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Abstracts

Contents

Session 1	
434 Microbiology	
Session 2	
450 De- and Re-Mineralization and Caries Risk	
Session 3	
465 Diagnostics and Fluoride	
Session 4	
480 Epidemiology	
Session 5	
495 Clinical Studies	
Session 6	
505 Erosion	
Session 7	
515 Fluoride and Clinical Studies	
Session 8	
521 Erosion and Clinical Studies	
527 Author Index	

primary and secondary caries in adults, and to identify those patients with high or low risk of caries by using classification and regression trees (CART). A clinical data set of 442 patients aged between 20 and 64 in a general practice was analyzed. Multiple regression analyses were performed to identify factors which affected the accumulated numbers of caries needed restorations per year. The following parameters according to each patient were considered: age, DMFT, numbers of mutans streptococci (SM) and lactobacilli (LB), the secretion rate and buffer capacity of saliva, compliance to a preventive programme. CART was performed by using the factors which were identified as statistically significant by the multiple regression analyses. The incidence of primary caries in adults was affected by SM ($p = 0.0373$) and LB ($p = 0.0633$), while that of secondary caries was affected by DMFT ($p = 0.0003$), SM ($p = 0.0014$), LB ($p = 0.0131$). CART was able to identify the low-risk patients against primary caries by the levels of SM ($<10^6$ CFU/ml) and LB ($<10^5$ CFU/ml), while those against secondary caries by DMFT (<22) and SM ($<5 \times 10^5$ CFU/ml). In conclusion, cariogenic bacteria were proved to be the most influential factors for the incidence of frequent caries. CART is an effective method to predict the future caries risk of an individual patient.

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64

Longitudinal Evaluation of Inactive Occlusal Enamel Lesions in Children and Adolescents

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This study was undertaken to gather evidence about the long-term outcome of inactive occlusal enamel lesions in children and adolescents with regular access to fluoride. The aims were to compare caries incidence and progression on sound occlusal surfaces and on surfaces presenting inactive enamel lesions and to estimate the risk of caries incidence and progression on these surfaces. The study was designed as a prospective cohort study and included 258 7–15-year-old children attending one public school in the municipality of Santa Maria, Brazil. The clinical assessments made on permanent molars were: (1) stage of eruption, (2) occurrence and distribution of occlusal plaque, (3) occurrence and localization of occlusal caries. Reliability was assessed at baseline examination for stage of eruption ($k = 0.86$), occlusal plaque index ($k = 0.78$) and occlusal caries ($k = 0.78$) as well as at 1 year examination for occlusal caries ($k = 0.76$). A total of 200 children were examined after 1 year and 22 (11%) were assigned to the category 'caries progression' characterized by the presence of at least one active lesion on molar teeth. At site level, no significant difference after 1 year was

observed in caries incidence and progression between sites classified either sound or with inactive enamel lesion at the baseline examination (chi square test, $p = 0.48$). After controlling for the number of molar teeth within the children's dentitions included in the study (generalized estimating equations), the presence of easily detectable plaque on occlusal sites was the only predictor for caries incidence and progression after 1 year (OR = 2.73, 95% CI = 1.01–7.41, $p < 0.05$). The null hypothesis that the risk of caries incidence and progression on occlusal surfaces presenting inactive enamel lesions was equivalent to those with sound occlusal surfaces was accepted.

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65

Evaluation of Salivary *Streptococcus mutans* Test with School Students

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A semi-quantitative enumeration system was developed to monitor levels of *Streptococcus mutans* in saliva. The system promptly detected salivary *S. mutans* in 15 min using species-specific monoclonal antibodies and classified the results into two levels. The purpose of this study was to evaluate the detection system with saliva samples collected from school students. Saliva samples were collected from 328 school students (age 12–16). 0.25 ml of collected saliva was treated with 0.05 ml of reagent #1 vigorously in order to reduce the viscosity of saliva. Then 0.1 ml of reagent #2 was added to adjust the pH of treated saliva. 0.3 ml of the treated saliva was applied to a test device of the system. After 15 min, when a positive line appeared in the test window, it was classified as high *S. mutans* level. When a positive line did not appear, it was classified as low *S. mutans* level. The remained saliva samples were subjected to the real-time PCR methods and salivary *S. mutans* levels were enumerated. At the same time, caries prevalence was examined and DMFT was calculated. Real-time PCR methods revealed that the subject with positive result of the system had significantly higher salivary *S. mutans* (median 8.9×10^4 cells/ml) than the subject with negative result (median 3.7×10^3 cells/ml) (Wilcoxon: $p < 0.01$). Additionally, the median DMFT score in the low *S. mutans* detected group was 0.0 and in the high *S. mutans* detected group, it was 2.0 (Wilcoxon: $p < 0.01$). The detection system was a simple and reliable tool to detect salivary *S. mutans* which showed positive correlation with DMFT in oral cavity. The study suggested that this detection system could also be useful for caries risk screening at group examination.