diagnosis of HNSCC. We sought to understand the performance of the POC assay in a hospital-based oral and maxillofacial surgery clinic (OMSC) in Germany.

Materials and Methods: Oral rinses from 90 patients at the OMSC, University Medical Center Hamburg-Eppendorf, Germany, were obtained. Three cohorts of patients were prospectively enrolled: Group (Grp) A, newly diagnosed with OSCC; Grp B, healthy smokers (18-40 years, >100 cigarettes) and Grp C, normal healthy individuals (18-40 years, <100 cigarettes). Operators provided POC visual tools to record results. A positive POC test: visible CD44 band or level of TP (i.e. scale from 1-5, recommended ≥ 3), with Sensitivity (Se), Specificity (Sp), NPV to evaluate correlation with biopsy.

Results: 90 patients: Grp A: 100% OSCC, 60% Stage I/II, mean age: 68 years, 60% male, 59% smokers; Grp B: mean age 43 years, 59% male, 100% smokers; Grp C: mean age 43 years, 49% male, 94% non-smokers. POC levels of CD44 or a TP ≥ 3 , Se of 76% in Group A. Grp A vs. Group B or C with a TP of ≥ 3 , Sp 83% and 85%, respectively. With a presumed population prevalence of 10%, the NPV was >90%.

Conclusions: POC performed well for identifying OSCC. Additional studies underway to confirm results.

Fri-88

Salivary metabolomics in the early diagnosis of head and neck squamous cell carcinoma

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Introduction: Cancer of the oral cavity, pharynx and larynx have together a worldwide incidence of more than 800.000 cases and more than 300.000 deaths. In most cases, these lesions are diagnosed in advanced stages. In this context, the study of biomarkers for the early diagnosis of head and neck cancer has been the subject of several researches.

Objective: The aim of this study was to evaluate the salivary levels of pipecolic acid, a lysine metabolite, as a possible biomarker isolated in the early diagnosis of squamous cell carcinoma of the head and neck (SCCHN).

Material and Methods: Unstimulated saliva samples from 40 individuals were analyzed using ultra performance liquid chromatography: 20 of the test group (with diagnosis of SCCHN not yet treated) and 20 individuals without cancer (control group).

Results: Our results showed mean levels of 169,8 ng/mL of the analyzed metabolite in the test group and 114,6 ng/mL in the control group ($p < 0,001$). The test group was divided into test 1 (early stage cancer) and test 2 (advanced stage cancer). There was a statistical difference between the means of the control group versus test 1 ($p = 0,008$) and control versus test 2 ($p < 0,001$). Through the analysis of the receiver operating characteristic (ROC) curve, a sensitivity of 90% and specificity of 65% was verified, with the area under the curve of 0,837.

Conclusion: We conclude that the salivary metabolite analyzed has a high sensitivity for the diagnosis of SCCHN and may be useful in the early diagnosis of this disease.

Fri-89

Candida species colonization and red autofluorescence of the dorsal tongue

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Introduction: Autofluorescence of oral mucosa has been employed as an ancillary method in the detection of neoplastic changes. Different outcomes of oral tissue under autofluorescence examination have been described in literature and red fluorescence (RF) also known as protoporphyrin fluorescence is reported mostly on dorsal tongue.

Objectives: The aim of this study was to evaluate the correlation between RF detected by VELscope examination and presence/absence of Candida species on the dorsal tongue.

Material and Methods: Sixty-five consecutive patients were subjected to VELscope examination followed by conventional lingual swab test. The scrubbed sites were photographed by Nikon D7100 digital equipment with a dedicated adapter and inspected in autofluorescence with parameters ISO 1600-F 8t 1/60. Sensitivity, specificity, positive predictive value, negative predictive value, accuracy and Cohen's K value, were analytically calculated comparing the RF to oral swab test.

Results: Thirty-two patients had RF on the dorsal tongue and 29 of them were negative to the Candida swab test. Presence of RF showed sensitivity and specificity values of 80% and 58% respectively in indicating the absence of Candida. Positive and negative predictive values were 36,4% and 90,6% respectively. Test accuracy was 63% and K Cohen value was 0,268 (moderate agreement).

Conclusions: The present study suggests the "off-label" use of RF. Presence of dorsal tongue RF may be employed as an immediate screening tool to exclude Candida species colonization on examined oral sites.

Fri-90

Rare presentations of cranial nerve dysfunction associated with space-occupying lesions

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Objective: Cranial neuropathies presenting in the oral cavity typically affect the trigeminal or facial nerves. When present these have well defined clinical features but a plethora of possible causes. We report 3 patients with symptoms of cranial nerve dysfunction occurring as a result of space occupying lesions at different intracranial locations.

Cases:

A 39-year-old male presented with a 5-year history of 'thinning' of the left side of his tongue. There was no dysarthria or dysphagia. Examination demonstrated muscle bulk loss and fasciculation on the affected side with no deviation on protrusion. MRI demonstrated a mass around the left hypoglossal canal and jugular foramen.

A 50-year-old female presented with an 8-week history of 'thickening' of the left side of her tongue. There was no dysphagia or dysarthria. Examination revealed atrophy and fasciculation on the affected side with deviation to the left on protrusion. MRI revealed a lesion in the left cerebellomedullary cistern, extending into the left hypoglossal canal.

A 51-year-old male presented with a 2-year history of a 'buzzing' sensation affecting the left lateral border of his tongue, occurring weekly, resolving within seconds. Examination of the tongue was normal. MRI revealed a lesion between the left trigeminal nerve and petrous bone.

Conclusion: Trauma, radiation, tumours and strokes account for most cases of cranial nerve dysfunction. Radiological imaging is essential to determine the site and cause of any palsy although there will often be a later requirement to confirm the aetiology histologically. Multidisciplinary team management should be considered in most instances.

Fri-91

Morphometric Analysis of the anatomical variables of the maxillary sinus and the alveolar artery using Cone Beam Computed Tomography (CBCT)

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Introduction: The maxillary sinus, superior alveolar artery, septum and Schneider membrane are important anatomical elements. The imaging technique of choice to study these structures is CBCT.

Objectives: To study the characteristics of the alveolar artery and relate them to the maxillary sinus and sinus membrane.

Material and methods: A consecutive retrospective study was conducted in 190 patients at the University Dental Clinic of Murcia. Inclusion criteria: Over 18 years of age, not pregnant, had undergone a CBCT for diagnostic and/or treatment needs and images without artefacts. We measured: presence of posterior alveolar artery and its location, distance from the alveolar artery to the bony crest, artery area, thickening of the sinus membrane, presence of septa, anterior and posterior cavity diameter formed by the septa.

Results: The final sample analyzed is 180 CBTC 55.3% were women and 44.7% men. The artery was detected in 61% of the population not having statistically significant differences between men and women ($p > 0.05$). The most frequent location of the artery was Type 3 (intrasinus) and the mean distance from the artery to the crest was 16.12 mm., the area of the artery had an average of 1.60 mm². The membrane appeared thickened in 44.13% of patients. The vertical septa mediolateral and anteroposterior were present in 35 patients.

Conclusions: CBCT is an excellent diagnostic method but when it comes to showing the presence of the alveolar artery it is not effective in all cases. Septa are a variable to consider for future studies.

Fri-92

Resistance to biocides in oral *Staphylococcus aureus*

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Introduction: Emergence of staphylococci with reduced susceptibility to biocides is being increasingly reported. There is also evidence that the oral cavity may have an important role either as a source of staphylococcal cross-infection to other body sites and/or as a reservoir of multidrug resistance genes. Furthermore, staphylococci in the oral cavity are frequently exposed to biocides, such as triclosan- and chlorhexidine-based oral products, further highlighting the potential role of oral staphylococci in emergence of resistance to biocides.

Objective: To assess chlorhexidine and triclosan resistance profiles in oral isolates of *Staphylococcus aureus*.

Materials and Methods: We collected 158 *S. aureus* isolates from patients who presented with angular cheilitis or erythema/swelling/burning of the oral mucosa at our Maxillofacial outpatient clinic over 2 years. Isolates were analysed for carriage of the *qacA/B* gene (associated with reduced susceptibility to chlorhexidine) and genetic determinants of triclosan resistance (*sh-fabI* and the F204L mutation in *fabI*).

Results and Conclusions: The proportion of *qacA/B* positive *S. aureus* isolates (15%), >90% of which were MRSA, was markedly higher than that reported by several studies analysing skin and blood culture isolates including our previous work. *qacA/B* positive isolates were clonally diverse, the majority carried *sh-fabI* and/or the *fabI* F204L mutation. *sh-fabI* was present within a composite transposon containing insertion sequence IS1272 and inserted downstream *qacA/B*. In two MRSA isolates *sh-fabI* was co-located with *qacA/B* on variants of a known transmissible plasmid (pTW20_1). These findings raise concerns in relation to selection of multidrug resistant strains by intensive use of chlorhexidine and triclosan-containing oral products.

Fri-93

Prevalence of human papillomavirus in saliva of women with HPV-related genital lesions

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Introduction: The human papilloma viruses (HPVs) are DNA viruses associated with benign and malignant lesions of skin and mucous membranes. The HPVs have been implicated as the cause of almost all cervical cancers and also of numerous malignant neoplasms in several tissues including oropharyngeal cancers.

Objective: The aim of this study was to estimate the prevalence of HPV-DNA in saliva samples and/or in oral lesions collected from women in which it has been confirmed the HPV infection of the cervix.

Material and Methods: Detailed intraoral clinical examination and saliva sample collection were performed in 121 sexually active women with cervical lesions which were confirmed histopathologically HPV-related. The samples were analyzed for the detection and genotyping of different types of HPV by means of multiplex PCR followed by visualization in low-density arrays.

Results: In the oral cavity there was not observed any lesion that was possibly related with HPV infection. The prevalence of oral HPV infection in saliva samples was 3,31%, 3 cases with high-risk HPV-16 type and 1 case with probably high-risk HPV-53 type and the concordance was 75% in the prevalent samples.

Conclusions: Women with genital HPV lesions are at risk for asymptomatic oral HPV infection but further studies are needed to confirm the behavioral risk factors and to clarify if the subclinical infection is as contagious as infections with confirmed existence of intraoral HPV-related oral lesions.

The World Workshop on Oral Medicine VII - Workshop abstract

Siri Beier Jensen Denmark, Martin Greenberg USA, Tim Hodgson UK, Ross Kerr USA, Peter Lockhart USA, Giovanni Lodi Italy, Douglas Peterson USA

The major objective of the WWOM is to assemble an international group of experts from the field of Oral Medicine to develop evidence-based manuscripts on topics of importance to clinicians, researchers and academics in Oral Medicine and also related specialties in dentistry and medicine.

The Workshops are also designed to promote career development for oral medicine trainees and junior faculty and encourage collaboration among international oral medicine organizations and specialists for multi-centered research as well as educational programs and training.

The organization of the Workshop is developed by an international Steering Committee who chooses the topics to be reviewed by each group and also select Section Heads to direct each group. Section Heads are chosen based upon their expertise in the topic as well as their leadership ability.

The Consultants for each Group are chosen by the Section Head in consultation with the Steering Committee based on their demonstrated expertise on the topic reviewed by the group.

The Reviewers and Assistant Reviewers are selected by an international competition based on a call for applications and have a major role under the guidance of the Section Head and Consultants in both the literature review and developing a draft of the manuscript.

The Reviewers are selected among mid-career specialists and are well versed in systematic reviews while Assistant Reviewers are early career oral medicine faculty or oral medicine residents/trainees.

The past three Workshops have been held in conjunction with the annual meetings of AAOM or EAOM and the results of the Workshops are presented at the respective meetings. The final manuscripts are published in either Oral Diseases or Oral Surgery, Oral Medicine, Oral Pathology, Oral Radiology and have had a significant international impact in research, clinical practice and oral medicine education.

Tissue regeneration and 3D printing

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This presentation describes two cases with major mandibular defects where reconstruction with autologous bone grafts had previously failed. The patients were offered a combination of autologous stem cells derived from their own abdominal fat (Adipose stem cells, ASC) and β -tricalciumfosfat (β -TCP) for reconstruction. Differentiation into bone producing cells and survival of these were confirmed before implantation. After a year of maturation *in situ*, the patients went through a third operation where titanium implants were installed for future dental reconstruction. Bone biopsies were taken and histology showed mature bone. Currently, this technique is still under development, it is time consuming and relatively expensive and only for selected cases.

From gene disorders to bedside therapy: the long journey of research in blistering diseases

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Two major groups of blistering diseases affecting skin and mucous membranes are recognized: inherited epidermolysis bullosa (EB) and autoimmune blistering diseases, which in turn include pemphigus, pemphigoids and EB acquisita. Over the past 30 years, molecular genetic studies have progressively unravelled the genetic heterogeneity of inherited EB identifying at least 19 genes as causative for the different EB types and subtypes. Knowledge of the genetic basis of the disease, together with progress in understanding the expression pattern and function of the involved genes and the availability of disease animal models, have paved the way to the design of targeted therapies ranging from gene and cell therapy to pharmacological treatment approaches. Early clinical trials of gene therapy for dystrophic and junctional EB and of cell therapy with mesenchymal and haematopoietic stem cells for dystrophic EB have been conducted and others are ongoing or in preparation. First trial results have shown some promise, but also highlighted obstacles towards an effective EB cure. In parallel, in the field of autoimmune blistering diseases, increased knowledge of molecular pathogenesis has contributed to the development and clinical evaluation of more specific and effective therapies, such as the anti-CD20 monoclonal antibody rituximab, and to the design of the first targeted treatment approach for pemphigus.

Investigating the genetic architecture of orofacial granulomatosis

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Introduction:

Orofacial granulomatosis (OFG) is a rare, heterogeneous inflammatory disorder of the mouth, in which some patients also present with, or subsequently develop, intestinal Crohn's disease (CD). Patients are mainly categorised into two phenotypic sub-groups; OFG only and OFG with concurrent CD (OFG/CD).

Objectives:

We aim to investigate the underlying genetic aetiology of OFG and determine whether there is a shared genetic aetiology with CD by looking at common risk variants that are associated with both diseases as well as the rare variants that are specific to the OFG only sub-phenotype.

Material and Methods:

Patients were recruited from Guy's Hospital's Oral Medicine and Gastroenterology units. Genomic DNA was extracted from the saliva and bloods of 367 OFG patients, 128 of which also provided saliva microbiome samples where microbial DNA was additionally extracted and sequenced. Simultaneously, a genome wide association study (GWAS) was performed with 248 OFG patients and 9,460 controls.

Results:

The most significant OFG GWAS hit was on chromosome 5 at SNP rs114335875 ($p = 6.65 \times 10^{-8}$), which correlates with a known Crohn's disease associated SNP rs4613763. OFG patients, CD patients and controls exhibited different oral bacterial communities. In particular, OFG patients were found to be enriched in streptococcal species.

Conclusion:

Preliminary observations suggest OFG and CD are relatively distinct disease entities, although there is emerging evidence for an overlapping genetic aetiology particularly in the OFG/CD group. Further investigation of CD associated variants in bacterial handling genes that may play a role in the variability of these communities between the phenotype groups will be explored.

Non-invasive screening for molecular dysplasia in oral potentially malignant disorders

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Introduction: Oral swirls are a robust source of microRNA, potentially useful to detect oral squamous cell carcinoma (OSCC)-associated molecular aberration.

Objectives: To study a panel of OSCC-associated microRNA, identified in next generation sequencing (NGS) data of tissue specimens, in oral swirls from individuals with OSCC and oral potentially malignant disorders (OPMDs).

Materials and Methods: An OSCC-associated panel of microRNAs was identified in FFPE specimen NGS data and a fresh frozen specimen data set from The Cancer Genome Atlas. This panel was studied by qPCR in oral swirls from 190 individuals with and without mucosal abnormalities including OSCC (n=53) and OPMDs (n=74).

Results: Upregulation of miR-31, miR-21 and downregulation of miR-99a, let-7c, miR-125b and miR-100 was found between OSCC and controls in NGS data of both FFPE and fresh frozen specimens. These microRNAs were studied in a training set of 15 OSCC vs 15 control oral swirls to develop a cumulative dysregulation score (AUC 0.95 (95% CI, 0.88-1.03)) and categorical algorithm-determined risk category. Utilizing the presence of HIGH-risk in 53 OSCC vs 54 controls, the test was 86.8% sensitive and 81.5% specific. One case of malignant transformation within the OPMD cohort demonstrated longitudinal utility of the test.

Conclusion: We are the first to analyze microRNA sourced from oral swirls from individuals with and without mucosal abnormalities including OSCC and OPMDs. A HIGH-risk dysregulation signature was found to be accurate in indicating the presence of OSCC and exemplified to parallel malignant transformation. Assessment in further longitudinal studies is warranted.

Quantification of green tea's effect on oral cancer cells, is this caused by EGFR inhibition?

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Introduction: Green tea is heavily consumed on a global basis for its health benefits. The active ingredient, (-)-epigallocatechin gallate (EGCG), is a major polyphenol demonstrated to inhibit the growth of various non-oral cancer cell lines and interfere with the carcinogenic process, including downregulation of the epidermal growth factor receptor (EGFR).

Objectives: Our aim was to determine the phenotypic changes of oral cancer cells treated with EGCG, and concurrently assessing EGFR expression.

Material and Methods: H400 and H357 oral cancer cells were treated with 10ug/mL and 20ug/mL EGCG replenished every 24 hours. Phenotypic changes were assessed by performing cell proliferation (growth curve) analysis and cell migration (Transwell) assay. EGFR expression was determined by western blotting.

Results: Cell proliferation of both cell lines was significantly reduced at 48hrs when treated with 20ug/mL EGCG. However, after 72 hours of treatment the effect of EGCG on cell proliferation ceased. Treatment of both cell lines with 10ug/mL and 20ug/mL of EGCG resulted in significant reduction in cell migration. EGFR expression was not reduced after treatment with EGCG.

Conclusion: EGCG transiently inhibits both cell proliferation and migration of oral cavity cancer cells. This effect is independent of EGFR. It may well be that more frequent bursts of EGCG could result in a persistent and sustained cancer inhibition, but this requires further research for clarification.

Sialendoscopy increases salivary secretion and reduces xerostomia in patients with Sjögren's syndrome: a 60 weeks randomized, controlled, single blind study

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Objectives: To assess the effect of sialendoscopy of the major salivary glands on salivary flow and xerostomia in patients with Sjögren's syndrome (SS).

Material and methods: Forty-five SS patients were randomly assigned to a control group (no irrigation; n=15, control), to irrigation of the major salivary glands with saline (n=15, saline) or to irrigation with saline followed by a corticosteroid (triamcinolone-acetonide in saline; n=15, TA/saline). Unstimulated whole saliva flow (UWS), chewing stimulated whole saliva flow (SWS), citric-acid stimulated parotid flow (SPF), Clinical Oral Dryness Score (CODS), Xerostomia Inventory score (XI), and EULAR SS Patient Reported Index (ESSPRI) were obtained 1 week before (T0), and 1(T1), 8(T8), 16(T16), 24(T24), 36(T36), 48(T48), and 60(T60) weeks after sialendoscopy.

Results: Sialendoscopy resulted, irrespective of the irrigation protocol applied, in an increased salivary flow and reduced sensation of oral dryness. The largest improvement of UWS and SWS after sialendoscopy was observed, respectively, at 60 weeks (Mdn=0.2mL/min; p=0.015) and 16 weeks (Mdn=0.64mL/min; p=0.028) in the TA/saline group. In both treatment groups, salivary flows were still above baseline levels at T60. The increase in salivary flow was also reflected in lower CODS, XI and ESSPRI scores compared to baseline, with a maximum improvement at respectively 1 (TA/saline; p=0.007), 36 (saline; p=0.002) and 16 (TA/saline; p<0.01) weeks after irrigation and better scores at T60 compared to baseline in both treatment groups.

Conclusions: Irrigation of the major salivary glands in SS patients enhances salivary flow and reduces xerostomia.

Novel fibroblast-derived 3D constructs to examine the role of the extracellular matrix in oral cancer progression

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Introduction: Cancer progression is determined by interactions between tumour cells, stromal cells and other components of the microenvironment such as the extracellular matrix (ECM). The ECM is predominantly deposited by cancer-associated fibroblasts (CAF) and plays a key role in cancer progression. Although considerable evidence exists demonstrating a role for CAF in oral

squamous cell carcinoma (OSCC), little is known about their influence on ECM:tumour interactions.

Objectives: Generate novel tissue-engineered 3D constructs using normal oral fibroblast (NOF)- and CAF-derived ECM.

Materials and Methods: Culture conditions were optimised to stimulate NOF- and CAF-derived ECM deposition. Full-thickness epithelium models were produced by culturing normal (FNB6) or OSCC (H357) cell lines onto ECM scaffolds. Key fibroblast and epithelial markers were characterised by immunohistochemistry (Ki67, AE1/3, E-cadherin and α SMA) and immunoblotting (α SMA, FN1-EDA, COL1A1). Collagen linearisation and elongation in NOF- and CAF-derived matrices were also analysed using second harmonic generation microscopy.

Results: NOF stimulated to produce ECM, generated an organised matrix with an average thickness of $\sim 200\mu\text{m}$ compared to CAFs which produced a thicker ($350\mu\text{m}$), highly irregular ECM. Collagen width, length, and linearisation were all statistically different in CAF-derived matrices than NOF-derived matrices. Addition of FNB6 and H357 cells generated a stratified epithelial layer histologically resembling normal and OSCC. Immunohistochemical analysis and immunoblotting of matrices revealed differential expression of ECM proteins and evidence of CAF-mediated tumour progression.

Conclusion: Using tissue-engineering techniques it is possible to model fibroblast-mediated ECM deposition providing a novel, physiologically relevant *in vitro* tool for the study of OSCC progression.

Interleukin 17-producing cells and Tc1 effectors drive pathogenesis of chronic graft-versus-host disease in the oral cavity

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Introduction: Chronic graft-versus-host disease (cGVHD) remains the main non-relapse complication of allogeneic hematopoietic stem cell transplantation (HSCT). Oral cGVHD manifestations can have a major impact on morbidity and quality of life. Evidence-based topical treatments for oral cGVHD are scarce, in part because the immunopathogenesis of oral mucosal cGVHD is not clearly understood.

Objectives: This study was designed to identify the role of critical immune pathways in oral cGVHD using an integrative approach incorporating immunologic data from multiple areas: oral mucosa, salivary glands, and saliva.

Material and Methods: Saliva and biopsies of the oral buccal mucosa (OM) and labial minor salivary gland (MSG) were collected from patients enrolled in an NIH cross-sectional study of CGVHD (NCT00092235).

Results and Conclusions: Multivariate ELISA analysis of whole saliva from oral cGVHD patients (n=58) and healthy controls (n=10) revealed elevated expression of interferon- and IL17-induced chemokines correlated with clinical scoring of cGVHD severity. Flow-cytometric analysis of patient OM and MSG demonstrated significant increases in infiltrating CD4+/CXCR3 and CD8+/CXCR3 cells in oral cGVHD patients versus unaffected. Fluorescent immunohistochemistry confirmed the lymphocytic infiltration, and in MSG revealed the presence of T-bet+ CD4+ and CD8+ surrounding the acini, with CD8+ cytotoxic effectors (Tc1) within damaged acini. IL17+ cells were most prevalent in the OM lamina propria and MSG inter-acinar stroma and lacked CD3 expression, suggesting these cells may potentiate or initiate the alloimmune response, rather than acting as direct effectors. Longitudinal studies are needed to clarify the role of IL17 production in the initiation versus potentiation of cGVHD.

Associations of oral infections with six-month survival after hematopoietic stem cell transplantation

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Objectives: Hematopoietic stem cell transplantation (HSCT) is used in hemato-oncology to eradicate dysplastic cells and to produce myelo- and immunosuppression. This study aims to examine the associations of common oral infections with survival and infection complications in HSCT recipients.

Material and Methods: All auto- and allogeneic HSCT-recipients transplanted in the University Hospital of Basel, Switzerland, between 2008 and 2016 who met the inclusion criteria were examined in this prospective study. All study subjects had a clinical dental examination and a panoramic dental x-ray taken just prior to HSCT. Presence of acute or chronic oral infections, decayed, missing or filled tooth index (DMFT) and periodontitis was examined. Survival and infections of the subjects were observed for a minimum of six months.

Results: 341 allogeneic and 125 autologous HSCT recipients were included. 47 and 4 subjects deceased within 6 months post-HSCT, respectively. Neither acute nor chronic oral foci of infections, DMFT or presence of periodontitis pre-HSCT were associated with the survival six months post-HSCT. There was no association of the examined oral infections with the hospital treated infectious diseases or septic infections during the six months observation period.

Conclusion: According to this study, untreated oral foci of infections have no associations with survival or severe infection complications post-HSCT.

A translational journey on the efficacy of hyaluronic acid in the prevention of oral mucositis: results of a phase 2 trial.

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Introduction: We have shown previously that hyaluronic acid induces molecular changes both in oral epithelial and stromal cells that could be protective against the oxidative damage induced by chemoradiation. Here, we translated these findings into a clinical setting.

Objectives: The aim of this present study was to compare the safety and efficacy of a commercial preparation of hyaluronic acid (HA) spray supplemented with a pool of amino acids (Mucosamin®) to standard oral care (SOC) in the prevention of chemotherapy-induced oral mucositis.

Material and Methods: This prospective controlled clinical study was conducted with cancer patients undergoing chemotherapy (n = 93). The experimental group (n = 46; 28 females) used HA spray three times daily starting 4 days before first cycle of chemotherapy. The SOC group (n =

47, 36 females) received instructions for routine oral care. Primary end point was incidence of oral mucositis (WHO 'Oral Mucositis Grading Scale'), safety end point included incidence of adverse events. Analysis was by intention to treat.

Results: In total, 10 patients interrupted chemotherapy (HA, 2; SOC, 8), no side effects specific to HA group were found. There was a significant (chi-square $p=0.001$) reduction in the onset of mucositis in the HA group ($n=2$, 1 grade 2 and 1 grade 1) compared to the SOC group ($n=14$; 6 grade 1, 8 grade 2), $RR = 0.146$, $95\% CI=0.035-0.607$.

Conclusion: Our data show that the prophylactic use of Mucosamin® is safe and significantly reduces the risk of developing oral mucositis in cancer patients undergoing chemotherapy.

Clinical outcome of dental extractions in renal transplant recipients -- preliminary results

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Introduction: Traditionally in dentistry, based on anecdotal evidences, renal transplant recipients are considered more likely to have infections after dental extractions. For this reason, many doctors and dentists recommended antibiotic prophylaxis before dental extractions in renal transplant patients.

Objective: To assess post-operative complications and wound healing in renal transplant recipients and control individuals, after dental extractions.

Material and Methods: We enrolled 35 renal transplant recipients (study group) and 56 controls (control group) who required dental extractions. All participants underwent an extraction and blinded investigators assessed patients' signs and symptoms at 3, 7, 21, and 60 days after surgery. They compared the healing pattern and the incidence of post-operative complications between the 2 groups.

Results: We performed 102 tooth extractions on 35 participants of the study group and 96 extractions on 56 patients from the control group. One patient from the study group presented local post-operative infection. After extraction, 3 participants from the control group showed epithelization delay at day 21, and none had post-operative infection. On post-operative day 60, all alveolar sockets were completely epithelialized and showed no signs of infection.

Conclusion: This preliminary result does not support the traditional view that renal transplant recipients have increased risk for infection and delayed healing after dental extraction.

Correlation between overexpression of p16 and the presence of human papilloma virus in oral leukoplakia and oral squamous cell carcinoma

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Introduction: Leukoplakia (LPL) is a potentially malignant oral mucosal disorder. A casual association between LPL, oral squamous cell carcinoma (OSCC) and Human Papillomavirus (HPV) infection has been suggested, but no conclusive evidence has been presented. P16, a tumor suppressing protein, is commonly used as a surrogate marker for HPV-infection.

Objectives: The aim of this study was to investigate if p16 expression correlates with an actual HPV-infection in LPL and OSCC.

Material and Method: In a multicenter study (ORA-LEU-CAN study) data from 80 patients with biopsy verified diagnosis of LPL and 16 patients with OSCC from the archives were analysed. Tissue specimens were analysed by standard immunohistochemistry visualising p16 (clone E6H4; Roche Ltd). Expression of p16 in epithelium was evaluated by a semi-quantitative scale. To compare p16 expression with presence of HPV, a RT PCR assay targeting HPV 16-18-31-33-35-39-45-52-56-58-59-6-11 was used. McNemar's test was used in comparing p16 expression and PCR detection of HPV in OSCC.

Results: Overexpression of p16 was observed in 20% of LPL patients (n=16). None of the HPV-subsets could be detected in the 80 LPL patients by PCR-analysis. In OSCC specimens 100% (n=16) showed an overexpression of p16, but PCR analysis revealed only 30% (n=5) HPV16 positive specimens. There was a significant difference (p=0.004) between the two methods in detecting HPV in OSCC.

Conclusion: In LPL patients none of the investigated HPV-subsets could be detected by PCR-analysis. P16 overexpression in OSCC is not a reliable method to identify HPV-infection

XEROMeds consortium: the impact of medications on stimulated and unstimulated salivary flow rate in patients with non-Sjögren's related sicca

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Objective: To evaluate the impact of categories of and specific medications on unstimulated whole salivary flow rate (UWSFR) and stimulated whole salivary flow rate (SWSFR) in patients with non-Sjögren's related Sicca (NSS).

Material and methods: This was a multi-center, retrospective, observational study collecting data from six international centers. Data collected from 2010-2014 for all NSS patients included age, gender, UWSFR and SWSFR, categories of and specific medications.

Results: Of all 1145 patients, 974 (85.0%) were females and 171 (15.0%) were males. The age of all patients was 59.0 ± 14.1 (mean \pm SD) years. Collectively, the patients had a daily intake of 5.00 ± 4.33 different medications and a mean UWSFR of 2.56 ± 3.45 mL/15min and a mean SWSFR of 13.40 ± 17.94 mL/5min. Among the most frequent categories of medications, lower UWSFR and SWSFR was found for: antihypertensives ($p < 0.001$) and non-narcotic analgesics ($p = 0.004$ and $p < 0.001$, respectively). Among the most frequent single medication, higher UWSFR and SWSFR was found for: vitamin D ($p < 0.001$), multivitamins ($p < 0.001$), and calcium ($p < 0.001$). Among patients taking vs. not taking medications, lower UWSFR ($p = 0.008$) but not SWSFR ($p = 0.747$) was seen, and no correlation was found between UWSFR and SWSFR and the number of medications.

Conclusions: Intake of certain, commonly prescribed medications including antihypertensives may have a negative impact on UWSFR and SWSFR, whereas the number of medications apparently does not. Overall, intake of medication was associated with low UWSFR. Certain vitamins may have a positive impact on salivary flow in NSS.

Pilocarpine spray for the treatment of xerostomia in patients with Sjögren's syndrome: a randomized, double-blind, placebo-controlled trial

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Introduction: Management of xerostomia remains an unresolved topic for Sjögren's Syndrome (SS) patients. Oral pilocarpine has showed to be very effective for controlling xerostomia in several clinical trials, but with variable side effects. Topical formulation could be an approach for getting local effect with minimal side effects.

Objectives: The aim of this study was to evaluate the effectiveness of pilocarpine spray as a treatment for xerostomia in patients with SS.

Material and Methods: This was a randomized, double-blind, crossover, placebo-controlled trial (NCT02982577) of SS patients complaining of xerostomia. Patients were randomly assigned to either placebo or pilocarpine group, and instructed to use 3 times a day for 4 weeks, with a one-month washout period between treatments. Outcomes measures were unstimulated whole salivary flow (UWSF), xerostomia (Xerostomia Inventory - XI) and quality of life (Oral Health Impact Profile - OHIP-14), which were performed at baseline, one hour (only UWSF) and at one month of treatment.

Results: Twenty-four patients were enrolled and randomized to receive pilocarpine (n=12) or placebo (n=12). Pilocarpine increased UWSF after one hour of using the spray (Wilcoxon test; $p=0.01$), but no changes were observed at one month. Xerostomia symptoms (XI) improved at one month of therapy (Friedman test; $p<0.05$), and OHIP-14 scores declined at 1 month related to functional limitation dimension (Friedman test; $p=0.03$). Sprays were well tolerated and no clinical side effects were observed.

Conclusions: Topical application of pilocarpine is effective for managing xerostomia in patients with SS, and should be considered as a therapeutic option.

Sat-01

Impact of the 2007 American Heart Association's antibiotic prophylaxis guidelines on antibiotic prophylaxis prescribing and incidence of infective endocarditis in the USA

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Introduction: The American Heart Association (AHA) updated its recommendations for antibiotic prophylaxis (AP) to prevent infective endocarditis (IE) in 2007, advising AP cease for those at moderate-risk of IE, but continue for those at high-risk undergoing invasive dental procedures.

Objectives: To quantify the effect of guideline-change on AP-prescribing and IE-incidence.

Material and methods: High-risk, moderate-risk and unknown/low-risk individuals with linked prescription and Medicare/commercial healthcare-data were identified in the Truven MarketScan databases between 2003-2015 (198,522,665 enrollee-years). AP-prescribing and IE-incidence before and after guideline-change were quantified in those at high-risk, moderate-risk and unknown/low-risk of IE.

Results: Following the 2007 recommendation changes, there were 62.8% and 18.5% falls in AP-prescribing for moderate- and high-risk individuals, respectively, and a 1.7-fold increase in IE-incidence (95%CI 1.0-2.9) among moderate-risk individuals (2.9 cases/month/100,000 increase) and a 2.8-fold increase (95%CI 1.7-4.6) in high-risk individuals (51.3 cases/month/100,000 increase) compared to the pre-2007 trend. There was no increase in IE-incidence in unknown/low-risk individuals, despite a 52.2% fall in AP-prescribing.

Conclusions: AP-prescribing decreased significantly in all risk-groups after the AHA guideline-change. This reduction was larger for individuals at moderate or low/unknown-risk than that for those at high-risk. These decreases were associated with a significant increase in IE-incidence among high-risk individuals, a smaller but still significant increase in moderate-risk patients and no change in those at low/unknown-risk. Although they do not prove a cause-effect relationship between AP reduction and IE-incidence increase, these data provide unique new evidence to help those drafting recommendations on the management of individuals at risk of IE undergoing invasive dental procedures.

Sat-02

In vivo and ex vivo evaluation of tablets containing piroxicam-cyclodextrin complexes for buccal delivery

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Introduction: Oral mucosal drug delivery could be an alternative method of non-steroidal-anti-inflammatory agents (NSAIDs) direct delivery to the circulation, avoiding gastrointestinal side effects.

Objectives: In the current study, the in-vitro characterization and the ex-vivo permeation of NSAID-piroxicam across porcine buccal mucosa with three different permeation enhancers: cyclodextrins (beta-CD, Me-beta-CD, HP-beta-CD), was investigated.

Material and Methods: Piroxicam and an equimolar amount of cyclodextrins were prepared by co-evaporated method and mucoadhesive tablets were prepared by direct compression. Chitosan was added as bioadhesive polymer. Co-evaporated products were characterized with Infrared-spectroscopy/IR, Differential-Scanning-Calorimetry/DSC and X-ray-diffraction/XRD. Buccal permeation studies were conducted using Franz-diffusion-cells where piroxicam complexes were administered free or in a tablet form. Cumulative amounts of piroxicam were plotted versus time. Finally, light-microscopy was performed to assess the tissues' changes resulting from the permeation enhancers.

Results: The rank order effect of the permeation enhancers for the transport of piroxicam across buccal epithelium was Me- β -CD > HP- β -CD > β -CD. Tablets with chitosan significantly increased the transport of the drug compared to free complexes. Histological assessment after 5 h treatment revealed significant changes in the porcine epithelium with the formation of vacuoles, linear detachment of the epithelium and swelling when present the permeation enhancers. However, desquamation and vacuolation of the epithelium limited only to the upper non-keratinized epithelial cells.

Conclusions: The results shown that cyclodextrins/chitosan can significantly increase the safety of mucosal permeation of piroxicam. This could be critical for the effectiveness and lower toxicity of NSAIDs that commonly used in oral/dental/systemic disorders.

Sat-03

Electrospun fibres deliver lidocaine HCL to porcine buccal mucosa: an ex vivo permeation and MALDI-MS imaging study

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Introduction: Local delivery of an anaesthetic from an adhesive patch to alleviate pain may have several applications in oral medicine and dentistry. Electrospinning, a versatile manufacturing method, has been shown by researchers in Sheffield to be capable of fabricating a mucoadhesive drug delivery system.

Objectives: The aim was to incorporate lidocaine HCl into an electrospun fibre patch, and investigate drug permeation and spatial distribution in porcine buccal mucosa.

Materials and Methods: A loaded polymer solution consisting of poly(vinyl pyrrolidone), RS100, poly(ethylene oxide), 3% lidocaine HCl in 97% (w/w) ethanol was electrospun into a fibrous mat. *Ex vivo* drug permeation studies were performed using patches placed on the surface of porcine buccal mucosa in Ussing chambers. These tissues were further analysed using Matrix-Assisted Laser Desorption Ionisation – Mass Spectrometry Imaging (MALDI-MSI) to investigate drug distribution through the buccal tissue.

Results: Permeation studies showed that lidocaine HCl released by the electrospun patches permeated the buccal mucosa and was detectable in the receptor chamber after only 15 minutes. MALDI-MSI demonstrated a time-dependent homogeneous distribution of lidocaine HCl through the epithelium and connective tissue.

Conclusion: The anaesthetic lidocaine HCl delivered by electrospun fibres permeated homogeneously through porcine buccal mucosa. This on-going research demonstrates that electrospinning is a versatile manufacturing technique for the preparation of innovative therapeutic products for oral medicine, dentistry, and surgery.

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Sat-04

Systemic medication of patients with oral lichen planus in Turku university hospital

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Objectives: Local corticosteroids are the first line medical treatment of oral lichen planus. In cases of severe symptoms and/or generalized symptoms systemic medication can also be considered. The objective of this study was to determine the outcome of systemic medical treatment of patients with oral lichen planus (OLP).

Material and methods: A retrospective, descriptive study was performed using medical files of 36 OLP patients who had visited the departments of oral and maxillofacial surgery and dermatology in Turku University Hospital during the years 2002-2015 and also, received systemic medication for lichen planus. Age, gender, medical condition, use of regular medication, smoking habits, clinical picture and symptoms of lichen planus and the medical treatment for lichen planus were analyzed.

Results: In this study group, 83 % (n=30) of OLP patients were women. Hypothyreosis was reported in even 25% (n=9) of patients. Prednisolone was the most common systemic medication used in OLP patients (n=14). More than 70% (n=10) of patients reported the results of prednisolone medication were good. Methotrexate was the second most common systemic medication used (n=13), and it affected well in more than 60% (n=8) of patients. Acitretin, hydroxychloroquine sulfate and cyclosporine were also used.

Conclusions: Systemic medical treatment may be considered as a safe and effective treatment for OLP. Clinical interventions of the use of different systemic medication are needed. The relationship of lichen planus and thyroid autoimmunity should be further studied.

Sat-05

A pigmented palate - hydroxychloroquine-related oral hyperpigmentation

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Introduction

Hydroxychloroquine, an antimalarial, is widely used in medical practice for the management of chronic inflammatory disease. Side-effects include cutaneous and mucous membrane pigmentation, with oral involvement being rarely reported.

Case Summary

A 58 year-old female with rheumatoid arthritis and a 10 year history of hydroxychloroquine therapy was referred for an assessment of pigmentation on her palate.

A uniformly blue-grey pigmented lesion was present on the hard palate; the intensity of the pigmentation being greatest over the non-denture bearing area. There was also a sharp demarcation at the junction of the hard and soft palate.

Histopathological examination demonstrated normal stratification and maturation of the epithelium with melanin and haemosiderin deposition in the connective tissue papillae, consistent with the clinical diagnosis of hydroxychloroquine-related oral hyperpigmentation.

Discussion

The mechanism of drug-related hyperpigmentation of the oral mucosa is poorly understood. It is suggested that increased melanin production, either by the stimulation of melanocytes or by formation of a drug complex, may be the cause. Another hypothesis is that pigmentation occurs as a secondary phenomenon to bruising. This would explain the presence of haemosiderin on histological examination and possibly the increased pigmentation on the non-denture bearing area. As to why the soft palate is spared and appears to be a 'protected site' in such cases is currently unknown.

Conclusions

- (1) Oral hyperpigmentation is a rare but recognised side-effect of hydroxychloroquine therapy.
- (2) Drug-related pigmentation of the oral mucosa has a characteristic demarcation at the hard and soft palate. The reason for this remains unknown.

Sat-06

Oral side effects of chemotherapy -- cross sectional study

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Introduction: Oral complications of chemotherapy have an estimated prevalence that varies between 13-89%. This huge variability might be attributed to differences in target populations, type of chemotherapy treatment, the moment when the patients are examined as well as to the lack of consensus in the reported outcomes and the lack of sample size calculations.

Objectives: The aim of this study was to determine the prevalence of professionally reported and self reported oral side effects in a sample of patients with an adequate size calculation.

Material and Methods: A cross sectional study with patients undergoing chemotherapy treatment was designed. Demographic, oral hygiene habits and cancer related data were collected. Patient's oral status was examined using the oral-assessment guide for patients in hospital environments designed by Eilers and patients related outcomes (PROMs) were determined by a visual analogue scale (VAS). Data and explorations were carried out at the Oncologic clinic in Hospital Universitario La Paz while the patients were receiving the chemotherapy infusion.

Results: The prevalence of professionally reported oral side effects was 86.99% (95% confidence intervals CI: 83.54%; 90.44%), and the prevalence of self-reported oral side effects was 89.70% (95% CI: 86.59; 92.82). Most common oral side effects were xerostomia (73.4%), dysgeusia (61.8%) and dry lips (54.2%).

Conclusions: The prevalence of oral side effects (professional or self-reported) is higher than 85% in patients undergoing chemotherapy.

Sat-07

Role of periapical diseases in development of medication-related osteonecrosis of the jaw

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Objectives: This study aimed to assess the effect of zoledronic acid on the development of medication-related osteonecrosis of the jaw (MRONJ) using an immunocompromised mice model with periapical disease.

Materials and Methods: Thirty C57BL/6N mice were randomly divided into three groups (N=10). All animals were subjected to bilateral ovariectomy and then treated with saline (Veh), zoledronic acid (ZA) or concomitant zoledronic acid and dexamethasone (ZA/Dx) for 12 weeks. Eight weeks after starting drug administration, pulpal exposure was conducted on the lower left first molar. Four weeks after pulpal exposure, all mice were sacrificed, and the mandibles were collected for radiological and histological examinations.

Results: Micro computed tomography (μ -CT) examination showed significantly reduced periapical bone resorption in ZA/Dx group and decreased periodontal bone resorption in both ZA and ZA/Dx groups. Higher bone mineral density and strengthened microstructure were found in ZA and ZA/Dx groups. More empty lacunae were found in ZA and ZA/Dx groups.

Conclusions: Apical periodontitis aggravates MRONJ under immunocompromised circumstances. Concurrent use of ZA and steroids inhibits alveolar bone resorption but increases the risk of developing MRONJ.

Sat-08

Tumor-like gingival overgrowth induced by calcium channel blocking agents

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Introduction: Amlodipine is one of calcium channel blocker widely used in the management of hypertension. Drug-induced gingival enlargement is a side effect of calcium channel blocking agents. We report tumor-like gingival overgrowth in the left maxilla premolar area.

Case report: A 64 year-old women visited the department of oral medicine at the Catholic University Hospital of Daegu with a complaint of swelling on left upper gingiva. She did not notice the gum change at first and could not remember the exact time. She sensed something soft was growing about 3 months ago, but had no pain or discomfort. She had been taking antihypertensive drug for more than 10 years and an amlodipine tablet was added 6 months ago. At clinical examination, we found ball-shaped (2.5cm diameter), soft pink mass was localized from the left maxillary canine to the second molar. There was no gingival hyperplasia in edentulous area. We explained the side effect of amlodipine and her physician changed the prescription. The enlargement did not subsided for one month, then it was removed by surgical excision.

Discussion: The pathogenesis of amlodipine-induced gingival hyperplasia is still uncertain and the treatment is drug substitution, maintenance of good oral hygiene and surgical removal of the overgrown tissue. Many studies reported the generalized gingival growth. Our case showed atypical shape of hyperplasia.

Sat-09

Angioedema of lower lip and gingiva due to oral hormonal therapy

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Introduction: Each drug can potentially cause harmful side effects in different parts of the body. Sometimes the side effects of the drug are reported after only one dose or after taking the drug for several years.

Case report: We present the case of a young women who developed angioedema of lower lip and gingiva due to oral hormonal therapy. A 25 year-old woman was referred to the Department of Oral Medicine, University Clinical Hospital Zagreb, Croatia due to angioedema of lower lip and gingiva which lasted for two weeks. Her medical history revealed polycystic ovarian syndrome. She was taking a drug which included ethinylestradiol and cyproterone for several months. Oral examinations revealed angioedema of lower lip and erythematous and edematous gingiva. The biopsy of gingival changes was taken and histopathological finding showed chronic inflammatory infiltrate. The findings of C2, C3, C4 and C1 inhibitor were normal. The patient was treated by

local corticosteroid (betamethasone (Beloderm, Belupo, Croatia) in orabase) and antifungal (miconazole (Rojazol, Belupo, Croatia) therapy. The suspected drug was abolished by the patient's gynecologist and regression of oral lesions was noticed after one week.

Conclusion: Patients who develop adverse drug side effects should be advised not to take drugs with the same active ingredients.

Sat-10

Oral mucosal lesions as a side effect of antituberculosis drugs

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Introduction: Tuberculosis is a severe infectious disease with a high rate of mortality and morbidity. It can affect all organs, notably the lungs (80%). Antituberculosis drugs are investigated in two groups as first-line drugs (isoniazide, rifampicin, streptomycin, ethambutol) and second-line drugs (capreomycin, etonamide, fluoroquinolones). Serious side effects may occur during antituberculosis treatment.

Objectives: Oral mucosal reactions are rare side effects of antituberculosis drugs. In this report our aim is to present a case with oral mucosal lesions that develop before cutaneous reactions in the patient who has first-line antituberculosis drug treatment.

Material and Methods: The patient was a 72 year-old female who has been in treatment consisting of isoniazide 300mg, rifampicin 600mg, and ethambutol 500mg for pulmonary tuberculosis. The patient applied to clinic with the complaint of lesions that occurred in the oral mucosa in the third month of treatment. Histopathological examination of the oral lesions revealed infiltration of the subepithelial area and tuberculosis bacilli was not observed. A hyaluronic acid gel as a topical agent and a mouthwash to stimulate the patient's saliva flow were prescribed. At one week's follow-up, regression of oral lesions and a reduction in pain complaints were observed. During the follow-up, cutaneous lesions were observed on patient's face and hands and dermatology consultation was requested.

Results: Oral and cutaneous lesions were observed as a side effect of first-line antituberculosis drug.

Conclusions: Oral mucosal lesions, which are side effects of antituberculosis drugs, can be treated with close monitoring and proper management without interruption of antituberculosis drug therapy.

Sat-11

Steroid-based inhalers are remarkably associated with occurrence of oral hairy leukoplakia in HIV-negative patients

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Introduction: Oral hairy leukoplakia (OHL) is predominantly present in HIV-positive patients, although it may occur in other immuno-compromised patients.

Objectives: We review current cases of OHL in non-HIV immuno-compromised patients (NHIPs) and analyze their demographic and clinical data.

Material and methods: Included were adequately documented cases of NHIPs with/without topical/inhaled/systemic immunosuppressive medications diagnosed with OHL, published in the English-language literature (2000-2017). We added a new case of a 34-year-old man after liver transplantation treated with systemic corticosteroids (SCS) for acute rejection. Data was examined in terms of age, gender, underlying conditions, type of medication and location of OHLs.

Results: Collectively, 51 NHIPs were analyzed, 31 males and 20 females (mean age 60 ± 14 y and 56 ± 15 y, respectively). Forty-one patients had asthma/chronic-obstructive-pulmonary-disease of them 36 (87.8%) used steroid-based inhalers (SBI). All had OHL lesions on the tongue: 26 (72%) uni-lateral, 1 (2.8%) bilateral, 1 (2.8%) lateral tongue and buccal mucosa and 8 (22%) dorsal or ventral tongue. Five (12.2%) remaining patients received SCS, of them four presented OHLs on the tongue and one on the palate. Ten patients had different background conditions (i.e. organ transplant, leukemias, auto-immune diseases) of them seven received SCS and three were treated by chemotherapy, hydroxychloroquine and no medication, each. Tongue OHLs were found in all patients. Two had additional involvement of palate or floor of the mouth.

Conclusions: Immunosuppressive medications may cause OHLs in NHIPs. Specifically, patients using SBI are at risk to develop tongue OHLs, predominantly unilateral. OHLs should be clinically differentiated from the more prevalence oral candidiasis.

Sat-12

Oral cooling distribution using Cooral™ and ice chips

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Introduction: Oral mucositis (OM) is a common debilitating adverse effect affecting up to 80% of patients treated with myeloablative therapy prior to stem cell transplantation (SCT). The clinical manifestation is characterized by erythema and ulcerations which may result in the need of total parental nutrition and high doses of morphine for pain alleviation. Treatment strategies aiming at prevention of OM are limited, although oral cryotherapy using ice chips has been shown to reduce OM. Cooral™ (*Fig. 1*) is an innovative intra-oral cooling device that has showed promising results, with regards to cooling efficacy and tolerability, in pre-clinical trials when compared with ice chips.

Objectives: The objective of this study was to measure temperature reduction and map the subsequent cooling distribution in the oral mucosa using Cooral™ and ice chips.

Material & Methods: In total twenty healthy volunteers (mean age: 23.9 years) used Cooral™ (+8 °C) and ice chips (+0.5 °C) for a maximum of sixty minutes. Baseline and final temperatures were measured in eight intra-oral locations using a thermographic camera (FLIR e60). The thermographic images were analyzed by a blinded observer.

Results: There was a significant temperature reduction for each of the eight intra-oral locations ($p < 0.001$) with both cooling methods. The cheeks and the lips were better cooled compared to

the palate and tongue, the root of the tongue was significantly better cooled with ice chips ($p < 0.05$) compared to Cooral™ (Fig. 2 & 3).

Conclusions: Cooral™ is equally effective as ice chips and may be an alternative cooling method in patients prior to STC.

Sat-13

The oral manifestations of psychiatric disorders

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Introduction: Many studies show that oral diseases are very common among psychiatric patients and they are usually a result of bad oral hygiene and other factors related to the pharmacokinetics of the psychotropic medications. The aim of this study was to evaluate the prevalence of oral manifestations among mental disorder patients taking into consideration the type of psychiatric disorder and psychotropic medications intake behavior.

Materials and Methods: Participants were recruited from Psychiatry unit at AL-Mowasat Hospital, Damascus, Syria. Specially designed charts to collect data were established including: personal and demographic data, psychiatric disorder, psychotropic medications, DMFT index, gingival index, periodontal index, TMJ disorders checklist.

Results: 46 patients (39.1% males, 60.9% females) were included in this study. The majority of the patients were diagnosed with schizophrenia (73.9%). 21.7% of the sample were taking one drug, 43.5% were on two drugs, 21.7% were on 3 drugs and 13% were on 4 or more drugs. Scores according to the number of medications intake were as follow: 1 drug (DMFT=12.2), 2 drugs (DMFT= 13.4), 3 drugs (DMFT= 17.8) and 4 or more drugs (DMFT= 20.3). A significant relation between the number of taken medications and DMFT score was found ($p = 0.036$). Also, a significant positive correlation was found between DMFT scores and the number of medication taken ($p = 0.022$). 39% of patients exhibited bruxism habit.

Conclusion: Psychiatric patients exhibited high rates of decayed, missed or filled teeth, gingivitis and plaque accumulation. The number of psychotropic medications seems to enhance significantly oral disorders manifestation.

Sat-14

Risk factors influencing gingival enlargement in renal transplant patients medicated with tacrolimus

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Introduction: Renal transplant recipients medicated with tacrolimus (Tcr) can present gingival enlargement when associated to different risk factors such as treatment with Tcr, treatment with calcium channel blockers (CCB), type, dose and blood level of immunosuppressants, creatinine level, time since transplantation, plaque index, diabetes and tobacco.

Objectives: To evaluate how different risk factors or predictive variables influence the appearance of gingival enlargement (GE) in renal transplant recipients medicated with Tcr.

Material and Methods: A descriptive cross-sectional study where the dependent variable was appearance of GE, and the independent variables were treatment with Tcr, treatment with calcium channel blockers (CCB), type, dose and blood level of immunosuppressants, creatinine level, time since transplantation, plaque index, diabetes and tobacco. We included in the study 211 renal transplant recipients treated with Tcr from the time of transplantation from the renal transplant clinic at Hospital 12 de Octubre de Madrid.

Results: The univariate analysis between appearance of GE and the predictive variables shows that there is a significant relationship between GE and time of transplantation ($p=0.02$), use of CCB ($p=0.0001$), and plaque index ($p=0.0001$).

Conclusions: The accumulation of plaque and the use of CCB are predictive variables of the appearance of GE in the sample studied. Therefore, in renal transplant patients medicated with Tcr who suffer GE, it is necessary to carry out a proper periodontal control to improve their gingival state.

Sat-15

Purulent drainage as a prognostic factor to be considered when planning the surgical approach to medication-related osteonecrosis of the jaw

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Introduction: Medication-related osteonecrosis of the jaw (MRONJ) is a potentially severe side effect of anti-resorptive and anti-angiogenic drugs, that may worsen the quality of life of patients.

Objectives: The present study aims to evaluate the prognostic role of suppuration for MRONJ, confined to the region of the alveolar bone, undergoing surgical treatment and the time to onset of relapse with reference to the performed treatment.

Material and Methods: Suppuration was observed in 22/36 MRONJ confined to the region of alveolar bone undergoing surgery: in 15/27 undergoing debridement and in 7/9 undergoing marginal resections. The surgical approach was chosen on the basis of the extension of bone necrosis. All relapses were associated to the presence of suppuration ($p=0.0003$; two-tailed Fisher's exact test): 11/15 (73%) cases treated with debridement and 2/7 (29%) cases treated with marginal resective surgery. Debridement and marginal resective surgery had similar mean free of disease intervals: 106 days and 92 days respectively.

Results and Conclusions: Suppuration seems to be a negative prognostic factor for surgical treatment of MRONJ. Even when the extension of bone necrosis supports surgical debridement, the presence of suppuration seems to be a predictive factor for relapse, to be expected about 3 months after surgery. The lower morbidity of debridement versus marginal resective surgery seems to imply a higher incidence of relapse to be confirmed in larger cohorts of patients. This suggests that the presence of purulent drainage should be considered when planning surgical treatment of MRONJ.

Sat-16

Oral and peri-implant conditions of patients at risk for medication-related osteonecrosis of the jaw (MRONJ)

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Introduction:

In literature association between implants and medication-related osteonecrosis of the jaw (MRONJ) is inconsistent and incomplete. Most reported cases of peri-implant MRONJ were not associated with surgical implant placement but became manifest as a consequence of a peri-implant lesion.

Objectives:

To evaluate the peri-implant condition in a population at risk for MRONJ and to assess the impact of non surgical periodontal treatment on peri-implant clinical parameters.

Material and Methods: Ferrara Hospital Dental Unit developed a program focused on primary prevention of MRONJ onset. All participants underwent complete oral and radiographical examination and clinical parameters records. All parameters were merged to assign each patient a comprehensive risk evaluation score.

Results: 361 patients eligible/undergoing ARDs were examined. Individual risk for MRONJ was checked for each patients during first visit and after 3 months. 36 patients presented implant supported prosthesis (ISP). According to Oncologist and Hematologist 6 patients underwent implant removal. Considering residual patients with implants (34/36) in unadjusted analysis, baseline and 6 months data did differ in terms of average BoP (-6% mean value), PII score (-19% mean value) and n. of sites with probing depth > 4 mm (from 5,23 sites for each patient to 3,18 mean value).

Conclusions:

This study seems to indicate that non surgical periodontal treatment of moderate peri-implantitis is effective in decreasing inflammation as well as pocket depth in patients during ARDs therapy.

A more radical surgical approach has to be followed for implants affected by severe peri-implant lesions prior to initiation of ARDs Therapy.

Sat-17

Alterations of mucosal vasculature at early stages of osteonecrosis of the jaws

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Introduction: Osteonecrosis of the jaws (ONJ) is a significant complication of anti-resorptive therapy used for the management of bone diseases. ONJ pathophysiology remains obscure.

Objectives: Our aim was to study early changes in periodontal vasculature utilizing an established murine ONJ model of experimental periodontitis (EP).

Materials and Methods: C57BL/6J male mice were treated with vehicle, Zolendronic Acid (ZA) or recombinant Osteoprotegerin (OPG-Fc) for 1 week. Subsequently, silk ligatures were secured around upper right second molars. Periodontal bone levels were analyzed by micro-CT scans 1, 2 and 4 weeks following ligature placement. Endomucin and αSMA, as well as VEGFA and VCAM1 levels, were assessed by immunofluorescence, as vasculature and angiogenic factors, respectively. Hypoxia, oxidative stress, and apoptosis were assessed by measuring HIF1α, 4HNE and caspase-3 expression levels, respectively.

Results: Periodontal bone loss was significantly increased in vehicle-treated animals, but attenuated in ZA- and OPG-Fc-treated animals. Radiographic and histologic signs indicative of ONJ were observed in ZA- and OPG-Fc-treated animals. Smaller and fewer vessels, as indicated by Endomucin and αSMA expression pattern, and impaired angiogenesis, were noticed at diseased sites in ZA- and OPG-Fc-treated animals, more prominently at 4 weeks. Excess hypoxic and oxidative stress followed by increased apoptosis were detected both in ZA- and OPG-Fc-treated animals at all time-points.

Conclusions: Disruption in periodontal vasculature at sites of EP in antiresorptive-treated animals is accompanied by altered responses to hypoxia, cell adhesion, oxidative stress and cell apoptosis that ultimately may lead to clinical bone exposure, the hallmark presentation of established ONJ.

Sat-18

Oral erythroplakia: a series of six cases

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Introduction: Oral erythroplakia (OE) is a rare high-risk potentially malignant lesion. The etiology of OE is unknown, but it is thought to be associated with tobacco and alcohol use. It is unclear if OE arises de novo or from a pre-existing oral lesion. One previous report described erythroplakic lesions arising in patients with oral lichen planus.

Objectives: To collect cases of OE and report their demographic and clinicopathologic features.

Material and Methods: Retrospective search for cases with the diagnosis of oral erythroplakia from 1999-2016 was undertaken using the hospital files in Oulu and Kuopio University Hospitals. In addition, a case from the Catholic University of Rome is included. The diagnosis of OE was done by combining the clinical and histopathological features.

Results: The mean age of the patients was 71 years. 5/6 of the patients were females. The lesions were histopathologically diagnosed as moderate dysplasia (1/6), severe dysplasia (1/6), carcinoma in situ (1/6), microinvasive squamous cell carcinoma (1/6) and squamous cell carcinoma (2/6). 4/6 cases were associated with previous oral lichen planus or lichenoid lesions. None of the patients were smokers or excessive alcohol users.

Conclusions: Based on this small case series and one previous report, some OEs may arise de novo and some in association with oral lichen planus or lichenoid lesions.

Sat-19

Co-morbidities in oral lichen planus a prospective hospital-based case-control study

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Introduction: Oral Lichen Planus (OLP) is an immuno-mediated muco-cutaneous disease with an acute and/or chronic development. Recent researches showed an association with systemic co-morbidities.

Objectives: The aim of this study was to identify any possible associated related disease in OLP, analysing a cohort of selected subjects stratified by age, sex and smoking habit.

Material and Methods: An hospital-based prospective case-control study was conducted on a comprehensive sample collected from a Caucasian population resident in Piedmont, North-west Italy; only patients older than 18 years-old were selected, while pregnant or breast-feeding women were excluded. The case group consisted of 435 patients attending the Oral Medicine Unit, University of Turin, with a confirmed histopathological diagnosis of OLP in the period between January 2015 and December 2017; 350 healthy controls with no clinically detectable oral lesions, were recruited from subjects attending two dental private practices in need of an oral implant rehabilitation. Anamnestic data were collected thoroughly in both groups, focusing on pre-existing or coexisting systemic diseases and daily medications. Odds ratios (ORs) and 95% confidence intervals (CIs) from the conditional logistic regression method were used to assess the risk of co-morbidities between cases and controls.

Results: The two groups were similar for sex, age, habit of smoking and HCV infection. There was a statistically significant difference between OLP patients and the control group for body mass index ($P=.0001$), hypertension ($P=.005$), diabetes ($P=.02$) and thyroid diseases ($P <.0001$).

Conclusions: In this selected population, OLP could be strongly associated with hypertension, diabetes mellitus, thyroid disease and obesity.

Sat-20

Presence of p16 protein in oral lichen planus (OLP) tissue samples and its connection with malignant transformation

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Introduction: Oral lichen planus (OLP) is considered premalignant condition. In this study we tried to investigate the possibility of malignant transformation in OLP patients, by measuring the level of tumor suppressor protein p16INK4A. p16INK4A protein is a product of the cyclin dependent kinase inhibitor 2 (CDK2). CDK inhibitors may be responsible for maintenance of cell cycle. An imbalance in the cell cycle regulatory pathway involving p16/pRb may interfere with terminal differentiation eventually leading to unrestricted proliferation and tumorigenesis.

Objectives: 40 patients with OLP underwent biopsy. Two control groups were included in this research (13 healthy persons and 12 patients with highly differentiated squamous cell carcinoma (SCC))

Material and methods: All tissue samples were treated immunohistochemically using an avidin-biotin peroxidase complex method.

Results: By our results the number of patients with p16 positive cells was higher in OLP (72.5%) in comparison to CA (33.33%). Although the prevalence of patients with p16 positive cells in CA was low, all of them expressed the highest percentage of p16 positive keratinocytes. Besides, according to our results, staining intensity of cytoplasm was also higher in p16 positive keratinocytes of CA in comparison to OLP.

Conclusion: These results suggest that inactivation of p16 is an early detectable event in oral tumorigenesis and premalignant oral lesions. Gradually alteration of p16 protein might contribute importantly to the multistep nature of oral carcinogenesis. p16 expression could also be connected with tumor grading, and it may be used as a helpful marker in oral tumor progression.

Sat-21

Malignant transformation of oral leukoplakia in a well-defined cohort of 162 patients with a long-term follow-up

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Introduction: Oral leukoplakia is a potentially malignant disorder of the oral mucosa. The aim of this retrospective study was to find possible factors that predict malignant transformation of oral leukoplakia in a well-defined cohort of patients with long-term follow-up. All oral leukoplakia were staged according to a clinicopathological classification and staging system.

Material and methods: This study consisted of 162 patients. The size, presence and degree of epithelial dysplasia were noted according to the oral leukoplakia staging system. Initial management consisted of observation, surgical excision or CO2 laser vaporization. The mean follow-up was 64.8 months (SD=49.4 range 12-219 months).

Results: In 27/162 patients (16.7%) malignant transformation occurred between 15 and 187 months (mean 67.9 months) after the first visit, therefore the annual malignant transformation rate was 3.1%. A stage IV lesion ($p=0.004$), the presence of dysplasia ($p=0.017$) and non-homogenous oral leukoplakia ($p=0.001$) showed to be statistically significant predictors of malignant transformation.

Conclusion: A stage IV lesion, the presence of dysplasia and non-homogenous oral leukoplakia showed to be significant predictors of malignant transformation of oral leukoplakia.

Sat-22

Epithelial dysplasia in oral mucosal disease - importance in control of oral candidiasis : 4-year follow up case report

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Introduction: Epithelial dysplasia can be detected in oral lichenoid lesion (OLL) and oral leukoplakia (OL). They can be combined with oral candidiasis. Occurrence of epithelial dysplasia is 4-5 times higher in candidial leukoplakia than uninfected leukoplakia. *C.albicans* isolated from potentially malignant oral mucosal diseases is able to produce mutagenic amounts when exposed to substrates.

Objectives: Early detection of epithelial dysplasia and control of oral candidiasis in potentially malignant oral mucosal diseases is important.

Materials and Methods: We presented epithelial dysplasia cases combined with oral candidiasis in OLL and OL. One had an excisional biopsy of the localized lesion which was first misdiagnosed as oral lichen planus (OLP) in the biopsy. It led to a final diagnosis of moderate epithelial dysplasia with massive candidal infection (lichenoid dysplasia). The patient has been monitored closely with follow-up appointments and an antifungal therapy for 4 years with additional four times complete excision. The other had an incisional biopsy of the buccal mucosa and led to a diagnosis of oral candidiasis with moderate epithelial dysplasia (candidial leukoplakia). He has also been closely monitored with follow-up appointments for 4 years, and an antifungal agent without complete excision. Both are well maintained without an advance to malignancy.

Results and Conclusions: Lichenoid dysplasia can be misdiagnosed as OLP. No responsive lesion to proper treatment should be re-biopsied. Oral candidiasis could be a risk factor in developing epithelial dysplasia. Chronic oral candidiasis can be led to OL with epithelial dysplasia. Long-term evaluation, proper excision, and control of oral candidiasis is important in potentially malignant oral mucosal diseases.

Sat-23

Dioxide carbon laser treatment of 36 cases of oral leukoplakia

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Introduction: Oral leukoplakia (OL) is the most typical potentially malignant disorder of the oral mucosa and is defined as a white plaque of a questionable risk having excluded known diseases or disorders that carry no increased risk for cancer. Different types of interventions have been used to treat OL including cold scalpel excision, cryosurgery, laser ablation (including CO2 laser) and photodynamic therapy.

Objectives: To evaluate the outcome of a cohort of 36 patients with OL submitted to a CO2 laser ablation.

Material and methods: We conducted an observational study of 36 patients with oral leukoplakia treated with CO2 laser (10600nm; 150-175W/cm²) between 2010 and 2016. Every lesion was previously biopsied and the leukoplakia diagnosis was confirmed in all patients before the treatment. The mean follow-up period was 36.6 months (range 12 -84 months). Statistical analysis was carried by univariate analysis using chi-square test.

Results and Conclusions: Of the 36 cases, 16 were men and 20 women. Mean age of the patients was 55.72 years-old (range 30-84). The most affected site was the gingival mucosa 13 (36.1%). Four cases (11.1%) had mild dysplasia. There were no complications during surgery. The recurrence rate corresponded to 25% (9 patients). There were two cases (5.6%) of malignant transformation in the tongue, one after 18 months and the other after seven years.

The CO2 laser is a safe and efficient instrument to treat OL. However, a follow-up period is advisable for these lesions attending to their malignant potential nature.

Sat-24

Analysis of haplotypes of gene polymorphisms (TLR3 and TLR4) in OLP

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Introduction: Oral Lichen Planus (OLP) is a chronic inflammatory disease with pronounced premalignant potential.

Toll-Like Receptors - TLRs represent a large class of receptors involved in the innate and adaptive immune response. After activation of the TLR, the disadvantageous molecules in the signal pathway are triggered, which leads to the expression of pro-inflammatory genes. It could be assumed that polymorphisms can affect the functionality of the TLR receptor and increase / lower the risk of developing a chronic infection. As oral mucosa is directly exposed to microorganisms that can be identified by TLRs, the presence of SNPs in the TLR genes could play an important role in the pathogenesis of the OLP. The aim of this study was to examine the frequency of individual haplotypes, as well as their relationship with OLP.

Material and methods: The study group consisted of 101 patients with diagnosed OLP and 104 healthy controls. The frequency of the identified haplotypes in the analyzed group is determined by the Haploview program, using the mathematical Expectation Maximization algorithm.

Results: The identified haplotypes in the TLR3 gene were not associated with the risk of developing OLP. Haplotype of the TA TLR4 gene was associated with a reduced risk for the development of OLP (0.099 lower risk) compared to the CA haplotype.

Conclusion: It is possible that the identified haplotype is only part of a larger haplotype block of the TLR4 gene, which has far more predictive power when it comes to susceptibility to OLP.

Sat-25

Recurrence rate after surgical removal of oral leukoplakia

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Introduction: Leukoplakia (LPL) is a potentially malignant oral disorder. Gold standard is to surgically remove LPL if possible. Despite optimal surgery, recurrence rates are estimated to be 5%-10% per year. The cause for this is not known.

Objectives: The aim of the present study was to investigate factors that can be correlated to recurrence after surgery.

Material and Method: In a prospective multicenter study (ORA-LEU-CAN study) data from 186 patients with a biopsy verified diagnosis of LPL have been collected. Medical and dental histories were recorded. Clinical data and diagnosis (homogenous/non-homogenous), histopathological diagnosis and photo were registered. In patients eligible for surgery LPL were removed with margin and sent for histopathological examination. Statistical analysis was done by a log rank test with a level of significance set to $P < 0.05$.

Results: Of the 186 patients diagnosed with LPL, 45% (N=83) underwent surgical removal *in toto*. Recurrence was observed in 40% (N=36). In this recurring group 28% (N=10) of excised LPL showed dysplasia. Forty-one percent (N=15) was of non-homogenous type and 36 % (N=13) had a size $> 200 \text{ mm}^2$. Fifty-eight percent (N=21) were males in the recurring group. No significant differences were found between the investigated parameters and recurrence ($P > 0.05$).

Conclusions: Neither clinical type of LPL, presence of dysplasia, lesion size or gender was correlated to recurrence after surgical removal.

Sat-26

Leukoplakia and OSCC

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Objectives: Potentially malignant oral disorders describes the group of mucosal diseases with risk of progressing to squamous cell carcinoma. Oral leukoplakia, the most common OPMD, has a 1% prevalence and reported malignant transformation rates of 2% to 5%. Histopathologic assessment of OPMDs is an area of subjectivity, and oral epithelial dysplasia is fraught with both interrater variability.

Probably the greatest challenge to those managing patients with oral diseases is the dilemma of attempting to predict which oral erythroplakias, leukoplakias, lichenoid and other potentially malignant mucosal disease such as oral submucous fibrosis will progress to neoplasia - notably OSCC.

Oral leukoplakia is a potentially malignant disorder of the oral cavity with chances of undergoing malignant transformation owing to the presence of dysplastic changes may not be clinically distinguishable from leukoplakias without dysplasia.

The clinical appearance of suspicious white lesions does not provide a true nature of its disease status and malignant changes may be missed.

Case report

The patient, 76 year-old female came for the treatment of burning mouth syndrome.

On the clinical examination leukoplakia-like lesions on the floor of the mouth were seen. Anamnesis revealed a history of hepatitis C infection lasting at least 20 years. The patient was aware of the leukoplakia lesions, and had been biopsied 5 years ago with simple leukoplakia as a result. We performed an immediate biopsy of the three different sites and the results were positive for OSCC stage II, moderately differentiated. The patient underwent oral surgery and has expired since.

Sat-27

Contact endoscopy and laser treatment of oral leukoplakia - a new protocol proposal

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Management of oral leukoplakia (OL) is still a challenge to clinicians. Although, the preferred treatment is total excision with definite histologic diagnosis, the procedure can be challenging and present a high morbidity.

Laser ablation is an alternative treatment with the advantages of reducing local morbidity and the technical difficulty in some oral subsites but could fail to give a definite histological diagnosis in cases of vaporization or having histological artifacts in cases of excision.

Contact endoscopy is a recent technology with high sensitivity and specificity in identifying oral malignancy before any invasive procedure. This method is capable of showing the epithelial cell

layers of oral mucosa and the submucosal vessels *in vivo*, detecting the histopathological features of several disorders. It is a non-invasive and easy technique which can be performed in a clinical office allowing the quick assessment of the entire lesion *in loco*.

The aim of this work is to propose a protocol of the use of contact endoscopy previously to the laser treatment of OL. We present three cases of OL in which contact endoscopy was performed before laser treatment, in two cases showing no dysplasia or malignant transformation which make laser vaporization possible and in one case showing a microinvasive oral carcinoma determining an excision of the entire lesion.

The combination of both technics in the management of OL, could expand the OL treatment possibilities with less morbidity and to serve as a guide to indicate the type of surgical protocol for each lesion.

Sat-28

PD-1 expressing cells in leukoplakia and oral lichen planus

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Introduction: Although a difference in etiology where LPL caused by genetic aberrations and OLP, most likely of autoimmune origin, an inflammation may be seen. Regulation of T cell activity is dependent on immune checkpoints such as PD-1 (programmed cell death protein-1)/PD-L1 interaction.

Objectives: The aim of this study was to compare presence of dendritic Langerhans cells (LC), T cells and PD-1 in LPL and OLP.

Material and Method: In 10 patients with LPL without dysplasia and 14 patients with OLP, sections from biopsies were obtained. Immunohistochemistry was performed against CD1a, CD3, PD-1 and Ki67 to visualize LCs, T cells, PD1-expressing cells and proliferating cells, respectively. Tonsils and oral squamous cell carcinoma (OSCC) specimens (N=3) were also assessed. Digitalized images were obtained and quantitative analysis was performed. Statistical analysis by the Mann-Whitney U test. The level of significance was set to $p < 0.05$.

Results: LPL compared to OLP: mean values no of positive cells/mm² (median; range):

Epithelium: CD1a+cells: 46 (30;4-170)/50 (50; 0-124) $p > 0.05$; CD3+cells: 117(107;8-204)/

71(75;4-153) $p > 0.05$; PD-1+ cells: 0/0 Ki67+ cells: 114(110;11-285)/95(111;5-170) $p > 0.05$.

Connective tissue: CD1a+cells: 44(28;8-130)/50(36;24-86) $p > 0.05$. CD3+cells: 1460(1175;38-3686)/3198(321;333-6096) $p < 0.05$ PD-1+ cells: 0/0

Control tissues PD-1+ cells: tonsils: solitary; OSCC: sparse

Conclusion: In the connective tissue of OLP-patients, CD3-positive T cells were significantly more abundant compared to LPL-patients. Preliminary results indicate that PD-1 is not expressed in LPL and OLP. Further investigations are presently undertaken.

Sat-29

Awareness among medical and dental undergraduates of benign and potentially malignant disorders and lesions

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Introduction:

Oral cancer is the eighth most prevalent form of cancer within the UK. Approximately 2.5% of the population present with an oral potentially malignant condition making this cohort of society an important target for cancer prevention strategy. Many disadvantaged adults visit doctors or emergency departments over dentists for conditions in the oral cavity as there is a fee associated with visiting an NHS dentist, but not an NHS medic. As disadvantaged individuals are more likely to partake in problem behaviours which predispose them to potentially malignant changes within the oral cavity, it is important to identify if both medical and dental healthcare professionals are able to recognise oral conditions which require referral to specialist centres (i.e. oral medicine, oral surgery or maxillofacial surgery).

Objectives:

We hope to ascertain whether there is any difference in the recognition of benign and potentially malignant oral conditions between final year medical and dental students.

Materials and methods:

Using REDCap, we intend to show the final year dental and medical students at the University of Birmingham, United Kingdom (UK), who are within six months of graduating into their respective vocations, 20 photographs of oral conditions, half of which are potentially malignant. The students must classify the condition shown as "benign", "potentially malignant" or "not sure" and attempt to name it.

Results and conclusions:

We will be able to demonstrate shortcomings in the identification and knowledge of oral potentially malignant conditions between an upcoming generation of medical and

Sat-30

The recurrence of oral leukoplakia after surgical treatment with diode laser versus conventional surgery

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Introduction: Oral leukoplakia (OL) is one of the most common malignant lesions of the oral cavity, the treatment of which may be conservative or surgical.

Objectives: The aim of this study was to investigate possible recurrence of the OL in patients of Sverdlövs Regional Dental Clinic using 940 nm diode laser or traditional scalpel. The recurrence rate for local excision varies from 10-34% and laser's recurrence needs to be further investigated.

Material and Methods: A sample of 34 patients; mean age was $51 \pm 4,2$; most patients were men (29M:5F) with a clinical-histological diagnosis of OL. The patients were divided into two groups. Group A: 940 nm diode laser excision (n=19) and Group B: traditional scalpel excision (n=15). All the patient data were compared during the following 24 months. All the patients were current or former smokers with lesions (>2cm) of buccal, tongue and gingival localization.

Results: After 24 month's follow-up there were 2 patients with recurrence of leukoplakia in Group A and 4 patients in Group B respectively. All these patients (n=6) were current smokers, had the previous epithelial mild or moderate dysplasia, non-homogeneous types, tongue and buccal localization.

Conclusions: The investigation showed that the rate of recurrence in Group A was 10.5% and in Group B – 26.6% respectively during the follow-up period. So follow-up programs especially in current smoking patients treated with conventional therapy are strongly recommended. Patients treated with diode lasers still may have the recurrence of OL. All the patients with it must be informed and carefully followed up.

Sat-31

Oral epithelial dysplasia: ten-year retrospective from Istanbul university

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Introduction: Despite the improvement in therapies for cancer, the five-year survival rates of oral squamous cell carcinoma (OSCC) has not change significantly in last 20 years. This fact raises the importance of detection of oral premalignant lesions and oral epithelial dysplasia (OED). We aimed to understand the character of OED in terms of severity, age, sex, location and related tumor development.

Objectives:

Material and Methods: In this retrospective cross-sectional study, proven OED with histopathology between years 2006-2016 in İstanbul University, İstanbul Medical Faculty Pathology Department were reviewed. Statistical data was evaluated with IBM 21.0 programme and statistical significance was taken as $p < 0,05$.

Results: A total of 384 biopsies from 275 patients (144 female, 131 male) with the mean age of 59,32 (14-91) were reviewed. The most common type of dysplasia was mild dysplasia (67.8%) and the most common locations were the tongue (40.6%), buccal mucosa (31%) and palatal mucosa (8.1%) respectively. Buccal mucosa and tongue showed a statistically significant difference according to dysplasia grades $p < 0.01$ and $p < 0.05$ respectively. Previous OSCC at the same location was positive in 17(6,1%) of the cases.

Conclusions: Intraoral examination of middle-aged population has an extreme importance in terms of detection early stage oral cancer and OED. Follow up of the OSCC cases also needs a careful watch of the oral mucosa and biopsy of the suspicious sites.

Sat-32

Do nutraceuticals and herbal medicines have a role in managing oral lichen planus? A systematic review

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Introduction: The main objective of oral lichen planus (OLP) management is to control symptomatic outbreaks via eliminating lesions and alleviating symptoms. There is consensus that the current evidence is insufficient to support the effectiveness of the available treatment modalities over placebo or superiority of any modality over the other. In addition, Corticosteroids, Calcineurin inhibitors, and most of the available modalities are associated with adverse effects, which may limit their use. Nutraceuticals and herbal medicines are growing alternatives in the management of OLP.

Objectives: This review was conducted to assess the effect of nutraceuticals (aloe vera, curcumin, honey, purslane, ignatia, quercetin, lycopene) on pain alleviation and/or clinical improvement in patients with symptomatic OLP.

Material and methods: MEDLINE-PubMed and CENTRAL were searched to identify clinical trials.

Results: From the included studies, there is weak evidence that nutraceuticals are more efficient than placebo and have comparable effect to corticosteroid.

Conclusion: Considering the cost effectiveness, the few side effects and their natural availability, nutraceuticals could represent a turning point in management of OLP, especially in patients who suffer from systemic diseases that contraindicate the use of the other available modalities.

Sat-33

Autophagy-related IRGM in patients with oral lichen planus

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Objectives: Immunity related GTPase M (IRGM) is required for initiating autophagy and participates in inflammatory and autoimmune diseases. This study investigated the possible involvement of autophagy-related IRGM in the T cell-mediated immune inflammatory conditions of oral lichen planus (OLP).

Material and methods: Quantitative real-time RT-PCR and immunohistochemistry were used to evaluate mRNA expression and protein levels of IRGM in peripheral blood T cells and lesions of OLP patients, separately. Meanwhile, double-labelling immunofluorescence (IF) was performed to

determine the expression of IRGM in local T cells and the results were analyzed qualitatively. In addition, autophagy marker proteins LC3B and p62/SQSTM1 were measured in local lesions.

Results: OLP displayed significantly elevated *IRGM* mRNA expression in peripheral blood T cells (1.07 ± 0.1 versus 0.67 ± 0.04 , $P = 0.001$), as well as upregulated IRGM (5.44 ± 0.74 versus 3.13 ± 0.45 , $P = 0.015$) and LC3B (5.5 ± 0.67 versus 2 ± 0.57 , $P = 0.001$) levels in lesions. Obvious staining of IRGM, LC3B and p62/SQSTM1 were also observed in local T cells of OLP. However, the expression of IRGM, LC3B and p62/SQSTM1 showed no significant differences between different clinical forms of OLP.

Conclusions: Taken together, increased IRGM may be involved in the immunoregulatory mechanism of OLP via its modulation on autophagy.

Sat-34

Update on the development of a novel treatment for oral lichen planus (OLP) - the Rivelin® patch

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Introduction: Although the merit of topical corticosteroids in the management of symptomatic OLP is acknowledged, no oral mucosal specific means for targeted delivery is currently available. The Rivelin® patch is a two-layer bio-adhesive patch that adheres to the oral mucosa and delivers Clobetasol to targeted sites.

Objectives: To present the findings of the Phase 1b study regarding adhesion and acceptability of the plain Rivelin® patch in patients with OLP and to provide an update on the status of the Phase 2b multi-centred placebo controlled randomized controlled trial (RCT) of the Clobetasol containing Rivelin® patch.

Material and Methods: An open label study was conducted to determine adhesion and acceptability of the plain Rivelin® patch. Subjects applied 1-2 patches to an investigator identified target lesion twice daily. Adhesion time at various intraoral sites and acceptability was determined using patient reported outcomes. Following the outcome of this Phase 1b study a further Phase 2b study was designed and initiated as a placebo controlled RCT in the US and Europe.

Results: Thirteen patients with symptomatic OLP were enrolled in the Phase 1b study. Mean intraoral adhesion time was 90 minutes. The patches were easy to apply and remove and generally well tolerated. The plain Rivelin® patch did not appear to have any clinical effect on the lesions.

Conclusions: The plain Rivelin® patch demonstrated better than expected adhesion time and good tolerability. The multi-centered Phase 2b study will determine the efficacy of the Clobetasol containing Rivelin® patch in the management of symptomatic, ulcerative OLP.

Sat-35

The role of mucosal associated invariant T (MAIT) cells in oral lichen planus (OLP)
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Introduction: MAIT cells possess the T cell receptor TCRV α 7.2 and are restricted by the highly conserved molecule, major histocompatibility class 1 related protein (MR-1). MAIT cells are activated by riboflavin derived MR-1 bound intermediates that are not endogenously produced in humans. Riboflavin, however, is produced by microbes including bacteria and *Candida*. Once activated, MAIT cells can destroy the infected cell. OLP, a T cell mediated inflammatory condition of unknown cause, has been associated with concurrent candidal infection. The interaction between MAIT cells and oral *Candida* and the role this may play in the aetiopathogenesis of OLP is currently unknown.

Objectives: To determine the presence and variability in the quantity of MAIT cells in OLP tissue with or without concurrent *Candida* presence.

Materials and Methods: 90 formalin fixed paraffin embedded biopsy tissue samples from patients were assessed including samples from 75 patients with OLP (30 asymptomatic, 30 symptomatic and 15 samples with concurrent *Candida*) for comparison with 15 patient samples of uninflamed fibroepithelial polyp. All samples were tested for presence of *Candida* with periodic acid-Schiff staining. MAIT cells were identified using a multiplex staining technique for the cellular markers CD3, IL-18R α , TCRV α 7.2, CD161, CD8, MR-1 and DAPI.

Results: Preliminary results confirm the presence of MAIT cells within the subepithelial infiltrate of OLP tissue. Limited staining was noted within the fibroepithelial polyp tissue.

Conclusions: MAIT cells were shown to be present in the OLP subepithelial infiltrate. Presence of these cells may allude to a possible role in the aetiopathogenesis of OLP.

Sat-36

Some cases of proliferative multifocal leukoplakia could come from oral lichenoid disease with plaque lesions?
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Introduction: Proliferative multifocal leukoplakia (PML) is an oral disorder with a great tendency to malignancy, which is characterized by the presence of multiple white plaques in the oral mucosa that progress. Oral Lichenoid Disease (OLD) is a frequent, potentially malignant oral disorder characterized by the presence of reticular papular lesions and sometimes showing plaque lesions. These disorders show some coinciding aspects (gender, age, not tobacco, etc.), which has been the reason why a possible relationship between them has been suggested.

Objectives: To know the prevalence of patients with OLD that show plaque lesions and their evolution.

Material and method: A retrospective study of patients diagnosed with OLD who showed plaque lesions at the time of diagnosis and with a minimum follow-up of 1 year. Evaluation of the clinical and evolutionary characteristics of plaque lesions.

Results: Of 387 patients, 27.69% showed some plaque lesion at the time of diagnosis. 77.70% were women and 22.30% men, with an average age of 58.48 years. The mean time of follow-up was 77.73 months. The plaque lesions were located in gums (37.69%), tongue (32.47%) and buccal mucosa (32.15%). During the follow-up, the plaque lesions grew by 26.91%, remained the same in 31.80% and decreased in 41.28%. During this period, 4 patients (3.85%) suffered malignant transformation.

Conclusions: Our results support the hypothesis that certain cases initially diagnosed as OLD may end up transforming into PML. OLD patients who show lesions on plaque should have careful control and biopsies should be performed on all progressing lesions.

Sat-37

Expression of ER stress related molecules - GRP78 and CHOP - in oral lichen planus

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Introduction: Oral lichen planus (OLP) is known as a T cell-mediated autoimmune disease. Apoptosis and T cell recruitment are thought to play major roles in pathogenesis of OLP. Exact mechanisms of apoptosis are unknown in OLP. Recently, endogenous cellular stress, endoplasmic reticulum (ER) stress, emerges a new apoptotic signaling initiator and controls inflammation and immune response. ER stress is also thought to play an important role in development of T cell-mediated autoimmune diseases.

Objectives: The aim of this study is to investigate an expression of ER stress-related molecules in OLP.

Material and Methods: We examined the expression of glucose-regulated protein of 78 kDa (GRP78); an ER stress marker, tumor necrosis factor alpha (TNF- α); a potent modulator of cellular apoptosis, CCAAT/enhancer-binding protein (C/EBP) homologous protein (CHOP); a transcription factor involved in ER stress-induced apoptosis by reverse transcription-polymerase chain reaction and immunohistochemistry in OLP tissue.

Results and Conclusions: The mRNA level of GRP78 and TNF- α were significantly higher, and CHOP was significantly lower in OLP compared to control. CHOP was expressed in the upper epithelial layers in control, whereas, expressed in the basal epithelial layer in OLP. We found out that ER stress is increased in OLP lesion and ER stress-induced apoptosis may be involved in apoptosis of basal keratinocytes. We suggest that the endogenous cellular stress, ER stress, may play a role in pathogenesis of OLP and propose that ER stress could be a new scope for study of OLP.

Sat-38

The equivocal diagnosis of oral lichenoid lesions appearing after rituximab administration

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Introduction: Rituximab, a chimeric monoclonal antibody approved mainly for treatment of hematologic malignancies and autoimmune diseases, is well tolerated, however various side effects, involving skin and mucosae, have been reported.

Objectives: We present a patient with a history of non-Hodgkin lymphoma, with oral lichenoid lesions following treatment with rituximab and discuss the differential diagnosis.

Results: A 44-year-old woman with follicular lymphoma in remission for the last two years presented with a 6-week history of burning and discomfort sensation on her tongue and palate. She had received a maintenance dose of rituximab combined with hydrocortisone every two months, the last being administered one week before the onset of the oral symptoms. Intraoral examination revealed multifocal erythematous/erosive lesions (hard palate, labial and buccal mucosae, attached gingivae, dorsal tongue) with no related white lesions. Skin/other mucosae were not involved. Repeated courses with topical and systemic antifungals or topical steroids yielded mild improvement in symptoms while the clinical presentation remained largely unchanged. Biopsy showed a lichenoid pattern of inflammation with fibrinogen deposition at the basement membrane zone by direct immunofluorescence. The final differential diagnosis included oral lichenoid reaction to rituximab and a lichenoid variant of paraneoplastic pemphigus (PNP).

Conclusion: In view of its growing use, clinicians must be aware of the side-effects of rituximab, including the spectrum of oral manifestations. Persistent/refractory oral lichenoid lesions with/without cutaneous involvement, especially in the background of a hematologic malignancy, may also raise the possibility of PNP, with a pathogenesis mediated by cytotoxic T cells rather than autoantibodies.

Sat-39

Oral Lichen Planus: a single center experience

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Introduction and Objectives: Lichen planus (LP) is a mucocutaneous disorder affecting the skin and/or mucous membranes including the oral cavity. Considering oral lichen planus (OLP) as a common disease in Saudi Arabia, the aim of this study was to describe its clinicopathological features at King Abdulaziz University, Faculty of Dentistry (KAU-FD) and management outcomes.

Material and methods: We retrospectively reviewed charts of all OLP patients who were seen at KAU-FD from June 2012 to June 2017. Demographic data, medical history, current medications, with clinical and histological findings were collected. Statistical analysis was mostly descriptive.

Result and conclusion: Fifty-eight patients were included in this study. There were 41 females (70.7%) and all patients had at least one follow-up. More than half of the patients were

asymptomatic (52.3%) and were followed up only. The remaining patients reported symptoms with various severity and a mean pain score of 2.7/10 (range 0-10). Twenty-three patients received treatment in different formulation including topical prednisolone alone (31.4%), systemic steroids alone (2.0%) and combination of both (11.8%). Median follow up was 8 weeks (range 4-24 weeks). At 4-weeks follow up, eight patients had either minimal or no symptoms which increased to seventeen patients at 8-weeks follow up (overall response was 64.7%). Topical prednisolone therapy is an effective method to control symptoms of mild to moderate OLP. Patients with more debilitating symptoms may benefit from additional intra-lesional injection or/and systemic immune modulating therapy. The current study is the first in a series of studies to better understand OLP in Saudi Arabia.

Sat-40

Unidirectional delivery of clobetasol-17-propionate using a novel mucoadhesive bilayer patch to treat oral lichen planus; a pre-clinical evaluation

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Objective: Oral lichen planus (OLP) is a chronic inflammatory condition often characterised by erosive and/or painful oral lesions that have a considerable impact on quality of life. Current treatment includes use of steroid-containing mouthwashes, creams or ointments that are frequently ineffective due to inadequate drug-lesion contact times. Here we evaluate the performance of a novel mucoadhesive bilayer patch for unidirectional delivery of the steroid clobetasol-17-propionate to the oral mucosa.

Material and Methods: Drug release profiles of electrospun polymer patches comprised of a clobetasol-17-propionate-loaded mucoadhesive layer and an impermeable backing layer were examined by HPLC. Drug-loaded patches applied to tissue-engineered human oral mucosa were evaluated for drug penetration, cytotoxicity and modulation of activated T cells. Release of clobetasol-17-propionate into the oral mucosa, and local and systemic drug safety was confirmed by *in vivo* mini-pig studies.

Results and Conclusions: Clobetasol-17-propionate was released from mucoadhesive patches in a sustained manner and penetrated tissue-engineered mucosa in a time and concentration-dependent profile without causing tissue toxicity. Patch-released clobetasol-17-propionate significantly reduced levels of IL-2 by activated T cells compared to controls in a tissue-engineered model. *In vivo*, drug-loaded patches displayed prolonged residence time with drug release at therapeutic-relevant doses and time points without local or systemic toxicity. Clobetasol-loaded electrospun mucoadhesive patches adhere to oral mucosal tissue; release their therapeutic load and target T cell function without causing tissue damage. These patches hold great promise for improving the treatment of OLP, RAS and other immuno-inflammatory oral diseases and are now entering phase 2 clinical trials.

Sat-41

Long term OLP transforming to OSCC

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Objectives

Oral lichen planus (OLP) and lichenoid lesions (OLL) are regarded as precursor lesions of oral squamous cell carcinoma (OSCC) with potential for malignant transformation. This potential is not clear due to difficulties in the diagnosis of OLP and OLL. Mucosal lesions with an ulcerative appearance and those located on the floor of the mouth showed significantly higher degrees of dysplasia or were diagnosed as OSCC. The current hypothesis connecting OLP and OSCC is that chronic inflammation results in crucial DNA damage which over time results in cancer development. p53 has been implicated in OSCC, but there are limited studies of mutations in premalignant oral lesions. As p53 expression has been identified as a response to DNA damage, the identification of p53 in OLP tissue is interpreted as an indication of precancerous potential by some researchers.

Case report

A 61 year-old women has been a long-term OLP patient, with regularly scheduled biopsies during 10 years. The patient developed a brain aneurism which had ruptured and was rushed for immediate surgery because of the long term recovery, she had missed one year in the OLP management. When seen again, she had ulcerated buccal mucosa on both sides and was in great discomfort. Both lesions were biopsied and on the right buccal side the result was OSCC with p53 positive. The patient has had surgical treatment limited to the site of the lesion, with no lymph node involvement.

Sat-42

Temporomandibular disorders in patients with cleft lip and palate

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Introduction: There is scant literature regarding prevalence and incidence of temporomandibular disorders (TMDs) in children with orofacial clefts (OFC). Children born with OFC will undergo substantial surgical and orthodontic treatment. There are often compromises from the ideal occlusion because of a constricted upper arch and/or aplasia of the teeth on the cleft side. Additionally, lip and palate repair can have a significant restrictive influence on the maxilla. Patients with clefts more frequently present with cross-bites than the general population.

Objectives: The aim of the present audit was to investigate the prevalence of TMD in subjects under the ages of 18 with repaired OFC.

Material and Methods: 100 paediatric patients were included in this audit. Patients attending the Children's Hospital were asked to answer a questionnaire and underwent a clinical examination by one clinician, as per the Diagnostic Criteria Temporomandibular Disorders

(DC/TMD). Questions included the patient's age, gender, area of residence, the type of cleft, medical history, dental history and 3 screening questions (3Q/TMD).

Results: Our youngest participant was 7 years old. None of the 100 patients were diagnosed with TMD according to the DC/TMD. No patient answered positively for more than 1 question of the 3Q/TMD.

Conclusions: Our results show that subjective and clinical signs of TMD were not more common in children with repaired OFC. This lends weight to the emerging literature regarding the negligible influence of occlusion on TMD. The 3Q/TMD has been validated in adults, and similarly appears to have reliable negative predictor value.

Sat-43

Psychological factors influencing decision making for trauma-related pain in the adolescent TMD patients: a case-control study

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Objectives: We evaluated the clinical, radiological, and psychological characteristics of adolescent temporomandibular disorder (TMD) patients, and investigated the relationships among them.

Material and methods: A total of 70 adolescent patients who were diagnosed with TMD according to DC/TMD Axis I were included. Among them, 35 were younger adolescents (12 to 16 year-old), and 35 were older adolescents (17 to 19 year-old). Each age group was subdivided according to the presence or absence of macrotrauma on the head and neck area. TMJ MRI was performed in all patients, and SCL-90R was used for evaluation of the psychological status. Student's t-test, Fisher's exact test, logistic regression analysis and Cramer's V were used for statistical analysis of the data.

Results: In younger adolescents, the score of palpation index was significantly higher than those of older adolescents (0.46 ± 0.35 vs. 0.27 ± 0.24). Regarding the TMJ MRI findings, the prevalence of disc displacement (80% vs. 54.3%) and effusion (60% vs. 28.6%) was significantly higher in younger adolescents. Interestingly, only in younger adolescents, the presence of macrotrauma history was more likely to increase the scores of psychological factors; the mean scores of somatization (50.53 ± 9.20 vs. 41.94 ± 8.01), obsessive-compulsive (45.53 ± 7.75 vs. 37.88 ± 9.94), hostility (46.26 ± 5.16 vs. 41.69 ± 6.41), and psychosis (47.42 ± 6.95 vs. 42.25 ± 7.06) were significantly higher in younger adolescents who had macrotrauma history than those without it.

Conclusions: Therefore, the clinician should be cautioned about the trauma-related relationship for decision making for treatment.

Sat-44

The impact of group intervention on patients with temporomandibular disorder

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Introduction: Temporomandibular Disorder (TMD) is recognised as the most common persistent orofacial pain, with prevalence figures ranging from 3% to 12%. Patients referred to a tertiary orofacial pain clinic for the management of TMD may experience delays in receiving treatment. The objective of our study was to assess the effectiveness of a group treatment program that has the potential of delivering early and effective intervention to specific patients with chronic TMD. Our hypothesis was that patients who suffer from TMD and catastrophize pain will respond to group treatment significantly better than individual treatment.

Objectives: Our aim was to assess the effectiveness of pain education delivered in a group compared with an individual setting on TMD related pain and catastrophizing.

Materials and Methods: Patients referred to a tertiary Oral Medicine clinic were examined and diagnosed with TMD. The Graded Chronic Pain Scale (GCPS) and Pain Catastrophizing Scale (PCS) were administered. Twenty-nine patients participated in the study and were allocated to receive education about basic neurophysiology of pain, TMD and relaxation techniques either in a group setting or individually. The GCPS and PCS were re-administered 6 weeks after the intervention.

Results: There was no statistically significant difference between the levels of Anxiety, Somatic Symptoms and Catastrophizing between patients who received either intervention. Both interventions equally reduced the level of pain and disability. The individual intervention reduced the rumination tendency considerably more than group intervention.

Conclusion: Group and Individual Intervention are equally effective in reducing TMD related pain and catastrophizing.

Sat-45

Analysis of differential gene expression in temporal tendons of patients with masticatory muscle tendon-aponeurosis hyperplasia by using next-generation sequencing

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Objectives: Masticatory muscle tendon-aponeurosis hyperplasia (MMTAH) is a newly identified disease associated with a limited mouth opening and it has often been misdiagnosed as a temporomandibular disorder. As a result, irreversible surgeries have been conducted on patients. Its symptoms advance slowly from adolescence that mandibular angles on both sides gradually exhibit hyperplasia with the passage of time, finally resulting in a characteristic square mandible. No useful diagnostic markers of this disease have been available because of its poor

objective symptoms. Here, we conducted bioinformatics analysis to identify causative genes of MMTAH.

Materials and Methods: Seven subjects with MMTAH and three with facial deformity were obtained from patients undergoing surgery. We conducted a differential gene expression analysis by using RNA sequencing.

Results: Of the identified 19,767 mapped read tags that showed clear differential expression, 124 were the regulators of muscle and tendon development and showed significant higher expression. Among them, following genes are highly expressed compared to others: Mohawk (i.e. atypical homeobox genes that are expressed while developing tendons), Myogenic Factor 5 (i.e. a master regulator of muscle development), and Myoblast determination protein 1 (i.e. a transcriptional activator that promotes transcription of muscle-specific target genes and plays a role). Moreover, quantitative PCR methods revealed that these genes significantly upregulated in MMTAH.

Conclusions: Our results demonstrated that the upregulation of myogenic and tenogenic factors are related with the pathological condition of MMTAH. Further experiments are needed to confirm that these genes are involved in the diagnostic markers or the therapeutic targets for MMTAH.

Sat-46

Eagle's syndrome: a lingual paresthesia in a patient affected by osteogenesis imperfecta

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Introduction: Eagle's Syndrome (ES) is characterized by deep, dull pain in the oropharynx and posterior auricular region, dysphagia and limited range of neck motion. The disorder is due to an elongated styloid process calcification of the styloid ligament. It was first described by Pietro Marchetti in 1652. In 1937 Eagle found out that only the 4% of the patient affected by ES had symptoms. He divided the syndrome into two forms: classic type and carotid archery type. Panoramic radiograph is a x-ray exam useful to evaluate the styled process elongation.

Objectives: Evaluation of the lingual paraesthesia in a patient affected by osteogenesis imperfecta.

Material and Method: A 42 year-old female subject referred to the Dental Clinic of the University Hospital San Raffaele, Milan, Italy, for a right lingual paraesthesia. The patient was affected by osteogenesis imperfecta since birth. We hypothesized she had an osteolytic lesion in correspondence of the third right lower molar.

Results: We analyzed both the panoramic radiograph and the CT and we saw a right calcified styloid ligament.

Conclusions: ES refers to a symptomatic anomaly due to elongation of the styloid process or the mineralization of the styloid complex. According to the literature the styloid process elongation is related to increased expression of osteogenetic and protective proteins. We hypothesized that the ES caused the right paraesthesia of the tongue due to the proximity of the calcified ligament to the lingual nerve.

Sat-47

Association between pain, horizontal condylar angle, and degenerative changes in the temporomandibular joint: longitudinal study using CBCT

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Objective: The purpose of this study was to reveal the association between clinical findings and radiographic features, and to evaluate long-term alteration of pain, horizontal condylar angle (HCA) and degenerative changes of the temporomandibular joint.

Materials and Methods: In this longitudinal study, CBCT images of temporomandibular joints and reports from 75 patients with degenerative joint disease (DJD), 13 control patients with temporomandibular disorder (TMD) and 24 control normal subjects.

Results: There were correlations among radiographic findings (HCA, erosion), clinical features and demographic features (gender, age). The HCA was significantly related to age, pain and bone type. DJD-affected condyles had higher HCA than DJD-unaffected condyles. The HCA of condyles with DJD gradually increased as bone remodeling proceeded in early stage, and then it decreases after osteophyte formation at stable stage. Bone remodeling was reversible and bone type transition can be possible in variable directions. The amount of erosion increased again in 23.5% of condyles at second (2-3 years) follow-up even though the decrease of erosion was confirmed at first follow-up.

Conclusions: Radiographic features which include HCA, bone type and the severity of erosion are interrelated and associated with pain. HCA, along with the condylar surface changes, can be used as a reference for judging remodeling stages. High HCA without bone changes can predict onset of DJD. The amount of erosion can be one of the imaging markers that can measure pain in patients with DJD. The progression of DJD can be reversible and a relapse of bone destruction occurred.

Sat-48

Salivary concentrations of antioxidants and cortisol in patients with chronic temporomandibular disorders

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Objectives: Temporomandibular disorders' (TMD) risk factors include mechanical and psychological stressors. The aim of this study was to investigate the relationship between salivary antioxidant parameters, salivary cortisol and TMD, i.e. to see if mentioned stressors are measurably affecting involved mechanisms.

Methods: Twelve patients diagnosed with chronic TMD, and 15 systemically and periodontally healthy age-matched controls were included. Five milliliters of whole unstimulated saliva were

collected into a graduated tube twice a day: 7 AM and 5 PM. Salivary superoxide dismutase (SOD), and glutathione peroxidase (GPx), total antioxidant capacity (TAC) and uric acid (UA) were analyzed using spectrophotometric methods. Salivary cortisol was determined by enzyme-linked immunosorbent assay. Salivary biomarker concentrations between TMD and control groups were compared by T- test and the correlation among antioxidants' and salivary cortisol concentrations by Pearson's correlation analysis.

Results: Significantly increased salivary concentrations of SOD ($p<0.001$) were found in TMD group, whereas the mean salivary concentrations of cortisol, GPx, TAC and UA, although higher in the TMD group, were not statistically significant. There was a highly significant positive correlation ($p<0.05$) between salivary cortisol levels and antioxidant parameters in TMD patients.

Conclusion: Contrary to earlier studies showing lower concentrations of anti-oxidant enzymes in TMD patients, indicating that a lack of anti-oxidant defense leads towards TMD, we observed trends towards higher levels of antioxidants in TMD patients. This represents compensatory mechanisms as response to higher level of stress, which could be extrinsic and leading towards TMD, or intrinsic stress emerging from established TMD, or both.

Sat-49

Juvenile idiopathic arthritis with severe unilateral temporomandibular joint involvement

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Introduction: Juvenile idiopathic arthritis (JIA) is the most common chronic inflammatory rheumatic disease in the pediatric population. Studies show that the temporomandibular joint (TMJ) is involved in most cases and the condylar lesions may have early manifestation and insidious course.

Objective: This study reports a case of JIA with severe involvement of the TMJ.

Case Report: A 9-year-old female patient sought the rheumatologist with the main complaint of hip pain without other relevant reports. The laboratory tests revealed negative rheumatoid factor, positive nuclear antibodies and HLA-B27 antigen present. The involvement of TMJ was not investigated at that time. She was initially treated with nonsteroidal anti-inflammatory, and then with methotrexate for 18 months, when the disease was controlled. Three years later, facial asymmetry was observed. Computed tomography and magnetic resonance imaging of the TMJ revealed reduced length of the right mandibular ramus and important morphological changes in the right mandibular condyle, fossa and articular eminence. Clinically, the patient presented Class II Angle malocclusion division 1, reduced mandibular excursion movements with right deviation, without painful symptomatology. Laboratory tests did not indicate active disease. She was treated with a Herbst mandibular protator with the aim of repositioning the mandible and reducing facial convexity. After 12 months of orthodontic treatment, correction of malocclusion was observed with adjustment of the facial profile and lip seal.

Conclusion: TMJ involvement in juvenile idiopathic arthritis may be asymptomatic and, when not diagnosed early, may compromise mandibular growth, resulting in skeletal and facial deformities.

Sat-50

The potential relationship between nasal deformities and temporomandibular disorders (TMD)

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Introduction: It is currently accepted that temporomandibular disorders (TMD) have a multifactorial and biopsychosocial aetiologic background consisting of initiating, predisposing, and perpetuating factors.

Objective: To explore the potential relationship between common nasal deformities (ND) and TMD, according to the diagnostic criteria of TMD (DC-TMD).

Material and Methods: Participants were first examined to determine if they have ND and these were grouped into one of four categories; nasal septal deviation (NSD), nasal septal deviation and inferior turbinate hypertrophy (NSD+ITH), inferior turbinate hypertrophy alone (ITH) and others. TMD was thereafter assessed according to DC-TMD. Specific exclusion criteria were applied.

Results: A total of 368 individuals (males=183, females=185) were included in this study with a mean age of 33.152(41%). Participants were diagnosed with at least one type of ND (NSD=114, NSD+ITH=20, ITH=8, others=10). While 60 participants (16.3%) had a pain-related DC/TMD diagnosis, 48 (13%) had intra-articular disorders (IAD), 6 (1.6%) had degenerative joint disease (DJD) and 31(8.4%) participants had headache attributed to TMD. A statistically significant correlation was found between the presence of ND and the presence of both clicking (Pearson Chi-square=4.9, P=0.027) and IAD (Pearson Chi-square= 3.8, P=0.05). Clicking was also significantly associated with the type of ND (Chi-square=8.2, P=0.043), in particular with ITH (Post Hoc test, P=0.021). IAD were also significantly associated with NSD category within ND (Pearson Chi-square=4.4, P=0.036).

Conclusion: The possible relationship between ND and different TMD features and diagnoses could have significant clinical implications in terms of early identification and referral of targeted patients.

Sat-51

Distribution of facial pain and the risk of obstructive sleep apnea

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Introduction:

Obstructive sleep apnea (OSA) is a disorder with reported associations with pain experience. Pain drawings are used as a subjective measure of pain assessment.

Objectives:

This study addressed the relationship between the extent of pain location and pain characteristics, medical comorbidities, diagnosis, and possible OSA.

Material and Methods:

This study was approved by CWRU Institutional Review Board (IRB-2017-1920). Records from subjects presenting to an orofacial pain service 2013 - 2017, were reviewed. All subjects completed OSA screening tools: Epworth Scale®, STOPBang®, Berlin®. Pain drawings were scanned and digitally standardized using Image J software. Subjects were distributed into two groups based on the location of pain drawing (orofacial area or other parts of the head and neck - broader pain group). Analyses included descriptive statistics, ANOVA or nonparametric alternatives, Pearson Chi-Square test and Fisher's exact test. Logistic regression was used to evaluate the association between pain drawing and the risk of OSA or daytime sleepiness.

Results:

329 subjects included: Mean age: 47.0±18.9 years. 78.4% female. Subjects in the broader pain group had higher pain score ($p=0.002$) and reported more throbbing, pressure, dull and constant pain. Subjects with broad pain were more likely to report psychiatric disorders ($p=0.051$). Broad pain location was associated with higher risk of OSA (Berlin®) ($p=0.001$) and was almost twice as likely to have OSA compared to those with pain drawing within the orofacial area (Berlin®) (OR 2.24 [95% CI 1.31, 3.88]).

Conclusion:

Pain drawings may characterize subjects at risk for OSA and should be included in clinical pain assessment.

Sat-52

Assessing diagnostic accuracy of ultrasonography and computed tomography compared to the magnetic resonance imaging in the early detection of rheumatoid-arthritis-related temporomandibular joint pathology

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Background: Rheumatoid diseases could affect the temporomandibular joint (TMJ) where most studies have shown that about 50% -75% of rheumatoid-arthritis (RA) patients exhibit TMJ disorders.

Objectives: Assessing diagnostic accuracy of Ultrasonography (US) and computed tomography compared to the magnetic resonance imaging in the early detection of rheumatoid-arthritis-related TMJ pathology.

Materials and Methods: This study comprised 45 patients with rheumatic disease aged 27 to 74 years mean age: 48.45 ± 14.92 years. Patients with a clear clinical complaint of TMJ disorders were excluded. The following radiological variables were evaluated and the interpretations on the MRI were considered as the gold standard: 1. synovial thickening, 2. effusion, 3. condylar destruction, 4. erosion of the Articular Fossa, 5. bone marrow oedema, 6. mandibular subchondral cysts.

Results: The sensitivity of US was calculated for: the synovial thickening, effusion, condylar destruction showing (94.45%-47.75%-75.3%) respectively, with specificity (70.85%-100%). Similarly, the sensitivity of CT for same variables was: (3.2% -96.65% -94.3% -59.15% -83.3%). with specificity accounting for (95.85%-100%-21.8%-100%-55.55%).

Conclusions: US has a high sensitivity in the detection of synovial membranes but low sensitivity in detection of bone marrow oedema, effusion, and bone changes. CT could be considered as a good option to detect bone changes in RA patients when it is difficult to conduct MRI.

Sat-53

Leiomyoma of the oral cavity: the role of the differential diagnosis

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Introduction: Leiomyoma represents one of the most common benign tumors of the uterus and gastro-intestinal tract. It is quite rare to be found in the oral cavity. These tumors arise from the smooth muscle cells and are mainly classified as leiomyoma (solid leiomyoma), angiomyoma (vascular leiomyoma) and leiomyoblastoma (epithelioid leiomyoma).

Objectives: To establish a differential diagnosis of a neoplasm of the oral cavity

Material and Methods: This clinical study describes a 22 year-old male subject referred to the Dental Clinic of the University Hospital San Raffaele, Milan, Italy, and reporting a painless soft mass in his right cheek. The clinical examination showed a small mass in the right cheek mucosa resembling a traumatic fibroma; however, the lesion did not interfere with the dental occlusal plane. The lesion has been promptly surgically removed with an excisional biopsy.

Results: Unexpectedly the histological examination showed the histopathological pattern of a leiomyoma; moreover, the specimen presented some mitotic figures infrequently described in oral leiomyomas. At the 6 months' follow-up visit no recurrence of the lesion was observed in the patient.

Conclusions: Soft tissues of the oral cavity may be stressed by chronic traumatism that lead to the growth of non neoplastic masses known as fibromas. Leiomyoma does represent one of the most common benign tumors of the uterus and gastro-intestinal tract and it is quite rare to find such a tumor in the oral cavity.

Sat-54

Linear IgA in Saudi male adult with with prominent oral menifestations: A Case Report

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Introduction: Linear IgA disease is a rare blistering disease affecting mainly the skin and less frequently the oral mucosa. The most common affected site in the oral cavity is hard and soft palate, followed by tonsillar pillars, buccal mucosa, tongue, and gingivae. Etiological factors might include certain drugs, autoimmune diseases, infection, chronic renal insufficiency, and malignancies. The gold standard for diagnosis is direct immunofluorescence (DIF). The immunofluorescence will demonstrate a homogeneous linear deposition of immunoglobulin A along the basement membrane.

Material and methods: A 44 years old Saudi male, presented to the oral medicine clinic seeking consultation regarding a previous skin and oral lesions and was diagnosed as pemphigoid. Past medical history indicated a skin allergy 4 years ago covering all his body and presented in the oral cavity a year ago. Clinically, upon examination, the patient had redness and ulcerations in both buccal mucosa, redness around the lower teeth which mimics desquamative gingivitis and etching in hand and foot. Incisional biopsy was taken from the lower lip area for immunofluorescence and H+E, the histopathology result showed a mild chronic inflammation in submucosa layer and DIF report stated "linear deposition of IgA at the dermo epidermal junction, while it could be also linear IgA bullous dermatosis or vancomycin usage, fibrinogen deposition was also seen around some dermal vessels". Patient was referred to a dermatologist. Multiple therapeutic agents were suggested, including prednisolone prednisone, dapsone, and colchicine (either alone or in combination).

Results and Conclusion: Oral investigation is an excellent tool for diagnosis of rare diseases.

Sat-55

The enigmatic nature of palatal erythematous lesions with histological psoriasiform pattern

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Introduction: Long standing, symmetrically distributed superficial erythema of the hard palate is a challenging diagnosis, including local lesions and systemic conditions. Pathologic examination should provide the diagnosis. However microscopic findings of psoriasiform features can be shared by systemic conditions such as hereditary mucoepithelial dysplasia (HMD) and psoriasis.

Objectives: We present a series of patients with palatal erythematous lesions (PELs) and highlight the possible relations to these entities.

Material and Methods: We collected all referrals with PELs, with/without known HMD or psoriasis. Excluded were patients with oral infections, neoplastic/pre-neoplastic lesions, autoimmune diseases, reactive lesions, blood disorders and vascular malformations. Incisional biopsies were performed in all patients. The English-language literature was searched for cases of HMD between 1978-2017.

Results: Four females and five males were included. Histopathologically, a psoriasiform pattern was found in all cases. The clinical and histological features of the PELs were undistinguishable from those reported in HMD patients (N=29). One of our patients matched the diagnosis of HMD due to typical extraoral manifestations. Of the 8 remaining patients, two have been diagnosed with skin psoriasis; therefore their PELs could be within the range of "oral psoriasis". In the other six otherwise healthy patients, PELs could be termed "oral psoriasiform mucositis" (OPM).

Conclusions: OPM may represent a focal/limited, under-diagnosed form of HMD or psoriasis and could be used for enigmatic cases of PELs that do not conform to any defined entity. Alternatively, OPM could be used to describe the oral expression of conditions that share these features.

Sat-56

Assessment of the quality of life in patients undergoing treatment for oral submucous fibrosis in eastern Indian population

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Introduction: Oral submucous fibrosis (OSMF) is a common oral potentially malignant disorder in India owing to the usage of betel quid-gutkha chewing.

Objectives: This prospective study examined the impact of OSMF and its treatment on the quality of life of OSMF patients.

Materials and Methods: A new quality-of-life questionnaire was developed correlating with OSMF and validated by using pilot study data; informal interviews of patients and expert panel consensus. The OSMF patients divided into 3 groups depending upon the medication prescribed and the quality of life was measured at 2 points of time, before starting the treatment and three months after treatment.

Results: At the end of third month, all the three groups of OSMF patients treated with different medications, showed an increase in mouth opening and a decrease in the burning sensation of oral mucosa, with significant differences in patients' quality of life and functioning at both points in time ($P < 0.05$).

Conclusion: The new quality of life questionnaire can be used for the patients suffering from OSMF is valid and can reliably measure quality of life in patients with OSMF. It may provide oral physicians/dentists with an accurate assessment of patients' quality of life and facilitate optimal decision making regarding the various treatment modalities available for OSMF.

Sat-57

Salivary calprotectin levels in patients with geographic tongue

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Introduction: Geographic tongue (GT) is considered to be an inflammatory condition, and the typical clinical appearance is one or more red depapillated areas with a raised white line in the periphery. Histologically, GT is characterised by a submucosal inflammation, with microabscesses consisting of neutrophils. The cytoplasm of neutrophils contains, among other proteins, calprotectin which is used as a marker of inflammation. In inflammatory conditions (e.g. Crohn's disease) the level of the calprotectin is usually elevated. There is a positive correlation between elevated concentrations of calprotectin and increased clinical disease activity.

Objective: The aim of this study was to investigate if patients with GT have elevated levels of salivary calprotectin, as a result of increased inflammatory activity in the tongue.

Material and methods: 23 patients diagnosed with geographic tongue and 32 control subjects, with no oral mucosal lesions were included in the study. The patients with GT were classified based on the clinical appearance and number of lesions. ELISA was used to determine the levels of calprotectin in whole saliva.

Results: The results of this study showed a statistically significant increase ($P=0.0134$) of the salivary levels of calprotectin in patients with geographic tongue than in healthy controls. It also showed that the levels of calprotectin are positively correlated with the number of lesions in patients with geographic tongue.

Conclusion: This study supports the theory that geographic tongue is an inflammatory disease, with activation of neutrophils and increased levels of calprotectin in whole saliva.

Sat-58

Idiopathic oral ulceration with bone sequestration - a rare entity

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Introduction and objective: Oral ulceration with bone necrosis and sequestration (OUBS) is a rare phenomenon of unknown etiology. Local trauma and aphthous ulcers were suggested as an etiology. Four new cases of OUBSs together with published cases are reviewed.

Material and methods: Inclusion criteria comprised of well-documented cases with idiopathic bone sequestration published in the English-language literature (1990-2017). Cases with related systemic medications (i.e., antiresorptive, antiangiogenic, m-TOR inhibitors) or conditions (i.e.

malignancies, immune-suppression) were excluded. Demographic and clinical data were analyzed.

Results: Twenty-nine cases were collected, including our four new cases. Male-to-female ratio was 3.1:1 and the mean age was 44 ± 9 y and 50.1 ± 9.9 y, respectively. In 27 (93%) cases lesions occurred in the mylohyoid ridge area. Exostosis in this area was reported in 7 patients. Three patients had either bilateral or metachronous lesions. Patients were symptomatic from few days to 4 months. Treatment was known in 13 patients, of them 7 were treated with antibiotics and antiseptic mouthwashes and 5 solely with antiseptic mouthwashes. In one case no medication was applied. A sequestrum was surgically removed in 10 patients, while in all others it either spontaneously exfoliated or was removed with a bland dental instrument. Consequently, a complete healing was achieved after a few days and up to 2 months.

Conclusions: Patients with OUBS are usually male in the fifth decade of life and lesions are located in the mylohyoid ridge area. Treatment modalities should be kept locally as the sequestrum either exfoliates spontaneously or can be removed non-surgically.

Sat-59

Traumatic neuroma of the lower lip and schwannoma of the tongue, two cases with diagnostic challenge

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Introduction: Oral benign lesions of neural origin may present fibrous reactive lesions leading to misdiagnosis. Traumatic neuroma occurs following trauma represents an attempt for nerve reparation. Schwannomas (neurilemmomas) on the other hand are benign neoplasms, consisting of Schwann cells. Less than 1% lead to malignancy (neurofibrosarcoma).

Objectives: This presentation reports a traumatic neuroma of the lip and a schwannoma of the tongue clinically misdiagnosed as reactive fibrous lesions.

Material and Methods: A 9 year-old female referred with small, painless, tumorous lesion of lower left lip (5 months).

Results: Clinically, the lobulated lesion was 0,7 X 0,6 X 0,3 cm in dimension, solid-elastic in palpation. The lesion was completely excised. Several, diffuse enriched bundles of fibrous tissue and small groups of entrapped nerve bundles were observed with mild inflammation. The second case was a 50 year-old female presented with painful multi-lobulated lesion (more than 1 year), 0.8 cm diameter at the top of the tongue, with solid-elastic consistency. The lesion was also totally excised. Microscopically, regions of intense aggregation of spindle cells arranged in intersecting bundles, with focal pleomorphism (Antoni A) and formation of two rows of aligned nuclei in a palisading formation (Verocay bodies). Also some areas were less edematous, with loosely arranged cells (Antoni B). The neoplastic cells were moderate positive for S-100 marker.

Conclusions: The first case was painless related to low inflammatory infiltration. The diagnosis has prognostic value due to traumatic neuroma's recurrence. Early diagnosis of schwannomas has important prognostic value due to pain, possible recurrence and malignant transformation.

Sat-60

Unusual pigmentary lesions of oral mucosa - case series

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Introduction: Typically, the colour of healthy oral mucosa is pink, almost uniform in intensity. Sometimes, pigmentary macules of different colour from brown to light gray to black can be observed. The etiology of these pigmentary lesions is diverse and complex. Thus, pigmentary lesions may be vascular, or caused by infiltration of exogenous substances, or can be melanotic or non-melanotic pigmentation. Melanogenic pigmentary lesions are caused by melanin hyperproduction. Generally, melanocytes produce a low amount of melanin. However, there are situations where melanogenesis can be stimulated by several factors: genetic, hormonal (ACTH, estrogen hormones) or medication.

Case series:

For this work we reviewed 3 cases of oral melanosis (2 women and 1 man) diagnosed in the Clinical Department of Oral Medicine/Oral Pathology, Faculty of Dental Medicine, Carol Davila University, Bucharest. Two of the patients were smokers at the time of presentation, and one was non-smoker. In all three cases the association of endocrine disorders or the administration of melanogenic stimulating drugs was excluded. The diagnosis was established by histopathological examination and immunohistochemistry.

Conclusion: Diagnosis of oral melanosis is complex and often represents a real challenge. Often a careful history of certain associated habits such as drug use or smoking is required. Also, medical history is particularly important with reference to certain general conditions or systemic treatments. To determine the diagnosis of oral melanosis and to eliminate other more serious conditions, such as melanoma, additional investigations are required: dermatoscopy, histopathological examination and immunohistochemistry.

Sat-61

Oral blue nevus - case report

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Two groups of pigmented lesions of the oral cavity are recognized: melanin-associated lesions or nonmelanin-associated lesions.

Blue nevus are melanin associated lesions and they represent benign proliferations of fusiform dermal melanocytes in the submucosa or deep dermis. These cells contain abundant melanin granules. The name "blue nevus" is due to the absorption of longer wavelengths by melanin pigment in the dermis with scatter of shorter wavelengths of blue light, a phenomenon known as

the —*Tyndall Effect*. In the oral cavity blue nevus are rare lesions and the hard palate is the site of predilection. The risk of malignant transformation of blue nevi is unknown because of the rarity of reported oral lesions.

A 67 year-old male patient was referred to our Oral Medicine clinic because he had a blue macule without clinical symptoms on the hard palate. The patient did not know how long the lesion had been there. The patient had not a relevant medical history and was a heavy smoker for 40 years.

Clinical examinations showed that the largest diameter of the blue pigmented lesion was 6 mm and it had distinct margins. The surface was regular. An excisional biopsy was made and the result was: blue nevus.

The reporting of such cases is important for a better understanding and possibly predicting the clinical behavior of intraoral blue nevus.

Sat-62

Migratory stomatitis. Case series

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Background: Oral mucosa may be affected by its specific pathological conditions, or may manifest lesions caused by general diseases. There may be cases when conditions involve oral mucosa with no pathological connotation, and show aspects of anatomical appearance. Migratory glossitis (geographic tongue) is among these cases. Although it is not a disease, migratory glossitis often affects patients due to its impressive appearance and symptoms. Its clinical features and evolution of migratory nature discovered by anamnesis are often enough to establish the diagnosis. In some cases, the histopathological examination may be useful to exclude the possibility of a more serious and rare disease, such as oral psoriasis. Migratory glossitis may sometimes have a more spectacular clinical form. Therefore, characteristic clinical lesions are no longer localized strictly on the tongue, but may also involve the buccal and labial mucosa. In these rare cases, the clinical aspect varies, and is difficult to recognize.

Cases series: For this research we reviewed the medical charts of patients treated at the Clinical Department of the Oral Pathology Discipline, Faculty of Dental Medicine, Bucharest and the Oral Medicine Service of the Oral and Maxillofacial Clinic (Outpatient) in Iași between 2012-2017. During this period, 8 patients (4 women and 4 men), mean age of 30.33 years, were diagnosed with migratory stomatitis. Clinical lesions were present on the dorsal tongue, floor of the mouth, labial and buccal mucosa, palatine velum.

Conclusions: Migratory stomatitis is a clinical condition with specific site pattern, and it may be challenging to diagnose.

Sat-63

The presentation of a mucosal keratocyst without syndromic involvement

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Objectives:

- To provide the reader with a greater insight into the aetiology, incidence rates and manifestations of mucosal keratocysts
- To ensure mucosal keratocysts are considered when creating a differential diagnosis list

Case: We present the case of a 76-year-old male who was urgently referred to the OMFS Department from his GP due to a rapidly increasing lump in his right buccal mucosa. On initial presentation there was a 3cmx2cm firm swelling palpable in the right buccal mucosa and the patient reported a 6-week duration, with no associated pain.

His Medical History includes hypertension, gastritis, hiatus hernia and angina.

Provisional diagnoses included an obstructed accessory parotid gland and a pleomorphic salivary adenoma. Further investigations included an MRI scan which demonstrated a mass within the parotid region. An incisional biopsy under local anaesthetic was arranged, during which, cystic fluid was expressed. The pathology report from this sample showed an unremarkable section of squamous epithelium, however, the lesion did not resolve. A further biopsy was taken under General Anaesthetic. This sample showed cystic wall lining with parakeratinized squamous epithelium and basal palisading. The report determined the lesion was a mucosal keratocyst. A complete excision was carried out under General Anaesthetic which assured clear margins.

Conclusion: Mucosal Keratocysts are more commonly seen in patients with Naevoid Basal Cell Carcinoma Syndrome. However, they can occur without syndromic association and should be taken into consideration when creating a differential diagnosis list and planning further investigations.

Sat-64

Clinical and histological features of oral granulomatous inflammation

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Objectives: Granulomatous inflammation in the oral region can be associated with systemic diseases such as Crohn's disease. The term orofacial granulomatosis is used when there is no systemic disease behind the inflammation. The purpose of this study was to analyze the clinical and histological features of oral granulomatous inflammation diagnosed at the Institute of Dentistry, University of Turku.

Material and Methods: A total of 34 biopsy samples with the histopathological diagnosis of granulomatous inflammation were included in the study. Biopsy samples and their referrals were collected from the histology laboratory of the Institute of Dentistry, University of Turku. Biopsies were diagnosed between the years 2000 and 2014. Clinical data was collected from the biopsy

referrals. The following features were analyzed in each specimen: presence of granulomas, depth and intensity of the inflammation, perivascular inflammation, presence of ulcers, giant cells and necrosis, and composition of inflammatory infiltrate.

Results: Patients presented various symptoms, most commonly gingival/mucosal hyperplasia and ulcers. Histologically, most common findings were lymphocyte infiltration, granulomas, giant cells and perivascular inflammation. In most cases, granulomatous inflammation was detected superficially, just beneath the epithelium. Biopsies from patients with Crohn´s disease showed rather intense granulomatous inflammation.

Conclusions: Manifestations of oral granulomatous inflammation can be various. It is important for physicians and dentists to identify these changes and take a representative biopsy for diagnosis. The incidence of inflammatory bowel diseases are continuously increasing among children and adolescents, and first signs of these diseases can be seen in oral cavity and lips.

Sat-65

Eosinophilic ulcer: a case series of an intriguing oral mucosa lesion

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Introduction: Eosinophilic Ulcer (EoUI) of the oral mucosa is an uncommon, benign, self-limiting lesion.

Objectives: Our aim is to describe the clinical characteristics, diagnostic approach, histopathologic findings, management and outcome of a series of 6 EoUI cases.

Material and Methods: Six patients (3 males - 49, 50, 70 years old, and 3 females - 63, 69, 70 years old, respectively) presented with painful ulcerative lesions. All lesions were located on the tongue, 2 on the dorsal surface 1 on the ventral surface and 3 on the lateral border. The duration of the lesions ranged between 7 and 30 days. Differential diagnosis for all cases included oral squamous cells carcinoma (OSCC), traumatic ulceration and eosinophilic ulceration, whereas the most possible diagnosis based on the clinical characteristics of the lesions was OSCC. A biopsy (incisional or excisional according to the size of the lesion) was performed in all cases.

Results: Histopathological examination of the biopsy specimens revealed intense ulceration, focal necrosis, and granulation tissue. An intense inflammatory infiltrate of lymphocytes, plasma cells, and histiocytes with abundant eosinophils was noticed. Atypical lymphocytic cells with oversized nuclei and prominent nucleoli were also observed and were immunohistochemically positive for CD30, but negative for CD15, CD3, CD20, cytokeratin AE1/AE3, and p63. All lesions resolved after biopsy without any subsequent recurrences.

Conclusions: The aetiopathology and initiating factors of EoUI remain unknown, while it is still uncertain if it is a distinct entity, a reactive condition or belongs to the spectrum of the CD30+ lymphoproliferative disorder.

Sat-66

Oral leishmaniasis: a case report

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Objectives:

Our objective is to report a clinical case as the first oral manifestation of this systemic disease.

Case Report:

A 76-year-old female in treatment with Adalctone and Bisoprolol due to a liver and heart failure of unknown origin, came to the clinic with acute pain with a month of evolution in the upper maxilla accompanied by fatigue and inappetence. Clinical examination shows an extensive area of inflammation and necrosis with fibrous consistency, slightly indurated to the touch, in the edentulous area from 15 to 25. Also in the inferior jaw there were similar lesions. After the histopathological examination, the diagnostic of Leishmaniasis was established, which was subsequently found to be the cause of the systemic disease that the patient had had for several years.

Results and Conclusions:

Leishmaniasis is an infectious disease caused by the bite of the female sand flies. Systemic or visceral leishmaniasis appears 2 to 8 months after the bite. Oral lesions are often confused with other oral pathologies, which sometimes causes the diagnosis and its treatment to be delayed. The patient in spite of the treatment, died several months after the diagnosis of Leishmaniasis.

Sat-67

Oral microbiome and oral mucositis in autologous hematopoietic stem cell transplantation recipients

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Introduction:

Hematopoietic stem cell transplantation (HSCT) frequently leads to oral ulcerative mucositis. The role of the oral microbiome in this condition is largely unknown.

Objectives:

To study the relationship between the oral microbiome and ulcerative oral mucositis in autologous HSCT recipients.

Material and Methods:

This study is related to the Orastem study. Patients were evaluated prospectively before, three times per week during hospitalization, and at day 100 after HSCT. Oral mucositis was scored (WHO) and oral microbiome samples were collected by oral rinse. Microbial DNA was extracted, 16S rDNA amplicons were sequenced using Illumina platform. Reads were clustered in oligotypes and classified in taxa. Changes in microbiome profiles (PCA), microbial diversity (Shannon) and similarity (Bray Curtis) were calculated and biomarker identification (LEfSe) was performed.

Results:

All patients (50; 57.4±7.3 years; 45% females) were diagnosed with multiple myeloma and treated with high-dose melphalan. 20 were diagnosed with ulcerative OM (WHO>2) after HSCT. The oral microbiome changed significantly after HSCT and returned to baseline after 100 days ($p=0.0001$). Microbial diversity and similarity decreased earlier and more pronounced after HSCT in the ulcerative OM group compared to N-OM. Before HSCT, 13 oligotypes discriminated significantly between the 2 groups. The N-OM samples contained a higher proportion of *Actinomyces graevenitzii* and *Streptococcus constellatus*, while the OM samples showed a higher proportion of *Veillonella*, *Enterococcus faecalis*, *Streptococcus*, *Staphylococcus* sp., *Fusobacterium*, *Prevotella oris* and *Prevotella veroralis*.

Conclusion:

The oral microbiome shifted and diversity/similarity decreased after HSCT. Certain species present before HSCT were associated with development of oral ulcerative mucositis after HSCT.

Sat-68

Fibrosis in labial salivary glands of patients with systemic autoimmune diseases

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Introduction: Labial salivary glands (LSGs) are considered to be sensitive and useful tools in the diagnosis of several systemic diseases including Sjögren's syndrome (SS). The foci forming inflammatory infiltration is a well-known and extensively researched area, however lobular

fibrosis (LF) have not been in the focus of interest recently as it is mostly considered to be an age related histological/pathological change.

Objectives: To quantify and evaluate the significance of LF in LSGs.

Material and Methods: LSGs of 576 patients with sicca symptoms were selected from the archives of Pathology, Pécs University, were re-evaluated and digitized. Semi-objective quantification of the extent of LF and mucin content was carried out by digital image analysis. Statistical evaluation of the histopathological changes and the clinical data including but not limited to age, diagnosis of systemic autoimmune disease, autoantibody titers were performed.

Results and Conclusions: Significant positive correlation was found in various statistical analyses between the presence of LF and the diagnosis of SS, seropositive rheumatoid arthritis (RA) and the elevated levels of antibodies against cyclic citrullinated proteins (CCP) whereas negative correlation was observed with average mucin content. As LF can reduce the parenchyma of LSGs thus it may cause xerostomia the evaluation of these changes can provide important information. The association of LF and seropositive RA may play a major role in understanding the course and onset of the disease. Further research is required to determine if the mechanisms behind fibrosis in LSGs of these patients are similar to those described in their joints and rheumatoid nodules.

Sat-69

Electrostimulation of the lingual nerve by an intraoral device may lead to salivary gland regeneration

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Objectives: Salivary gland function is controlled by the salivary reflex, whose efferent arm is composed by the parasympathetic and the sympathetic divisions of the autonomic nervous system. Parenchymal injury is the main salivary gland involvement of Sjögren's syndrome and head and neck radiotherapy, but neural damage has been reported as well. Recently an intraoral device for electrostimulation of the lingual nerve in vicinity to the lower third molar has been introduced. At this point this nerve carries efferent fibers for the innervation of the submandibular, sublingual and several minor salivary glands and afferent fibers of the salivary reflex. Thus, excitation of these fibers potentially leads to increased secretion of all salivary glands. Furthermore, as electrostimulation of the lingual nerve entails comprehensive neural activation, we investigated the potential to induce the regeneration of damaged salivary glands.

Material and Methods: The device was tested on three patients with no collectable resting and stimulated secretion of saliva during a double blind, sham controlled period of two months and nine open-label months.

Results: All three subjects developed the capacity to spit saliva, not only in direct response to the electrostimulation but also after free intervals without electrostimulation. In addition, their symptoms of dry mouth severity and frequency improved.

Conclusions: This recovery is probably due to the combined effect of increase in secretory functional gland mass and regain of nervous control of the secretory elements and blood vessels. Both are phenomena that would contribute to gland regeneration.

Sat-70

EBV and CMV em viral load in rheumatoid arthritis and associated Sjögren's syndrome

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Introduction: The role of viral infections in the pathogenesis of autoimmune diseases has long been suggested, but a clearer understanding of this relationship is still needed.

Objective: To evaluate the association between EBV and CMV and the presence of RA and SS.

Material and Methods: A sample of 256 patients was divided into rheumatoid arthritis (RA, n=108), Sjögren's syndrome and rheumatoid arthritis (RA/SS, n=20) and healthy controls (C, n=128). Patients were evaluated for RA activity, sialometry and Schirmer's test; minor salivary gland biopsy was performed when indicated. Viral loads of CMV and EBV was determined in the peripheral blood; glandular tissue samples were used to detect these viruses by in situ hybridization (EBV) and immunohistochemistry (CMV).

Results: The AR/SS group presented the majority of patients complaining of xerostomia and xerophthalmia ($p<0.001$ and $p<0.007$, respectively), positive Schirmer test ($p<0.001$), reduced resting salivary flow ($p<0.001$) and focus score >1 ($p<0.001$). EBV was more frequent in RA and RA/SS than in healthy controls ($p<0.0001$); no correlation with clinical markers ($p>0.05$), and no difference between RA and AR / SS ($p>0.05$) was observed. EBV/DNA copies were higher in subjects with RA (149.42 copies/ μ L) and SS (99.24 copies/ μ L) than in the control group (61.51 copies/ μ L, $p=0.936$). Schirmer test was associated with EBV/DNA ($p=0.03$). CMV virus was rare in both groups. EBV and CMV were not detected in salivary glands.

Conclusions: EBV virus appears to play a role in the pathogenesis of RA, but not in associated SS.

Sat-71

A case of Sjögren's syndrome complicated with cognitive impairment caused by autoimmune encephalitis

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Sjögren's syndrome (SS) is a chronic autoimmune disease characterized by lymphocyte infiltration and destruction of exocrine glands, such as lacrimal and salivary glands. Dry mouth

and dry eyes along with *extraglandular symptoms*, such as fatigability, slight fever, joint pain, and peripheral neuropathy, are common symptoms of SS. However, the manifestation of psychological and central nervous system symptoms is rare. Here, we report a case of cognitive impairment caused by autoimmune encephalitis associated with Sjögren's syndrome that was improved by corticosteroid administration. In February 2017, a 57-year-old male visited the internal medicine department of our hospital with the chief complaint of cognitive impairment since the past month. His mini mental state examination (MMSE) score was 25, and he showed mild cognitive impairment. No abnormality was observed in his brain magnetic resonance imaging; however, positive anti-SSA and anti-SSB antibodies were detected in his blood. To diagnose SS, the internal medicine department referred the patient to our department. Lip biopsy detected >50 lymphocyte infiltrates around the duct of the minor salivary gland. Further, the patient's brain single photon emission computed tomography revealed mild reduction of blood flow in the frontal and parietal lobe and posterior cingulate gyrus on the right side. Thus, the patient was diagnosed with SS accompanied with autoimmune encephalitis and was admitted to the internal medicine department. Pulse steroid therapy was initiated and the patient showed improvement in his cognitive impairment, with an increase in the MMSE score to 27 from 25 points.

Sat-72

Dry mouth in hypertensive patients

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Introduction : Dry mouth sensation is common among hypertensive patients due to drug intake.

Objectives: To study the prevalence of xerostomia in a group of patients with hypertension and the associated risk factors.

Material and Methods: This study was carried out in a group of hypertensive patients belonging to two Health Centers of Community of Madrid (Spain). Patients with diabetes mellitus, thyroid disease, HIV, Sjögren's syndrome and patients who had received head and neck radiotherapy were excluded. Patients underwent a complete medical history, intraoral exploration, quantification of stimulated and unstimulated saliva, and the results of the questionnaires Xerostomy Inventory (XI) and Oral Health Impact Profile (OHIP-14) were collected.

Results: We included 97 patients (59 women and 38 men, mean age 74.08 ± 9.53). 53.6% of patients suffered from xerostomia. A statistically significant relationship was found between suffering xerostomia and the number of drugs received; patients with xerostomia received 6.19 ± 3 compared to 4.89 ± 2.72 in the group without xerostomia ($p = 0.028$). 87.62% of the patients with arterial hypertension took xerostomizing drugs of which 90.4% reported xerostomia. The total results of XI (23.37 ± 7.46 vs 16.67 ± 4.54 , $p = 0.0001$) and OHIP-14 (16.92 ± 4.32 vs 14.71 ± 1.6 , $p = 0.002$) were significantly higher in the group of patients with xerostomia.

Conclusions: Xerostomia is frequent among patients with arterial hypertension. The sensation of dry mouth in hypertensive patients diminishes the quality of life of the patients who suffer from it.

Sat-73

Purulent sialoadenitis in patients with primary Sjögren's syndrome , a single center experience

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Introduction: Primary Sjögren's syndrome is a progressive autoimmune disease that affects predominantly middle-aged women, typically in the fourth to sixth decennium. The disease manifests most often by xerostomia and xerophthalmia. Oral manifestations are usually the initial symptoms. Beside xerostomia, patients are in increased risk of purulent sialoadenitis.

Objectives: To evaluate our experience regarding purulent sialoadenitis associated with Sjögren's syndrome.

Material and Methods: We retrospectively analyzed patients with primary Sjögren's syndrome treated at the Department of Dentistry, University Hospital in Hradec Králové. All patients fulfilled diagnostic criteria from 2016. Our study focused on purulent sialoadenitis, diagnosed upon clinical examination. Purulent sialadenitis was considered healed when there was no fever, pus secretion from the duct and edema of the salivary gland.

Results: Seventy-three patients, 67 women (91.8%) and 6 men (8.2%) were included. Patients with hypoechogenic changes of salivary glands on sonographic examinations were at increased risk of acute purulent sialoadenitis ($P=0.0003$). We treated 54 cases of purulent sialoadenitis, only women were affected. The mean therapy length was 8.6 days. Patients age did not play a role in an incidence of purulent sialoadenitis ($P=0.23$). In 11 cases acute purulent sialoadenitis preceded the diagnosis of primary Sjögren's syndrome.

Conclusions: Although purulent sialoadenitis is not in the most cases life threatening complication of primary Sjögren's syndrome, it is a serious disease. On the other hand, purulent sialoadenitis can lead to the diagnosis of an unrecognized primary Sjögren's syndrome as it can be an initial symptom of the disease.

Sat-74

Topical dry mouth products to treat xerostomia in patients with primary Sjögren's syndrome: a double-blind clinical trial

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Introduction: Primary Sjögren's syndrome (pSS) is a rheumatic disease characterized by xerostomia and xerophthalmia.

Objectives: To assess the effects of topical dry mouth products (toothpaste and mouthwash) containing olive oil, parsley oil, provitamin B5, betaine and xylitol in pSS patients with xerostomia.

Material and Methods: A double-blinded, placebo-controlled, randomized design where patients were randomly assigned at baseline test or placebo products. Patients used the products (test or placebo) 3 times a day for 28 days. We used Visual Analog Scale (VAS) for

xerostomia and Oral Health Impact Profile-14 (OHIP-14), before and after treatment, to assess xerostomia and patients quality of life.

Results: A total of 28 patients with pSS were included in this study, but only 24 patients finished it (all women, mean age 55.21 ± 11.87), 13 patients received test and 11 placebo treatments. VAS and OHIP-14 scores decreased in the two groups after treatment but significant differences between groups were not found (VAS $p=0.61$; OHIP-14 $p=0.86$). We do not found VAS intragroup significant differences before and after treatment in test (46.92 ± 12.90 / 38.31 ± 16.35 ; $p=0.15$) and placebo (44.09 ± 15.98 / 39.82 ± 11.52 ; $p=0.24$) groups. A significant improvement (37.31 ± 13.18 / 32.08 ± 12.55 ; $p=0.04$) in OHIP-14 was identified in the treatment group, while no significant differences were observed in the placebo group (32.82 ± 15.53 / 26 ± 8.80 ; $p=0.15$). There were no adverse effects.

Conclusion: The use of topical dry mouth products containing olive oil, betaine and xylitol is effective in improving xerostomia-associated quality of life in pSS patients.

Sat-75

Xeromeds consortium: The impact of medications on stimulated and unstimulated salivary flow rate in patients with Sjögren's Syndrome

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Objective: To evaluate the impact of categories of and specific medications on unstimulated whole salivary flow rate (UWSFR) and stimulated whole salivary flow rate (SWSFR) in patients with Sjögren's Syndrome (SS).

Material and methods: This was a multi-center, retrospective, observational study collecting data from six international centers. Data collected from 2010-2014 for all patients included age, gender, UWSFR and SWSFR, categories of and specific medications.

Results: Of all 302 patients, 294 (94.0%) were females and 18 (6.0%) were males. The age of all patients was 56.4 ± 12.9 (mean \pm SD) years. Collectively, the patients had a daily intake of 4.8 ± 4.5 different medications and had a mean UWSFR of 1.42 ± 2.21 ml/15min and a mean SWSFR of 9.40 ± 14.06 mL/15min. Among the most frequent categories of medications, only antihypertensives were associated with lower UWSFR ($p<0.017$) and vitamins ($p=0.050$) were associated with higher SWSFR. Among the most frequent single medication, vitamin D ($p=0.028$) and multivitamins ($p<0.001$) were associated with higher SWSFR. Patients taking medications had higher SWSFR ($p=0.024$), but no difference in UWSFR ($p=0.985$) than patients who did not take

any medication. No correlation was found between UWSFR and SWSFR and the number of medications.

Conclusions: Certain and commonly prescribed medications, but not the number of medications, may have an additional negative impact on UWSFR or SWSFR in patients with SS. Overall, SS patients taking medications have higher SWSFR than those not taking medications. Certain vitamins may have a positive impact on salivary flow in SS.

Sat-76

SLE patients with secondary Sjögren's syndrome are characterized by typical autoantibodies and a pro-inflammatory state

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Introduction: Sjögren's syndrome occurs in isolation (primary Sjögren's syndrome, pSS) and secondary (sSS) to other rheumatic diseases e.g. systemic lupus erythematosus (SLE). There is a need to investigate similarities and differences between SLE patients with (SLE-sSS) and without sSS (SLE-noSS).

Objectives: To investigate the occurrence of sSS in a large cohort of SLE patients and to explore clinical and laboratory characteristics associated with SLE-sSS as compared to SLE-noSS and controls.

Material and Methods: A total of 504 SLE patients and 322 matched controls were included. All patients fulfilled at least four of the 1982 revised ACR criteria. SLE-sSS was defined according to the AECC 2002. SLE-associated autoantibodies and rheumatoid factor (RF) were analysed. Routine laboratory workup and a panel of cytokines were measured in blood.

Results and Conclusions: SLE-sSS occurred in 23% of the SLE patients. Compared to SLE-noSS the SLE-sSS group was older at inclusion and at disease onset, and more enriched in females, patients with leucopenia and peripheral neuropathy. Nephritis was less common in SLE-sSS. Higher levels of total IgG, positivity for anti-SSA/Ro52, anti-SSA/Ro60, anti-SSB antibodies and RF characterized the SLE-sSS group. 20/30 investigated cytokines were detectable, of these 19/20 were higher in SLE than in controls. 6/20 cytokines were up-regulated in SLE-sSS vs. SLE-noSS.

The frequency of SLE-sSS increases with age and affects roughly ¼ of SLE patients. Less severe organ manifestations were more common among SLE-sSS patients. Higher levels of pro-inflammatory cytokines demonstrate that patients with SLE-sSS are characterized by a state of chronic systemic inflammation.

Sat-77

Mucosal associated lymphoid tissue type lymphoma detected in the parotid gland in a patient with undiagnosed Sjogren's Syndrome

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Objectives:

Sjogren's Syndrome (SjS) has been closely associated with an enhanced risk of lymphoma. About 7.5% of patients with SjS develop malignant B cell lymphoma, 48%-75% is of the mucosal associated lymphoid tissue (MALT) type. B cell lymphoma in many cases will develop in the parotid gland.

Material and methods:

A 58-year-old man, referred to our Sjogren's Syndrome Center due to complaint of enlargement of the left parotid gland lasting for 18 years. Previous non-responsiveness to treatment attempts with sialo-endoscopy and antibiotics. Clinical examination revealed facial asymmetry due to left side hard parotid gland swelling. On sialometry test, mild hyposalivation was obtained. Consequently, ultrasound-guided fine needle aspiration from left parotid gland, cone beam computerized tomography - sialography and autoimmune blood markers for SjS, were required for further investigation.

Results:

Ultrasound-guided FNA revealed extranodal marginal zone lymphoma of MALT, serological findings were positive for anti-Ro. The patient was treated with chemo-immunotherapy. Four years later, the patient's salivary output was within the normal range, with no recurrent swellings.

Conclusions:

Enlargement of the parotid gland may serve as alarming sign. Early diagnosis of Sjogren's syndrome based on the patient's signs and symptoms using additional tests such as serology and Sialo-CBCT, is necessary for improved management, as well as for the increased awareness regarding potential complications, such as MALT lymphoma as in the described case.

Sat-78

Patient with Sjogren's syndrome suffering from severe hyposalivation treated successfully with sialoendoscopy

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Objectives:

Sialendoscopy is widely used in the treatment of sialolithiasis. Nevertheless, reports in the literature are limited regarding the use of sialendoscopy for the diagnosis and treatment of other salivary glands pathologies, such as Sjogren's syndrome.

Material and methods:

A 68-year-old female, referred to our Sjogren's syndrome Center due to complaint of dry mouth and burning sensation of the tongue for the last 18 months. Treatment attempts with pilocarpine and oral rinses were not successful. Medical background included rheumatoid arthritis. Upon clinical examination, dry oral mucosa and red, fissured dorsal tongue were observed. Sialometry results reflected severe hyposalivation with no secretion upon milking the Stenson's ducts. Cone beam computerized tomography- sialography (Sialo-CBCT) was obtained as part of the initial work-up.

Results:

Sialo-CBCT of the bilateral parotid glands revealed main ducts with strictures and kinks. Consequently, the patient started cevimeline HCl intake along with sialendoscopy for dilatation combined with saline lavage of bilateral parotid gland. Follow-up examination revealed improvement in the sialometry in conjunction with xerostomia relief report. After 18 months, with three sialendoscopy, unstimulated saliva flow increased intensely.

Conclusions:

Sialendoscopy offers a minimally invasive approach to treatment and diagnosis of hyposalivation related to Sjogren's syndrome.

Sat-79

Salivary gland dysfunction and xerostomia in Sjogren's syndrome: shear wave elastography

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Objective: Evaluation of Acoustic Radiation Force Impulse Imaging (ARFI) elastography performance in predicting the elasticity of salivary glands. The aim of this study was to assess the usefulness of ARFI for diagnosing Salivary Gland Dysfunction.

Methods: This transversal study included patients with SS (according to American-European Consensus Group (AECG) criteria), and a control group. All subjects underwent ARFI high-resolution (ARFI) with Siemens ACUSON S-2000 Virtual Touch™ tissue quantification equipment (Siemens AG, Erlangen, Germany), using a 9 MHz linear transducer assessment of the parotid glands (PG) and submandibular glands (SMG). The echostructure of the parotid and submandibular glands in BMUS was graded on a scale of 0 to 4 according to a previously published scoring system.

Results: Taking a score of >2 for the submandibular glands and >1.75 in the parotid glands as pathological cut-off points, or thresholds, SS diagnostic validity indices for AECG criteria and the ARFI technique were calculated for each salivary gland, finding sensitivity of 75.61 (95% CI; 61.3 – 90.0) and specificity of 50 (95% CI; 24.1 – 75.9) for the parotid glands, while left submandibular glands obtained a sensitivity of 69.05% (95% CI; 53.9 – 84.2) and specificity of 44% (95% CI; 18.7 – 70.2).

Conclusions: It is a possible qualification as a monitoring tool for the evaluation of detecting pathological changes to the parotid and submandibular glands.

Sat-80

Patient outcomes and gingival blood flow using laser doppler flowmetry following the use of episil® on free gingival graft donor sites

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Introduction: A free gingival graft (FGG) is a periodontal procedure, which leaves an open wound on the palate causing postoperative pain.

Objectives: The purpose was to compare postoperative pain and gingival healing, at FGG donor sites, in patients receiving Surgicel® covered either by PeriAcryl®90 or by episil®.

Materials and Methods: Thirty-four patients who were randomized to receive episil® (experimental) or PeriAcryl®90 (control) with Surgicel® completed postoperative questionnaires at 1, 2, 3, 5, 7, 10, 14, and 21 days to assess pain and the number of analgesic pills. Postoperative pain was assessed using a visual analog scale (VAS, 0–3 = minimal pain, 4–6 = moderate pain and 7–10 = severe pain). Laser Doppler Flowmetry (LDF) and a peroxide test were used to assess wound healing.

Results: The mean and median VAS scores did not reach statistical significance between the experimental and control groups. However, a significantly greater proportion of subjects receiving episil® perceived only minimal post-operative pain ($p < 0.05$). The mean and median dosages of ibuprofen 600mg tablets taken by experimental subjects were significantly different from the control subjects on postoperative days 1, 2, and 3 ($p < 0.05$). No statistical significant difference was observed in blood flow or timing of re-epithelialization.

Conclusions: episil® provided a reduction in postoperative discomfort and a reduction in the number of dosages of analgesics after performance of a FGG compared to PeriAcryl®90 during the first 3 days postoperatively. No discernible effects were observed in blood flow or the timing of re-epithelialization of FGG donor sites.

Sat-81

Successful excision of tongue irritational fibroma using 940 nm diode laser

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Introduction: Traumatic or irritational fibroma is a common benign exophytic and reactive oral lesion that develops secondary to injury. The most common sites of irritation fibroma are the tongue, buccal mucosa and lower labial mucosa. Differential diagnosis of other lesions including benign tumours and mucoceles should be ruled out by biopsy. These lesions may be excised using conventional surgery, electrosurgery or laser.

Lasers have recently made tremendous progress in the field of dentistry. The diode laser device has specifications such as a relatively small size, portability, and lower cost that attracts dental practitioners to its use for various surgical procedures in comparison with other laser equipment.

Material and Methods: Four female patients agreed to undergo surgical removal of superficial proliferative tongue lesions under local anesthesia using a 940 nm diode laser in continuous wave mode. Bleeding was stopped using Laser Dry Bandage setting and no suturing was needed. The specimens were sent for histopathological examination. The patients were assessed for intraoperative and postoperative complications.

Results: The procedure was easy to perform with excellent precision and minimum bleeding. It was well accepted by the patients who also reported mild post-operative pain. Optimum healing was achieved within 10 days with no residual ulceration or scarring. The excised specimens proved adequate for histopathological examination and all lesions were benign.

Conclusion: The 940 nm diode laser can be employed in excisional biopsy of tongue frictional fibromas with minimum bleeding, discomfort, scarring and postoperative pain and should be considered as a viable alternative to the conventional surgical technique.

Sat-82

Successful use of 940nm diode laser in oral soft tissue surgery: a case series

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Introduction: Lasers were introduced into dentistry more than 4 decades ago. Since that time, different wavelengths have been used for oral soft tissue surgery.

A diode laser is a semiconductor device using aluminum, gallium, arsenide, and occasionally indium as the active medium. The device produces coherent radiation in the visible or infrared spectrum with wavelengths ranging from 810nm to 980nm. Therefore, all wavelengths are absorbed properly by pigmented tissue, which contains melanin and hemoglobin. The diode laser-tissue interaction makes it considerably safe and well-indicated for soft oral tissue surgeries in regions near the dental structures.

Objectives: In this presentation, we present our experience in a case series of oral soft tissue surgeries (such as Frenectomy, Pyogenic granuloma, irritational fibroma, muocele and depigmentation) performed with a 940nm diode laser.

Material and Methods: Different settings of 940nm diode laser were used according to the specific procedures for excision of different oral lesions (10 cases) by two oral medicine consultants. Written informed consent was obtained from the patients prior to the surgery, and all protective precautions were taken throughout the procedures. Postoperative instructions were given to all patients. All patients have been followed up regularly to ensure complete healing.

Results: In all cases, Diode laser provided clean incision of tissues, immediate coagulation, and minimal postoperative pain, and edema. No postoperative complications have been reported.

Conclusions: The use of a 940nm diode laser in those presented cases offered the best treatment option which reduced the risk of postoperative infection and pain with rapid healing.

Sat-83

Contamination of smartphones of dental students: a comparison with computer science students

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Introduction: There is tremendous growing number of smartphone users worldwide. Its use is still strikingly increasing. In clinical environments, touchscreens of the smartphones have been reported to be pathogen carriers. No data, however, on the potential contamination of these devices in dental settings.

Objectives: Assessing the potential microbial contamination of dental students' smartphones' (touchscreens) in comparison to those of computer science students.

Material and Methods: A sample of 186 students (dental=98 and computer science=88) participated. Swab samples (with transport medium) were taken from touchscreens of the participants' smartphones. The samples were immediately transported into 5 ml of neutral broth and incubated there at 37 °C for 5 hours. Then, the samples were cultured in neutral agar dishes that incubated overnight at 37 °C. The positivity and intensity of growth (measured as Colony Forming Units [CFU]) were then determined.

Results: Only 35 smartphones (18.8%) were negative. The positive smartphones were significantly higher among males (78, 87.6%) compared to females (73, 75.3%; $P = 0.039$). There were statistically more CFU reported for smartphones of dental students (mean [SD]=106.3 [124.81]) compared to those of computer science students (40.61 [46.09]; $P=0.003$). The smartphones of male students revealed statistically more CFU (112.45 [122.08]) compared to those of females (41.33 [60.19]; $P < 0.001$). Smartphones of dental clinical students revealed fewer CFU (81.33 [111.3]) compared to preclinical students (131.27 [133.49]; $P=0.033$).

Conclusions: Touchscreens of smartphones harbor positive bacterial growth. Surprisingly, the intensity of growth was higher among dental students, more specifically amongst male preclinical dental students.

Sat-84

Congenital absence of lingual frenum in a non-syndromic patient: a case report

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Background: Lingual frenum (LF) is a fold of mucous membrane connecting the ventral tongue to floor of the mouth. In general, LF serves multiple roles with main function to support the tongue and aid in limiting its movement in different directions. Any anatomical or functional deficiency of LF may have an impact on tongue functions based on its severity. Historically, the absence of LF has been linked to multiple genetic and developmental conditions such as infantile hypertrophic

pyloric stenosis, non-syndromic ankyloglossia diseases and Ehlers-Danlos syndrome and was never reported in otherwise health subjects. Case presentation: We are reporting a case of a 21-year-old female presented to King Abdulaziz University, Faculty of Dentistry, Jeddah, Saudi Arabia for routine dental evaluation. The patient medical history was significant for hypothyroidism secondary to thyroidectomy procedure performed 7 years ago to treat early thyroid papillary carcinoma. The patient received post-operative radioactive iodine as part of the treatment protocol. She has been taking thyroxin 100 mg/day since then to manage secondary hypothyroidism and has no significant allergy history. Dental history was significant for active orthodontic treatment for the past 2 years. Extra-oral examination was noncontributory with no speech impairment. Intra-oral examination was significant for complete absence of LF with normal surrounding oral structures. In order to rule out a diagnosis of EDS, the patient was referred for medical evaluation and upon clinical examination did not meet the standard criteria for EDS. As a part of the comprehensive assessment process, all family members including her 6 female siblings were evaluated for signs and symptoms of EDS through medical consultations and none qualified for the diagnosis. In addition, none of the patient's family members presented with absent LF.

Conclusion: To our knowledge, this is the first case to be reported in the literature with similar clinical presentation. Even without a significant impact on tongue movement or speech, it is important for health practitioners to be aware of such conditions and evaluation steps for diagnosis and management.

Sat-85

Jaw cysts. A 37-year retrospective study according to the 2017 World Health Organization classification

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Introduction: Jaw cysts (JCs) are common in dental practice and represent a considerable number of biopsy material submitted to an oral pathology laboratory. To date, there is no study reporting the relative proportion of each type of JC according to the 2017 classification of the World Health Organization (WHO).

Objectives: To report the clinical features of JCs diagnosed during a period of 37 years.

Materials and Methods: All JCs diagnosed from 1980 to 2017 were retrieved from the files of the Department of Oral Pathology. Diagnosis was confirmed using representative hematoxylin and eosin stained tissue sections. Data regarding age, gender of the patients, as well as the location of each lesion were collected from the biopsy report forms.

Results: JCs were more common in male patients, with a male to female ratio 1.6:1. More than 50% of patients were in the 4th – 6th decade of life, with a mean age 40.4 ± 16.3 years. There was no jaw predilection, but lesions were more commonly encountered in the anterior area of the jaws, followed by the molar and premolar region. Approximately 70% of JCs were radicular cysts, followed in descending order by dentigerous cysts, odontogenic keratocysts, nasopalatine duct cysts, inflammatory collateral cysts, lateral periodontal cysts, glandular odontogenic cysts,

calcifying odontogenic cysts, orthokeratinized odontogenic cysts, gingival cysts, aneurysmal bone cysts and simple bone cysts.

Conclusions: The majority of JCs were of inflammatory origin and represented a sequela of pulp necrosis. However, odontogenic and developmental cysts were also present.

Sat-86

Characterization of oral medicine consultations in hospitalized patients

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Introduction: The department of Oral Medicine in tertiary medical centers provides consultation services.

Objective: Considering the limited data in the literature, we aimed to characterize the cases where a consultation was sought.

Materials and methods: This retrospective study reviewed all hospitalized patients cases referred to the department of Oral Medicine at Hadassah Medical Center during 2011 - 2016. Data (demographics, clinical information, referral cause, diagnostic tests and diagnosis.) were collected from the electronic medical records and analyzed using descriptive statistics. The institutional review board approved the study.

Results: 1201 cases were included in this study. The median age was 49.38±32.8 years with equal gender distribution. The majority of referrals were from the Dermatology, Hemato-Oncology and Internal Medicine departments (18.5%, 17.5% and 13% respectively). 20% were referred for infectious foci elimination prior to chemo-radiotherapy, cardiac surgery and transplantation, others were referred due to oral signs and /or symptoms. The most common diagnoses were mucosal conditions (62.5%) mainly conditions of infectious origin, immune mediated, and cancer related (48.7%, 23.1% 13.2% respectively). 29.2% of cases had pathology of dental origin and 7.7% had no oral findings. Diagnostic tests included: cultures and viral PCR 30%, dental radiographs (24%), blood tests (11.9%) and biopsies (10%).

Conclusion: The need for oral medicine care/services, in a hospital setup is significant. Oral medicine specialists have extensive knowledge of oral diseases and oral manifestations and complications of systemic diseases. By increasing awareness of the specialty of oral medicine among the hospital staff patient care will improve.

Sat-87

Odontogenic epithelial hamartoma of the gingiva: a case report

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Objectives:

To present a clinic case of an odontogenic epithelial hamartoma of the gingiva (OGEH) in a 49-year-old female.

Case report:

A 49-year-old woman complained of an enlarging lesion of the maxillary vestibular gingiva on the left lateral incisor region. Its presence was first noticed by the patient 2 years prior to her visit. Clinical examination shows a non-removable tissue mass on the labial side of the maxilla, gingival above the left lateral incisor, the longest diameter measuring approximately 10mm with telangiectasias. The lesion was indurated on palpation and asymptomatic. CT and panoramic radiograph demonstrated an osteolysis of this zone. The gingival mass was excised and the histology revealed a diagnosis of odontogenic gingival epithelial hamartoma. Currently the patient is asymptomatic and without signs of recurrence.

Results and Conclusions:

Odontogenic epithelial hamartoma of the gingiva (OGEH) is considered to be a transitional stage between a true epithelial odontogenic neoplasm and a tumor-like, but non-neoplastic lesion. It is probably originated from the reduced tooth-forming tissues such as rests of dental lamina lying dormant in the gingiva after odontogenesis, and are very rare lesions. Histologically, the most outstanding feature is the presence of multiple, well-delineated cluster being surrounded by a pseudocapsule. The accumulation of cell clusters are wrapped into a connective tissue pseudocapsule, totally separating the lesion from the basal cell layer of the oral epithelium. The differential diagnosis has to be made with the granular cell variant of ameloblastoma and central odontogenic fibroma.

Sat-88

Rhinocerebral mucormycosis with extensive involvement. A case series

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Introduction: Mucormycosis is an opportunistic infection caused by saprophytic fungi of the class Zygomycetes.

Objectives: Our purpose is to present a case series of three patients with rhinocerebral mucormycosis showing extensive involvement.

Material and Methods: All patients had uncontrolled diabetes mellitus. The first patient, a 45-year-old man, was referred with infection and extensive necrosis of the right maxilla, nostril, upper and lower eyelid and eye, and frontal region, and right facial nerve paresis. After meticulous clinical, radiographic and laboratory investigation, the diagnosis of mucormycosis was set. Radical excision of the infected, necrotic tissue was performed including hemimaxillectomy and eye exenteration. The defect was reconstructed with an anterolateral thigh free flap. The second patient, a 72-year-old man, had been admitted to hospital for sinusitis. The patient was

diagnosed with mucormycosis extending up to the skull base with meningeal involvement and underwent multiple debridement procedures of the maxillary sinus and maxilla. The third patient, a 62-year-old man, was diagnosed with mucormycosis and was referred with an extensive necrosis of the maxilla. Radical excision of the infected, necrotic tissue was performed including hemimaxillectomy. All patients received high doses of antifungal drugs and diabetes mellitus consultation and remained under close monitoring.

Results: Seven months after discharge, the second patient presented for debridement of exposed, necrotic tissue of the maxilla and occlusion of an oro-antral communication. In all patients, the disease was well controlled.

Conclusions: Rhinocerebral mucormycosis is an opportunistic infection that can be life threatening. A multidisciplinary approach for diagnosis and treatment is essential.

Sat-89

Immunohistochemical expression of EDA and EDAR in odontogenic keratocysts

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Introduction: Odontogenic keratocyst (OK) is a well defined odontogenic developmental cyst, speculated to derive from remnants of the dental lamina. Its pathogenesis has not been resolved, although the Sonic Hedgehog signaling pathway (SHH) seems to play a fundamental role. Ectodysplasin (EDA), a member of tumor necrosis factor superfamily, participates in tooth development and interacts with signaling pathways, including SHH.

Objectives: To investigate in OK the immunohistochemical expression of EDA and EDA receptor (EDAR).

Material and Methods: EDA expression was assessed by a routine immunohistochemical method in 30 non syndromic and non recurrent OK from 30 patients, and 10 dentigerous cysts (DC) as controls, whereas EDAR in 20 OK and 5 DC.

Results: EDA expression was nuclear, cytoplasmatic or both, whereas EDAR expression was strictly cytoplasmic. EDA was expressed in all OK and dentigerous cysts, while EDAR in 3/21 OK and 4/5 DC. A statistical significant difference was found between EDAR expressions in OK, compared to DC ($p < 0.05$).

Conclusions: EDA does not seem to participate in the pathogenesis of OK, but lack of expression of EDAR in OK is in accordance with its purported derivation from dental lamina epithelium.

Sat-90

Unusual case of osteonecrosis without a clear cause

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Introduction:

Osteonecrosis develops as a result of ischemia in bone and bone marrow. The ischemia can occur in relation to trauma, fracture, radiotherapy (RT) and various medications (BF, corticosteroids, etc.) which may damage the vascular structure of the bone. Ischemic necrosis is related to different causes and can affect almost every bone in the jaw. Clinical manifestations depend on the size of the necrotic area, proximity to anatomic structures and secondary infection.

Material and Methods:

This case report presents diagnosis and treatment protocol of a 61-year-old female patient with aseptic osteonecrosis of the mandibular left posterior edentulous area. The patient was referred by her general dental practitioner regarding itchiness and paraesthesia and a radiolucent area was seen on panoramic radiography. The patient was systematically fit and healthy and not taking any medication. Clinical, radiological and microbiological examinations resulted in different preliminary diagnoses. Floresan guided excision and curettage of the area, with tetracycline prophylaxis, was performed to enable histological examination. Platelet-rich-fibrin(PRF) was applied before closing the wound. Final diagnosis was established with histopathological examination.

Results:

Regular follow-ups showed healing of the area and patient's symptoms disappeared. The patient has been followed for a year.

Conclusions:

A good clinical and radiological examination is important in diagnosis and treatment of lesions such as osteonecrosis, which should be directed to specialists. Anamnesis, clinic; radiologic; microbiologic and histologic examination facilitate identification of the exact type of necrosis and the appropriate treatment. The surgical site should be followed-up postoperatively.

Sat-91

Readability of online materials for oral ulcerations

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Introduction: Nowadays, patients have a greater access to online information as compared to previous decades where physicians or dentists were the primary source of health information. Through the advent of information technology, the wisdom of information resources is better than ever.

Objective: This study was conducted to evaluate the readability of online patient education information specifically on oral ulceration.

Methods: Three terms "oral ulcer", "oral ulceration" and "aphthous ulcer" were browsed from the largest search engine, Google, and the link addresses were copy-pasted and calculated using a web-based readability test tool (<https://www.webpagefx.com/tools/read-able/>). Approximately 200 websites were identified. Patient-directed content from all relevant articles greater than 100

words and directly accessible from the original parent site are inclusive. Readability was analysed using 6 established methods which are Flesch Kincaid Reading level, Flesch Kincaid Grade level, Gunning Fog Score, SMOG Index, Coleman Liau Index and Automated Readability Index. One-way ANOVA was used to establish statistical differences between groups, with significance set a priori at $P < 0.05$.

Results: Results showed all 200 web sites are suitable for an average grade level of 7 to 8 which can be easily understood by 12 to 14 years old. Flesch-Kincaid grade level, Flesch-Kincaid Reading Ease and Coleman-Liau Index showed an average grade level of 7.

Conclusion: Websites regarding oral ulcerations available on the internet are found to be readable at a minimum grade level of 7 to 8, which conformed with the recommended grade level for patient educational materials according to The National Institutes of Health.

Sat-92

Taste perception in patients with oral lichen planus with and without tongue lesions

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Objectives: To evaluate the taste in patients with oral lichen planus (OLP) with and without tongue lesions and compare to control subjects.

Material and methods: First, subjective taste sensation and impairment was rated with a VAS scale (1-100 mm). Then, scores were attributed to the question "Is food tasting different?" (1 = never, 2 = seldom, 3 = often, 4 = always) overall and for the taste of sweet, salty, sour and bitter individually. Third, taste function was tested with taste strips for the four sensations and in four different concentrations, and scored (0-16) for each side of the tongue dorsum. Objective and subjective taste perception were compared using Kruskal-Wallis and Mann-Whitney-Wilcoxon tests.

Results: The groups were matched by gender and age and included 35 patients with OLP and tongue lesions, 36 patients with OLP without tongue lesions, and 36 control subjects. The self-reported taste rating and impairment was similar for all groups. For the measured taste function, a significant difference in overall taste function was found between OLP patients with tongue lesions and control subjects ($p=0.027$). The sensation of sour showed the most pronounced difference ($p=0.08$). In the group of OLP patients without tongue lesions a significant difference in the taste sensation of salty ($p=0.029$) was found compared to control subjects. The correlation between self-reported taste rating and measured taste function was low.

Conclusion: In case of loss in appetite in OLP patients a taste strip test might be indicated to assess for a potential impairment of taste function.