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R1

Effect of a Statherin-like peptide on enamel erosion *in vitro* measured by X-ray microtomography

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Background: Statherin is a salivary protein present in pellicle which protects enamel against demineralisation. A 21 amino acid derivative of Statherin (StN21) has been shown to reduce rates of demineralisation in hydroxyapaptite (HAP), but has no effect on HAP remineralisation. X-ray microtomography (XMT) is a quantitative 3D method of measuring changes in mineral concentration over time.
Aim: To make 3D measurements of the effect of StN21 on rates of de- and remineralisation of enamel under erosive and remineralising conditions using XMT.
Method: Premolar teeth were sectioned. The sections were exposed to 0.1 M acetic acid (pH 4.5) for 128 hours. From each tooth, one section was exposed to a daily application of 1.88×10^{-4} mol/L StN21 for 3 minutes; a second section was exposed to PBS as a control. XMT scans were taken at 0, 63, 80 and 128 hours. The sections were then exposed to a remineralising solution (2 mol/L Ca^{2+}, pH 7) for a period of 3 weeks, with XMT scans at 3 and 5 weeks.
Results: Enamel exposed to StN21 demonstrated a 40% decrease in rate of demineralisation when compared with controls. There was no difference in remineralisation between the control and StN21 exposed sections following prolonged exposure to remineralisation solution.
Conclusion: While rates of demineralisation were significantly decreased following exposure to StN21, remineralisation was not enhanced. StN21 has a potential role in the prevention of erosive lesions.

R2

The use of a cognitive pamphlet to improve cooperation with inhalation sedation

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Background: Nitrous oxide inhalation sedation is a highly successful technique for helping anxious patients cope with dental treatment. However, it still requires a certain amount of cooperation which some patients lack. Research shows that it is possible to teach children how to use cognitively oriented coping strategies.
Aim: To develop and evaluate a cognitive pamphlet to help facilitate inhalation sedation treatment for anxious paediatric dental patients.
Method: The overall approach was a single blind randomised controlled clinical evaluation. Subjects were assessed and recruited to the study from sedation assessment clinics and randomly allocated to either a control or a study group. The subjects in the study group received a previously developed pamphlet consisting of a cognitive behavioural therapy exercise. All the subjects had their first treatment visit videotaped and all the tapes were watched by two blinded observers at the end of the study. The subjects' acceptance of the nose-piece, as well as their overall behaviour, was scored using the Houpt Scale, the Visual Analog Scale and the Global Rating Scale at four time-points. The primary outcome measure of the study was whether the pamphlet improved subject acceptance of the nose-piece. The secondary outcome measure was the overall behaviour of the subjects during treatment.
Results: The final number of subjects participating in the study was 35. The preoperative anxiety scores were very similar for both groups. There was no statistically significant difference between the groups for either the primary or the secondary outcome measures.
Conclusion: The pamphlet was not successful in improving subject cooperation with inhalation sedation.

R3

Can a dental erosion index predict the need for clinical intervention?

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Aim: To determine whether a dental erosion index can predict appropriate clinical intervention.
Design: A prospective study of children and young adults with and without dental erosion.
Method: A record bank of photographs and study models was established and assessed by a calibrated examiner and an expert panel. The calibrated examiner assessed the record bank using the 2003 Child Dental Heath (CDH) Survey Erosion Index. The expert panel scored the record bank in relation to the anticipated need for intervention in terms of (1) no treatment, (2) monitor in primary care, and (3) to refer for a specialist opinion. The calibrated examiner and expert panel scores were correlated to identify whether the index or its components could discriminate between the three levels of intervention.
Results: Eighty one patients were approached and 67 met the inclusion criteria. A record bank of 60 patients with and without erosion was established (31 male, 29 female). The components of the index with greatest discriminatory power were overall highest score, overall highest score for depth and overall highest score for area. Combining these components into 'decision rules' enabled 56 out of 60 cases to be classified correctly, with the ability to differentiate between patients requiring no treatment and those requiring monitoring or referral (sensitivity = 0.93, specificity = 0.94).
Conclusion: The Child Dental Health Survey 2003 Erosion Index can be used, in its entirety or with partial scoring, to predict clinical intervention in children and young adults.

R4

Swipe cards: a potential source of hospital-acquired infection

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Background: Hospital-acquired infections, causing high morbidity and mortality, are a major burden on the UK health care system.
Aim: To determine whether swipe-cards of staff in the dental hospital are a reservoir for potentially pathogenic microorganisms, and to compare the level of contamination of swipe-cards between Child Dental Health (CDH) and other clinics.
Method: Hundred identification swipe-cards collected between September 2008 and February 2009 from staff, students and receptionists from three clinics (CDH, Oral Medicine and Surgery, and Restorative Dentistry) at Bristol Dental Hospital, UK, were washed prior to bacterial culture. Wash samples were cultured on eight different media allowing detection and quantification of aerobes, anaerobes, streptococci, staphylococci, coliforms, yeasts, vancomycin-resistant entercocci (VRE) and Methicillin-resistant *Staphylococcus aureus* (MRSA). Frozen stored samples positive for MRSA growth were analysed further by PCR.
Results: All cards carried culturable bacteria. The median numbers of aerobes, anaerobes and streptococci washed from swipecards were 580, 1240 and 760 colony forming units respectively. Clinicians had significantly higher swipe-card counts than receptionists ($P = 0.01$). 65% of cards were contaminated with potentially pathogenic *Staphylococcus aureus*, of which 6% were MRSA, further confirmed by PCR. 3% of cards were contaminated with *Candida*, 1% VRE and 1% coliforms. CDH staff cards were not significantly different to those from other clinics ($P \geq 0.5$).
Conclusion: Swipe cards are contaminated with significant numbers of bacteria, including important pathogens such as MRSA, VRE and *Candida,* and may therefore be a possible source of hospital-acquired infection. Different clinical environments were not a factor in determining swipe-card bacterial load.

R5

Oral manifestations and candida load during treatment of childhood acute lymphoblastic leukaemia

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Background: A review in 2001 of the 22 UK Children's Cancer Study Group centres revealed that almost a quarter had no oral care protocol and that antifungal prophylaxis prescription was highly variable. There is little research detailing oral signs and symptoms during treatment of childhood acute lymphoblastic leukaemia (ALL).
Aim: The primary end point was to compare the oral *Candida* load of children with ALL managed in Cardiff and Vale NHS Trust Paediatric Oncology Clinic with that of healthy matched controls. Secondary aims were to monitor the oral condition and to determine the *Candida* species present.
Method: Study children were assessed monthly over a 6-month period and controls were assessed on a single occasion. Oral signs and symptoms were scored using a modified Eilers' Oral Assessment Guide; a modified oral rinse was used to determine *Candida* load.
Results: 28 children with ALL (range = 5–19 years) participated. A high *Candida* growth occurred in the absence of oral signs and symptoms. *Candida* was isolated at 41% study versus 22% control visits. Of these isolates, 86% were *C. albicans*. The non-albicans species isolated were *C. famata, C. tropicalis, C. Guilliermondii, C. parapsilosis* and an unidentified yeast. One control sample yielded *Saccharyomyces cerevisiae*.
Conclusion: Children with ALL experience few oral problems. The majority of isolates were *C. albicans* but oal signs and symptoms do not correlate with *Candida* load. Overall, the oral care protocol used by the department is effective.