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DOES NUTRITIONAL STATUS AFFECT MUCOSAL CELL RESPONSES? DEMONSTRATION OF DIRECT EFFECTS OF VITAMIN C

W Li, JE Stewart, F Fortune

Centre for Clinical & Diagnostic Oral Sciences, Bart's & The London School of Medicine & Dentistry, QMUL, London

Introduction: Many patients with oral manifestations of systemic disease, such as Behcet's disease or HIV, have poor nutritional status with vitamin deficiencies. This contributes to poor mucosal healing and poor response to treatment regimes. Like vitamin D, the antioxidant, Vitamin C, has been postulated to exert positive effects on epithelial cellular activities. **Objectives:** To examine the effects of vitamin C (ascorbic acid) on mucosal epithelial cells, in terms of cellular proliferation, antioxidant capacity and regulation of apoptosis. **Methods:** SVpgC2a normal buccal epithelial cells, TR146 cancer epithelial cells, D407 retinal epithelial cells, and normal human gingival fibroblasts (HGF) were seeded at 5000 cells/well in 96-well plates, grown for 24 h, and synchronised by serum starvation, prior to treatment with ascorbic acid (AA) or cisplatin. Cells were assayed for proliferation (MTT assay), oxidation status, by estimation of reactive oxygen species (ROS) output, and apoptotic activity (measurement of caspase activity by the ApoONE kit, Promega). **Results:** Ascorbic acid stimulated proliferation of all cell types in a dose-dependent manner, up to a concentration of 1.25 mM (1.25 mM AA > control; $p < 0.0001$). A dose-dependent reduction in ROS levels were also observed (1.25 mM AA > control; $p < 0.001$). Apoptotic activity was reduced by up to 50.7% in the presence of 1.25 mM AA compared to positive control (AA < cisplatin; $p < 0.05$, $p < 0.005$ for HGF), bringing it down to levels comparable with medium only. Levels of AA above 2.5 mM exhibited some cytotoxicity in each case. **Conclusions:** Vitamin C exerted direct positive effects on all cellular activities studied. One mechanism of action appears to be by scavenging of ROS thus preventing further cellular damage. We suggest that vitamin supplementation of our patients may improve their oral immunity and their ability to heal oral ulcers.

EVALUATION OF CLINICAL TEACHING OF ORAL MEDICINE BY LONDON DENTAL UNDERGRADUATES

JM Zakrzewska¹, MP Escudier²

¹Bart's & The London Queen Mary's School of Medicine and Dentistry, ²King's College London Dental Institute

Introduction: Increasing numbers of students, diminishing numbers of staff and time pressures mean that students get less clinical exposure to oral medicine (OM) than previously. There are no guidelines as to how much clinical OM teaching is needed to ensure competency for general dental practice. **Aim:** To ascertain 5th year dental students views on clinical teaching of oral medicine. **Method:** Fifth year dental undergraduates attending a lecture were asked to complete a questionnaire consisting of 15 questions scored using a five point Lickert scale at two London dental schools in their penultimate term. Both schools require attendance at 8 clinics with one requiring some written work. Dental schools around the UK were asked to provide details on the number of OM clinics students needed to attend and whether there were any formal assessments. **Results:** Response rate over 90% (158 students). At The London School over 70% felt that more than 8 clinics were needed to provide enough experience in OM and 67% did not feel competent in dealing with OM patients, whereas at King's the comparable numbers were 46% and 24% respectively. Over 70% thought the teaching on the clinics was adequate but more feedback was wanted by 30% of students. Seven dental schools provided data on OM teaching and requirement of attendance at clinic from 4 to 15 sessions and 4 did some form of assessment. **Conclusion:** There may be a minimum number of clinics that students need to attend if they are to feel competent in OM. There are wide variations in practise in different dental schools. Some unified approach could be helpful.

GROWTH FACTOR LEVELS IN SALIVA OF BEHCET'S PATIENTS: A ROLE IN DELAYED HEALING?

E Hagi-Pavli, B Ilyas Fazil, JE Stewart, F Fortune

Centre for Clinical & Diagnostic Oral Sciences, Bart's & The London School of Medicine & Dentistry, QMUL, London

Introduction: We previously demonstrated differences in proliferative capacity of oral epithelial cells in response to stimulation by Behcet's (BD) and healthy control (HC) saliva. The reduced ability of BD saliva to stimulate cell proliferation suggested a possible lack of growth factor activity in the saliva of these patients, which might account for delayed healing of oral ulcers. **Objectives:** To compare levels of vascular endothelial growth factor (VEGF), epidermal growth factor (EGF) and platelet derived growth factor (PDGF-BB) in saliva from BD patients and healthy volunteers. **Methods:** Whole unstimulated saliva was obtained with informed consent from BD patients ($n=18$), and age-matched healthy control vol-

unteers (n = 14). Behcet's patients were diagnosed according to ISBD study group criteria; healthy volunteers had no history of recurrent aphthous ulcer or other pathological conditions. Fresh saliva samples were placed on ice and centrifuged (1600 rpm, 4 °C, 6 min) to remove bacterial and cellular debris. Samples were stored at -70 °C prior to assay by ELISA (R&D systems). **Results:** Levels of EGF and PDGF were significantly higher in BD than HC saliva (BD > HC; $p < 0.0005$ and $p < 0.05$ respectively). Conversely, VEGF levels were lower in BD patient's than HC saliva (BD < HC; $p < 0.05$). **Conclusions:** The results demonstrate some dysregulation in salivary growth factor expression in BD. Low VEGF levels were in agreement with our hypothesis, and suggest a contributory role in delayed oral ulcer repair. High EGF levels were unexpected and we speculate the possibility of a defect in the processing of EGF at the target cell level.

MANAGEMENT AND OUTCOME OF ORAL DYSPLASIA AND SQUAMOUS CELL CARCINOMA IN PATIENTS WITH HIV INFECTION

JAG Buchanan¹, L Newman², N Kalavrezos², TA Hodgson¹, SR Porter¹

¹Oral Medicine and ²Oral and Maxillofacial Surgery, UCL Eastman Dental Institute and UCLH NHS Trust, Eastman Dental Hospital, London

Introduction: It is suggested that oral squamous cell carcinoma (OSCC) may be associated with HIV disease, arising at an earlier age and being more aggressive than in non-HIV infected individuals. Tobacco and alcohol usage would be expected

to be the likely risk factors for OSCC in HIV infected individuals, however, the reported increased incidence of oral warts associated with mild dysplastic change associated with ART (antiretroviral therapy) may suggest an additional role for human papilloma virus (HPV) in oncogenesis. **Aim:** A series of patients with either oral epithelial dysplasia (OED) or frank OSCC in association with long-standing HIV infection with an assessment of their risk factors for oral oncogenesis, management and outcome is detailed. **Patients:** All four patients were males who had had sex with men but were in stable exclusive relationships at the time of diagnosis. Their duration of HIV infection ranged from 10 to 20 years. All were receiving ART. All had significant cigarette smoking and alcohol habits. Two patients aged 37 and 49 years had severe epithelial dysplasia. The OED involved the buccal mucosa and the ventrolateral aspect of the tongue. HPV immunostaining was absent in both OED lesions, although one demonstrated koilocytic dysplasia. Both lesions were surgically excised and smoking cessation and alcohol moderation advice were given. Both patients remain well approximately 36 months following OED presentation. The two patients with OSCC were both aged 45 years and had had AIDS defining conditions prior to starting ART. The OSCCs affected the right posterior gingival mucosa and left lateral tongue and both patients were staged as T4 N1 M0. HPV immunostaining was negative in both cases. Both patients were treated with surgical excision, neck dissection and radiotherapy and made a good recovery, with no recurrence 11 months and 48 months after presentation. **Conclusion:** This small series suggests that OED and OSCC in HIV infection is associated with smoking and alcohol habits, presents at a relatively young age (< 50 years) but is not associated with HPV infection.

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