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CONTENTS: BOOKS AND ARTICLES

BOOKS:

Ahlberg Kristiina  Self-reported bruxism.................................................................14

Cinar Basak Ayse  Preadolescents and their mothers as oral health-promoting actors: Non-biologic determinants of oral health among Turkish and Finnish preadolescents .... 15

Ghasemi Hadi  Preventive orientation and caries management by Iranian dentists. ...... 17

Lindy Otso  Inflammation and tissue destruction in arthritides and periodontal disease. 18

Mohebbi Simin Z.  Early childhood caries and a community trial of its prevention in Tehran, Iran.................................................................19

Musrati Ahmed S. Ali  Oral immune defense against chronic hyperplastic candidosis. 20

Rice David  Craniofacial sutures: Development, disease and treatment.....................21

Sargeran Katayoun  Oral cancer in Tehran, Iran: An approach for understanding disease burden. ......................................................................................22


ARTICLES IN ENGLISH

Ahlberg Kristiina, Jahkola Antti, Savolainen Aslak, Könönen Mauno, Partinen Markku, Hublin Christer, Sinisalo Juha, Lindholm Harri, Sarna Seppo, Ahlberg Jari  Associations of reported bruxism with insomnia and insufficient sleep symptoms among media personnel with or without irregular shift work [ Elektroninen aineisto .].........................25

Ahlberg Kristiina, Savolainen A, Paju Susanna, Hublin C, Partinen M, Könönen Mauno, Ahlberg Jari  Bruxism and sleep efficiency measured at home with wireless devices .... 26
Arponen H, Elf H., Evälahti Marjut, Waltimo-Sirén J   Reliability of cranial base measurements on lateral skull radiographs. .................................................................26

Asikainen Antti, Pelto Mika, Noponen Jukka, Kellomäki Minna, Pihlajamäki Harri, Lindqvist Christian, Suuronen Riitta   In vivo degradation of poly(DTE carbonate) membranes : Analysis of the tissue reactions and mechanical properties.........................27

Avellán Nina-Li, Sorsa Timo, Tervahartiala Taina, Forster Clemens, Kemppainen Pentti Experimental tooth pain elevates substance P and matrix metalloproteinase-8 levels in human gingival crevice fluid.........................................................................................27

Bakhshandeh S, Murtomaa Heikki, Vehkalahti Miira, Mofid R., Suomalainen Kimmo Dental findings in diabetic adults .................................................................................................................................28

Bakhshandeh Sohella, Murtomaa Heikki, Vehkalahti Miira, Modif Rasoul, Suomalainen Kimmo Oral self-care and use of dental services among adults with diabetes..............28

Bayat Faiborz, Vehkalahti Miira, Zafarmand A Hamid, Tala Heikki   Impact of insurance scheme on adults' dental check-ups in a developing oral health care system.............29

Beklen Arzu, Pihakari Antti, Rautemaa Riina, Hietanen Jarkko, Ali Ahmed, Konttinen Yrjö T.   Chronic sinusitis associated with the use of unrecognized bone substitute……29

Biedzka-Sarek M, Jarva H, Hytyiäinen H, Meri S, Skurnik M   Characterization of complement factor H binding to Yersinia enterocolitica serotype O:3.................................30

Chaudhuri B, Paju S, Haase EM, Vickerman MM, Tanzer JM, Scannapieco FA. Amylase-binding protein B of Streptococcus gordonii is an extracellular dipeptidyl-peptidase ......................................................................................................................30

Cinar A. B., Kosku N., Sandalli N., Murtomaa Heikki   Individual and maternal determinants of self-reported dental health among Turkish school children aged 10-12 years........................................................................................................................................31

Cinar Basak, Murtomaa Heikki   Clustering of obesity and dental health with lifestyle factors among Turkish and Finnish pre-adolescents.................................................................32

Cinar Basak Ayse, Murtomaa Heikki, Tseveenjav Battsetseg   The life-course approach in assessment of dental health .........................................................................................................................32
Emingil Gürnür, Afacan Beral, Tervahartiala Taina, Töz Hüseyin, Atilla Gül, Sorsa Timo
By mistakes we learn: determination of matrix metalloproteinase-8 and tissue inhibitor of matrix metalloproteinase-1 in serum yields doubtful results..................................................33

Emingil Gürnür, Afacan Beral, Tervahartiala Taina, Töz Hüseyin, Atilla Gül, Sorsa Timo
Gingival crevicular fluid and serum matrix metalloproteinase-8 and tissue inhibitor of matrix metalloproteinase-1 levels in renal transplant patients undergoing different immunosuppressive therapy..................................................33

Emingil Gürnür, Atilla Gül, Sorsa Timo, Tervahartiala Taina
The effect of adjunctive subantimicrobial dose doxycycline therapy on GCF EMMPRIN levels in chronic periodontitis..........................................................34

Firth J. D., Uitto Veli-Jukka, Putnins E. E.
Mechanical induction of an epithelial cell chymase associated with wound edge migration..........................................................35

Flisfisch S., Meyer J., Meurman Jukka H., Waltimo T
Effects of fluorides on Candida albicans. ..........................................................35

Forsman Minna, Pääkkönen Virve, Tjäderhane Leo, Vuoristo Jussi, Kallioinen Leena, Salo Tuula, Kallioinen Matti, Ryhänen Jorma
The expression of myoglobin and ROR2 protein in Dupuytren's disease..................36

Ghasemi H., Murtomaa Heikki, Torabzadeh H., Vehkalahti Miira
Restorative treatment threshold reported by Iranian dentists...................................37

Ghasemi Hadi, Murtomaa Heikki, Torabzadeh Hassan, Vehkalahti Miira
Risk-based approach in preventive practice among Iranian dentists..........................37

Subantimicrobial-dose doxycycline modulates gingival crevicular fluid biomarkers of periodontitis in postmenopausal osteopenic women..................................................38

Gorter R., Freeman R., Hammen S., Murtomaa Heikki, Blinkhorn A., Humphris G.
Psychological stress and health in undergraduate dental students...........................39

Gürsoy Mervi, Pajukanta Riitta, Sorsa Timo, Könönen Eija
Clinical changes in periodontium during pregnancy and post-partum..........................40

4
Gursoy U K., Könönen Eija, Uitto Veli-Jukka Intracellular replication of fusobacteria requires new actin filament formation of epithelial cells ...............................................................40

Gursoy U. K., Könönen Eija, Uitto Veli-Jukka Stimulation of epithelial cell matrix metalloproteinase (MMP-2, -9, -13) and interleukin-8 secretion by fusobacteria .................41

Hajihosseini Mohammad K., De Langhe Stijn, Lana-Elola Eva, Morrison Harris, Sparshott Neil, Kelly Robert, Sharpe James, Rice David, Bellusci Saverio Localization and fate of Fgf10-expressing cells in the adult mouse brain implicate Fgf10 in control of neurogenesis .........................................................................................................................41

Heikkinen Anna Maria, Pajukanta Riitta, Pitkäniemi Janne, Broms Ulla, Sorsa Timo, Koskenvuo Markku, Meurman Jukka H. The effect of smoking on periodontal health of 15- to 16-year-old adolescents .................................................................42

Heimonen A., Rintamäki H., Furuholm J., Janket Sok-Ja, Kaaja R., Meurman Jukka H. Postpartum oral health parameters in women with preterm birth ..............................................43

Hessari Hossein, Vehkalahti Miira, Eghbal Mohammad J. Samadzadeh Hamid, Murtoomaa Heikki Oral health and treatment needs among 18-year-old Iranians ..................................43

Hessari Hossein, Vehkalahti Miira, Eghbal Mohammad J., Murtoomaa Heikki Tooth loss and prosthodontic rehabilitation among 35- to 44-year-old Iranians...............................44

Ilumets Helen, Rytilä Paula, Sovijärvi Anssi, Tervahartiala Taina, Mylläriemi Marjukka, Sorsa Timo, Kinnula Vuokko Transient elevation of neutrophil proteinases in induced sputum during COPD exacerbation ..................................................................................45

Janket Sok-Ja, Jones Judith, Meurman Jukka H., Baird Alison, Van Dyke Thomas E. Oral infection, hyperglycemia, and endothelial dysfunction ..................................................45

Jie Bao Guang, Kari Kirsti, Tervahartiala Taina, Sorsa Timo, Meurman Jukka H. Proteolytic activities of oral bacteria on proMMP-9 and the effect of synthetic protease inhibitors [Elektroninen aineisto] ..................................................................................46

Kallio K. A. Elisa, Buhlin Kare, Jauhiainen Matti, Keva Ritva, Tuomainen Anita M, Klinge Björn, Gustafsson Anders, Pussinen Pirkko Lipopolysaccharide associates with pro-atherogenic lipoproteins in periodontitis patients ...........................................46

Kerosuo H., Väkiparta M., Nyström Marjatta, Heikinheimo K. The seven-year outcome of an early orthodontic treatment strategy ........................................................................47

Khami M. R., Murto M. Heikki, Jafarian M., Vehkalahti Miira, Virtanen Jorma  Study motives and career choices of Iranian dental students ..........................................................48

Könönen Mauno, Suominen-Taipale Liisa, Nordbland Anne  Temporomandibular disorders.....................................................................................................................49


Kostamo Katriina, Toskala Elina, Tervahartiala Taina, Sorsa Timo  Role of matrix metalloproteinases in chronic rhinosinusitis .................................................................50

Kuula Heidi, Salo Tuula, Pirlä Emma, Haggerström Jaana, Luomanen Marita, Gutierrez-Fernandez Ana, Romanos Georgios, Sorsa Timo  Human beta-defensin-1 and -2 and matrix metalloproteinase-25 and -26 expression in chronic and aggressive periodontitis and in peri-implantitis ..........................................................51

Laaksonen Matti, Suojanen Juho, Nurminen Sini, Läärä Esa, Sorsa Timo, Salo Tuula  The enamel matrix derivative (Emdogain) enhances human tongue carcinoma cells gelatinase production, migration and metastasis formation ..................................................52

Laisi S., Kiviranta H., Lukinmaa Pirjo-Liisa, Vartiainen T., Alaluusua Satu  Molar-incisor-hypomineralisation and dioxin..............................................................52

Lajunen Taina, Vikatmaa Pirkka, Bloigu Aini, Ilonen Tuuja, Lepäntalo Mauri, Pussinen Pirkko, Saikku Pekka, Leinonen Maija  Chlamydial LPS and high-sensitivity CRP levels in serum are associated with an elevated body mass index in patients with cardiovascular disease.................................................................53

Lauhio Anneli, Sorsa Timo, Srinivas Ravi, Stenman Matias, Tervahartiala Taina, Stenman Ulf-Häkan, Grönhagen-Riska Carola, Honkanen Eero  Urinary matrix metalloproteinase -8, -9, -14 and their regulators (TRY-1, TRY-2, TATI) in patients with diabetic nephropathy ............................................................54
Lemberg Kim, Siiskonen Antti, Kontinen Vesa K., Yli-Kauhaluoma Jari, Kalso Eija Pharmacological characterization of noroxymorphone as a new opioid for spinal analgesia.................................................................54

Määttä Marko, Kari Osmo, Tervahartiala Taina, Wahlgren Jaana, Peltonen Sirje, Kari Marjatta, Rytilä Paula, Saari Matti, Sorsa Timo Elevated expression and activation of matrix metalloproteinase 8 in tear fluid in atopic blepharoconjunctivitis.........................55

Mazzoni Annalisa, Pashley David H., Tay Franklin R., Gobbi Pietro, Orsini Giovanna, Ruggeri Alessandra Jr., Carrilho Marcela, Tjäderhane Leo, Di Lenarda Roberto, Breschi Lorenzo Immunohistochemical identification of MMP-2 and MMP-9 in human dentin: correlative FEI-SEM/TEM analysis .................................................................56

Meurman Jukka H. Infective endocarditis .................................................................56

Meurman Jukka H. Micro-cosmos of the mouth.........................................................57

Meurman Jukka H., Uittamo Johanna Oral micro-organisms in the etiology of cancer ........................................................................................................57

Meurman, Jukka H. Probiotics in oral biology and dentistry.........................................57

Mitsiadis Thimios A., Tucker Abigail S., De Bari Cosimo, Cobourne Martyn T., Rice David A regulatory relationship between Tbx1 and FGF signaling during tooth morphogenesis and ameloblast lineage determination...........................................58

Mohebbi Simin Z., Virtanen Jorma, Murtomaa Heikki, Vahid-Golpayegani Moitaba, Vehkalahti Miira Mothers as facilitators of oral hygiene in early childhood.....................58

Mohebbi Simin Z., Virtanen Jorma, Vahid-Golpayegani Moitaba, Vehkalahti Miira Feeding habits as determinants of early childhood caries in a population where prolonged breastfeeding is the norm ......................................................59

Nakano K., Nomura R., Nemoto H., Lapirattanakul J., Taniguchi N., Grönnroos Lisa, Alaluusua Satu, Ooshima T. Protein antigen in serotype k Streptococcus mutans clinical isolates .................................................................60

Nordblad Anne, Könönen Mauno, Suominen-Taipale Liisa Prevalence of removable dentures and need for repair .................................................................60
Salmela Eija, Sahlberg Carin, Alaluusua Satu, Lukinmaa Pirjo-Liisa  
Tributyltin impairs dentin mineralization and enamel formation in cultured mouse embryonic molar teeth.  

Salonen Elina, Koivikko Mika, Koskinen Seppo  
Acute facial trauma in falling accidents: MDCT analysis of 500 patients.  

Sargeran K., Murtomaa Heikki, Safavi S. M., Vehkalahti Miira, Teronen Olli  
Survival after diagnosis of cancer of the oral cavity.  

Sawanheimo Nora, Vehkalahti, Miira  
Preventive aspects in children's caries treatments preceding dental care under general anaesthesia.  

Seppänen Lotta, Lauhio Anneli, Lindqvist Christian, Suuronen Riitta, Rautemaa Riina  
Analysis of systemic and local odontogenic infection complications requiring hospital care.  

Smolka Koord, Kraehenbuehl Michel, Eggensperger Nicole, Hallermann Wock, Thoren Hanna, Iizuka Tateyuki. Smolka Wenko  
Fibula free flap reconstruction of the mandible in cancer patients: evaluation of a combined surgical and prosthodontic treatment concept.  

Söder P. O., Meurman Jukka H., Jogestrand T., Nowak J., Söder B.  
Matrix metalloproteinase-9 and tissue inhibitor of matrix metalloproteinase-1 in blood as markers for early atherosclerosis in subjects with chronic periodontitis.  

Suomalainen Anni, Vehmas Tapio, Kortesniemi Mika, Robinson Soraya, Peltola Jaakko  
Accuracy of linear measurements using dental cone beam and conventional multislice computed tomography.  

Suominen-Taipale Liisa, Nordblad Anne, Vehkalahti Miira  
Edentulousness and number of teeth.  

Suominen-Taipale Liisa, Vehkalahti Miira  
Quality assurance.  

Suominen-Taipale Liisa, Vehkalahti Miira  
Materials and methods.  

Suominen-Taipale Liisa, Nordblad Anne, Vehkalahti Miira  
Utilization of services.  

Swinnen S., Bailleul- Forestier I., Arte Sirpa, Nieminen Pekka, Devriendt K., Carels C.  
Investigating the etiology of multiple tooth agenesis in three sisters with severe oligodontia.  

9
Tarkkila L., Furuholm J., Tiitinen Aila, Meurman Jukka H. Oral health in perimenopausal and early postmenopausal women from baseline to 2 years of follow-up with reference to hormone replacement therapy ............................................................75


Thoren Hanna, Snäll J, Hallermann W., Kormi E., Törnwall J. Policy of routine titanium miniplate remoal after maxillofacial trauma ...............................................................76

Tuomainen Anita, Jauhiainen Matti, Kovanen Petri T., Metso Jari, Paju Susanna, Pussinen Pirkko Aggregatibacter actinomycetemcomitans induces MMP-9 expression and proatherogenic lipoprotein profile in apoE-deficient mice........................................77

Vardar-Sengul S, Buduneli Eralp, Turkoglu O., Buduneli Nurcan, Atilla Gül, Wahlgren Jaana, Sorsa Timo, Baylas Haluk The effects of selective COX-2 inhibitor/celecoxib and omega-3 fatty acid on matrix metalloproteinases, TIMP-1, and laminin-5gamma2-chain immunolocalization in experimental periodontitis ........................................78

Vehkalahti Miira Changes in oral health and health behaviour 1980-2000...................79

Vehkalahti Miira Spaces in dental arches ....................................................................79

Vehkalahti Miira, Varsio Sinikka, Hausen Hannu Dental status......................................79

Vehkalahti Miira, Knuuttila Matti Oral self-care ............................................................79

Vihinen Pia, Koskivuo Ilkka, Syrjänen Kari, Tervahartiala Taina, Sorsa Timo, Pyrhönen Seppo Serum matrix metalloproteinase-8 is associated with ulceration and vascular invasion of malignant melanoma.................................................................80


Xu Ling, Yu Zhao, Lee Hsi-Ming, Wolff Mark, Golub Lorne, Sorsa Timo, Kuula Heidi
Characteristics of collagenase-2 from gingival crevicular fluid and peri-implant sulcular fluid in periodontitis and peri-implantitis patients: pilot study ......................... 82

Functional outcome after total and subtotal glossectomy with free flap reconstruction ................................. 83

Yazdani R., Vehkalahti Miira, Nouri M., Murto M., Heikki M., Murtomaa H.
Oral health and treatment needs among 15-year-olds in Teheran, Iran ......................................................... 83

Yazdani Reza, Vehkalahti Miira, Nouri Mahtab, Murto M., Heikki M.
Smoking, tooth brushing and oral cleanliness among 15-year-olds in Tehran, Iran ........................................ 84

Yazdani Reza, Vehkalahti Miira, Nouri M., Murto M., Heikki M.
Validity of self assessment of oral health among 15-year-olds in Teheran, Iran .................................................. 84

ARTICLES IN FINNISH OR SWEDISH

Ahlberg Kristiina
Koettu bruksismi epäsäännöllistä vuorotyötä ja säännöllistä päävityötä tekevillä mediatyöntekijöillä ................................................................. 86

Aho Sanni, Nieminen Anja, Uitto, Veli-Jukka
Parodontiitin kokonaisriskin voi määrittää yksilöllisesti ...................................................................................... 87

Ali Musrati, Ahmed S.
Suun immuunipuolustus kroonista hyperplastista kandidoosia vastaan .............................................................. 87

Avellán Nina-Li
Kiivun aiheuttamat tulehdusmekanismit myötävaikuttavat ienkudoksen vaurioitumiseen ........................................ 88

Lehtonen Lasse, Virtanen Jorma
Hoitosuostumus hammashoidossa .......................................................... 89

Mäntylä Päivi
Milloin viimeksi passitit potilaasi suusairauksien asiantuntijalle ....... 89

Meurman Jukka H.
Amalgaami tiensä päässä .............................................................................. 90

Meurman Jukka H.
Hammashoitoyksikköjen vesilinjojen mikrobikylvo .................................. 90

Meurman Jukka H.
Husin nykyinen rakenne ei ole sattuma ..................................................... 90
Meurman Jukka H. HYKS 50 vuotta................................................................. 90

Meurman Jukka H. Muuutoksen tuulet .................................................................................................................. 90

Meurman Jukka H. Paljonko on päivittäin nautittava riittävä nestemäärä.................. 90

Meurman Jukka H. Refluksitaipotilas suun- ja hampaiden hoidon kannalta:
ylävatsavaivat ovat väestössä yleisiä ja ne voivat aiheuttaa haittavaikutuksia myös suussa.......................... 91

Meurman Jukka H. Vielä endokardiittiprofylaksista ........................................... 91

Meurman Jukka H., Lumio Jukka, Valtonen Ville, Jokinen Eero, Nieminen Markku S.,
Peltola Heikki, Koivula Irma, Vanhanen Hannu  Bakteeriendokardiitin uusi
antibioottiprofylaksisuositus ............................................................................................................................. 91

Meurman Jukka H., Lumio Jukka, Valtonen Ville, Jokinen Eero, Nieminen Markku S.,
Peltola Heikki, Koivula Irma., Vanhanen Hannu  Bakteeriendokardiitin uusi
antibioottiprofylaksisuositus ............................................................................................................................. 92

Mohebbi Simin Z. Varhaislapsuuden karies ja sen ehkäisy kehittyvän terveydenhuollon
maassa.......................................................................................................................... 92

Paju Susanna Suun tulehdukset : riski sydämelle................................................. 94

Peltola Jaakko Säteilyn oikeasta käytöstä vielä.................................................. 94

Salo Tuula, Sorsa Timo, Konttinen Yrjö T., Tjäderhane Leo, Kemppainen Pentti
Skriande brist på lärare och forskare ........................................................................... 94

Silvo Anna-Maija, Numminen Mauri, Murtoma Heikki   Oikein kohdennettu
anestesiahammashoito on lapsen edun mukaista ja taloudellista....................... 94

Sorsa Timo Väitöskirjan teko ei ole tuttavankauppaa........................................... 95

Vehkalahti Markus Hammaslääketiede ja tunteet................................................. 95

Vehkalahti Miira, Knuuttula Matti  Förebyggande vård främjar äldres munhälsa: Finland
vill flytta focus från reparatoriv vård till profylax ....................................................... 96

12
The present study was performed on media personnel who could be considered to be under sustained pressure at work due to intense on-going technological, organizational and economic changes. The study formed part of a comprehensive investigation of shift work and its sleep/awake consequences.

The general aim was to examine the relationships of self-reported bruxism and sleep quality among employees with or without irregular shift work. The study also focused on the possible associations of bruxism and orofacial pain. Some psychological, neurological and physiological factors known to be detrimental to sleep were also studied.

A questionnaire with several standard questions was mailed to all employees of the Finnish Broadcasting Company with irregular shift work (n=750; 57.0 % men) and to an equal number of randomly selected controls in the same company with regular eight-hour daytime work (42.4 % men). The mean age of invited subjects was 43.0 (SD 10.4) years in irregular shift work and 44.8 (SD 10.2) years in day work. The work duties of the present media personnel included journalism, broadcasting, programme production, technical support and administration. The questionnaire covered perceived bruxism (assessed with a five-point scale) and, among others, the following: demographic items, employment details, general health experience, physical status, pain symptoms, psychosomatic symptoms, psychosocial status, stress experience, work satisfaction and performance, perceptions of sleep and its awake consequences. The overall response rate was 58.3% (53.7% men). The response rate in the irregular shift work group was 82.3% (56.6% men) and in the regular daytime work group 34.3% (46.7% men). The invited subjects and respondents in both shift work and day work groups were similar as regards gender and age (NS).

Frequent self-reported bruxism was found among 10.6 % of subjects overall. The bruxism scores were evenly distributed in the irregular shift work and regular day work groups (NS). Similarly, a total of 43.6 % reported disrupted sleep and 36.2 % perceived their as sleep non-restorative. Current orofacial pain was found overall in 19.6 % of the study population. Among those reporting current pain 88.3 % had experienced it for over six months.

According to the multivariate analyses, self-reported bruxism and dissatisfaction with
current work shift schedule were significantly associated with most studied sleep variables. More frequent bruxism (p<0.01) and more severe stress (p<0.001) tended to occur more often among those subjects dissatisfied with their work shift schedule. It was found that dissatisfaction with one’s work shift schedule and not merely irregular shift work may aggravate stress and bruxism. In addition, frequent self-reported bruxism was associated with increased numbers of health care visits. The results also revealed significant associations between self-reports of bruxism and anxiety, and bruxism and orofacial pain experience.

Based on the multivariate analyses, it can be concluded that disrupted sleep and bruxism may be concomitantly involved in the development of orofacial pain. It may also be possible that self-reported bruxism indicates sleep problems and their adherent awake consequences in non-patient populations. It was suggested that subjectively conceptualized awareness of bruxism may be linked to stress-related states and behavior which could be useful knowledge for health care professionals.

PREADOLESCENTS AND THEIR MOTHERS AS ORAL HEALTH-PROMOTING ACTORS: NON-BIOLOGIC DETERMINANTS OF ORAL HEALTH AMONG TURKISH AND FINNISH PREADOLESCENTS

CINAR BASAK AYSE

The present study aimed to investigate how non-biologic determinants of oral health (behavior, cognition, and affect, maternal and societal influences) are interrelated with each other and with oral health among preadolescents in two different oral health care and cultural settings, Turkey and Finland. In addition, the association of their general well-being with their oral health was assessed.

The cross-sectional study of Turkish (n=611) and Finnish (n=223) school preadolescents in Istanbul and Helsinki, from the fourth, fifth, and sixth grades, aged 10 to 12, was based on self-administered and pre-tested health behavior questionnaires for them and their mothers as well as the youth’s oral health records. Both questionnaires assessed self-reported dental health and oral health behaviors along with cognitive-affective factors (self-efficacy and dental anxiety). In addition, health behavior questionnaires for preadolescents (PHBQ) included questions of self-esteem and self-reported gingival health, whereas those for mothers (MHBQ) surveyed societal factors, dietary habits and body-weight of preadolescents. PHBQ were completed in classes, whereas MHBQ were carried to and from home.

Dental examinations in Turkey based on World Health Organisation (WHO) criteria (1997) were carried out in the classrooms 2 weeks after the questionnaire survey by two
calibrated pediatric dentists. Finns’ oral health data came with permission from records at the Helsinki City Health Department.

Among the Turks, response rate for PHBQ was 97% (n=591) and 87% for the MHBQ (n=533). The corresponding Finnish rates were 65% (n=223) and 53% (n=182). Participation in oral health examinations was 95% for the Turkish (n=584) and 65% for the Finnish (n=223).

Clinically assessed dental status (DMFT) and self-reported oral health of Turkish preadolescents was significantly poorer than the Finns’. A similar association occurred for well-being measures (height and weight, self-esteem), but not for school performance. Turkish preadolescents were more dentally anxious and reported lower mean values of toothbrushing self-efficacy (TBSE) and dietary self-efficacy (DSE) than did Finns. The Turks less frequently reported recommended oral health behaviors (twice daily or more toothbrushing, sweet consumption on 2 days or less/week, decreased between-meal sweet consumption) than did the Finns. In both groups, those with high TBSE were more likely to practice the recommended toothbrushing. Similarly, all with high DSE were more likely to report recommended toothbrushing and sweet consumption. High levels of TBSE and DSE contributed to low dental anxiety in various patterns in both groups.

Turkish mothers less frequently reported dental health as being above average and recommended oral health behaviors as well as regular dental visits (once within 12 months). Their mean values for dental anxiety were higher and self-efficacy on implementation of twice-daily toothbrushing were lower than for the Finnish mothers.

All preadolescents were likely to imitate toothbrushing and sweet consumption behaviors of their mothers. In both groups, those who reported high TBSE were more likely to have mothers who practiced recommended toothbrushing. Among Finns, high maternal self-efficacy and low dental anxiety contributed positively to preadolescent’s recommended toothbrushing and high TBSE. Among the Turks, high maternal dental anxiety contributed to that of their children.

Among Turks, the mothers of public school preadolescents reported a poorer societal profile and oral health behaviors than did mothers of private school preadolescents. Public school preadolescents were more likely to imitate non-recommended toothbrushing and sweet-consumption behaviors of their mothers, whereas their counterparts in private school followed a similar trend for recommended maternal toothbrushing behavior.

Self-esteem and school performance were positively correlated with TBSE and DSE in both groups. Clustering between high self-esteem and low preadolescent- and maternal dental anxiety occurred in various patterns for Turks and Finns. Societal factors contributed to self-esteem among the Turks. Among all preadolescents, good school performance was a common predictor for recommended toothbrushing.
Oral health and well-being of preadolescents were interrelated. In both groups, DMFT was negatively correlated with better school performance. Body height and the societal factors were the common explanatory variables accounting for DMFT’s.

TBSE and school performance contributed positively to self-reported dental health, in common, among all preadolescents. High self-esteem and less frequent maternal sweet consumption among Finns, decreased number of children in the family, and recommended preadolescent toothbrushing among Turks were the other contributors to self-reported good dental health.

In the present study, non-biologic determinants of oral health were interrelated and related to well-being measures in various patterns, and these all contributed to the oral health of preadolescents. Based on these findings, a need exists for improvement in Turkish preadolescents’ and their mothers’ oral health behaviors, cognition, and affect. The paired associations separately studied in the literature; self-efficacy—behavior, child—mother health behavior, general well-being—oral health, self-esteem—school performance, were all found in a holistic theoretical framework, regardless of different cultural, socio-economic, and health-care systems in the two countries, Turkey and Finland. This may indicate that the respective associations are turning out to be part of the global health culture, and therefore a need exists for similar further research including the complex interaction pathways between these associations in countries with different developmental, cultural, and health-care characteristics. Clarifying these complex relations by psychosocial holistic approaches in different cultural settings and socio-economic contexts may provide a multidimensional understanding of preadolescents’ oral health behavior that will provide enhancement of their well-being and oral health.

PREVENTIVE ORIENTATION AND CARIES MANAGEMENT BY IRANIAN DENTISTS.

GHASEMI HADI

The present study investigated the preventive orientation of Iranian dentists and what they perceived as barriers to the provision of preventive dental care.

The target population comprised Iranian general dental practitioners that took part in two major dental congresses in Tehran, Iran, one in December 2004, and the other in July 2005. Data was gathered by means of a self-administered questionnaire which was filled in anonymously. The questionnaire covered dentists’ knowledge of caries prevention, attitudes towards preventive dental care, self-assessed oral health behaviour, restorative treatment threshold, risk-based preventive practice, involvement in smoking cessation, perceived barriers for carrying out preventive dental care, practice-related information, activity in continuing education and background information.
In total, 1033 dentists completed the questionnaire, and 980 were eligible for the present study; their mean age was 37.3 years, and 64% were men. The dentists showed high levels of knowledge of and positive attitudes towards preventive dental care. They, however, underestimated the role of fluoride toothpaste. More than half the dentists complied with the optimal level of oral self-care and almost half reported having visited a dentist for a routine dental check-up during the last year. There was a strong tendency among the dentists to intervene in proximal enamel caries restoratively. The majority of the dentists agreed with applying well-known preventive measures, and more than half reported that they always recommend that a smoking patient quit the habit. Dentists’ level of preventive input was positively correlated with their knowledge of and attitudes towards preventive dental care. Moreover, this correlation was evident regarding the dentists’ activities for their own oral health. Patient-related factors were the most frequently cited barrier among these dentists for the provision of preventive dental care. Generally, female dentists demonstrated a stronger preventive orientation than did male dentists.

It can be concluded that there is room for improvement in dentists’ knowledge of and attitudes towards preventive dental care, and this requires placing more emphasis on relevant areas in dental education. More understanding of barriers to the provision of preventive dental care is required to facilitate dentists' preventive practice.

INFLAMMATION AND TISSUE DESTRUCTION IN ARTHRITIDES AND PERIODONTAL DISEASE.

LINDY OTSO

The principal aim of this study was to examine diseases characterized by inflammatory injury, especially human arthritides and periodontitis, with specific interest to final effector enzymes of tissue destruction and address the possible future tools to prevent permanent tissue loss.

We used biochemical and immunological methods applied to synovial tissue samples, samples of synovial fluid, and samples of peripheral blood. In Study IV, we used established clinical inflammatory injury indicator probing pocket depth and used it to derive a new clinical measure of systemic burden, periodontal inflammatory burden index.

In study I, we showed a difference in the effector enzymes of peripheral blood leukocytes and leukocytes from inflamed synovial fluid of rheumatoid arthritis and reactive arthritis patients. The effector enzyme activities were higher in synovial fluid than in peripheral blood. In study II, we showed the presence of collagenase-3 in rheumatoid synovial tissue samples, relative resistance of the enzyme to inhibition in vitro and developed an electrophoretic method for detection of collagenase-3 in presence of collagenase-1. In
study III, we carried out an open label study of doxycycline treatment of 12 RA patients. During the treatment period, we observed an improvement in several of the biochemical and psychosocial variables used to assess the status of the patients. In study IV, we showed a clearly lower level of periodontal inflammatory injury in chronic periodontitis patients referred for periodontal treatment. In this cross-sectional pilot study, we showed lower levels of inflammatory injury in periodontitis patients using statin than in those not receiving statin treatment. The difference was of same magnitude in patients using simvastatin or atorvastatin. The weighted index of inflammatory burden, PIBI, which emphasizes the burden imposed by the deepest pathological pockets on the system showed values consistent with a wider scale to ease future studies on the inflammatory burden associated with periodontitis.

EARLY CHILDHOOD CARIES AND A COMMUNITY TRIAL OF ITS PREVENTION IN TEHRAN, IRAN.

MOHEBBI SIMIN Z.

The present study assessed the prevalence of and risk factors for Early Childhood Caries (ECC) in children 12- to 36- month-old and evaluated the impacts of an educational intervention on ECC prevention in the 12- to 15-month-old cohort.

The target population included 12- to 36-month-olds (n = 504) and their mothers attending the vaccination offices of 18 randomly selected public health centers of Tehran city. The mother was first interviewed by a structured questionnaire covering background factors, feeding habits, daytime sugar intake, mother’s and child’s oral cleaning habits, and mother’s perception toward her ability to maintain the child’s oral hygiene; then the child’s clinical dental examination was carried out covering caries experience and dental plaque status.

In addition, the 12- to 15-month-olds (n = 242) were assigned to a six-month interventional study. The 18 health centers were randomly allocated into two groups for intervention and one for control. The mothers in the intervention groups received education on caries prevention from the vaccination staff with extra motivation as reminder phone calls in one of the intervention groups. The outcome was measured as differences in increments of enamel and dentinal caries.

The results showed that the prevalence of ECC was rather high (3%-26%) in the three age groups, and almost all dmft was due to untreated caries. The majority of the children showed visible plaque on central upper incisors. Oral cleaning on a daily basis was reported for just 68% of mothers and 39% of children. The frequency of oral cleaning and good oral hygiene of the child were directly proportional to the mother’s own toothbrushing frequency. Of the children, 98% were solely or partly breastfed. ECC was
more likely to occur among those for whom the burden of milk-bottle feeding at night existed (OR = 4.9), while breastfeeding per se, its duration, and its nighttime burden were not related to ECC. The indicator of daytime sugar intake also did not show a clear relationship with ECC. The educational intervention applying a pamphlet with some extra motivation and implemented by non-dental staff of public health centers appeared to be successful in preventing caries increments.

To improve oral health status among the young children in countries with a developing oral health system, community-based oral health educational programs should be established by involving non-dental staff of health settings who are more frequently in contact with these children. Parents should be encouraged to realize that they play the dominant role in the oral health care of their children. Parents’ own oral health behaviors should be emphasized in dental and general health settings.

ORAL IMMUNE DEFENSE AGAINST CHRONIC HYPERPLASTIC CANDIDOSIS.

MUSRATI AHMED S. ALI

Candida yeast species are widespread opportunistic microbes, which are usually innocent opportunists unless the systemic or local defense system of the host becomes compromised. When they adhere on a fertile substrate such as moist and warm, protein-rich human mucosal membrane or biomaterial surface, they become activated and start to grow pseudo and real hyphae. Their growth is intricately guided by their ability to detect surface defects (providing secure “hiding”, thigmotropism) and nutrients (source of energy, chemotropism).

The hypothesis of this work was that body mobilizes both non-specific and specific host defense against invading candidal cells and that these interactions involve resident epithelial cells, rapidly responding non-specific protector neutrophils and mast cells as well as the antigen presenting and responding den-dritic cell – lymphocyte – plasma cell system. It is supposed that Candida albicans, as a result of dar-winistic pressure, has developed or is utilizing strategies to evade these host defense reactions by e.g. adhering to biomaterial surfaces and biofilms.

The aim of the study was to assess the host defense by taking such key molecules of the anti-candidal defense into focus, which are also more or less characteristic for the main cellular players in candida-host cell interactions. As a model for candidal-host interaction, sections of chronic hyperplastic candidosis were used and compared with sections of non-infected leukoplakia and healthy tissue.
In this thesis work, neutrophil-derived anti-candidal α-defensin was found in the epithelium, not only diffusely all over in the epithelium, but as a strong α-defensin-rich superficial front probably able to slow down or prevent penetration of candida into the epithelium. Neutrophil represents the main host defence cell in the epithelium, to which it can rapidly transmigrate from the circulation and where it forms organized multicellular units known as microabscesses (study I). Neutrophil chemotactic inter-leukin-8 (IL-8) and its receptor (IL-8R) were studied and were surprisingly also found in the candidal cells, probably helping the candida to keep away from IL-8- and neutrophil-rich danger zones (study IV). Both leukocytes and resident epithelial cells contained TLR2, TLR4 and TLR6 receptors able to recognize candidal structures via utilization of receptors similar to the Toll of the banana fly. It seems that candida can avoid host defence via stimulation of the candida permissive TLR2 instead of the candida injurious TLR4 (study V). TLR also provides the danger signal to the immune system without which it will not be activated to specifically respond against candidal antigens. Indeed, diseased sites contained receptor activator of nuclear factor kappa B ligand (RANKL; II study), which is important for the antigen capturing, processing and presenting dendritic cells and for the T lymphocyte activation (study III).

Chronic hyperplastic candidosis provides a disease model that is very useful to study local and systemic host factors, which under normal circumstances restrain C. albicans to a harmless commensal state, but failure of which in e.g. HIV infection, cancer and aging may lead to chronic infection.

CRANIOFACIAL SUTURES: DEVELOPMENT, DISEASE AND TREATMENT.
RICE DAVID

Foreword
This epic-making book – Craniofacial Sutures – edited by David Rice together with his many research articles make him magister mundi of sutural biology. Elsewhere [1], I have discussed suture systems of the skull and their respective anatomic boundaries (table 1). Pruzansky [2] conceived of the skull as a community of bones separated by articulations, whereas Moffett [unpubl. manuscript] thought of the skull as a community of articulations separated by bones. Several different types of articulations were recognized by Moffett (table 2). The two views of Pruzansky and Moffett are actually complementary and simply represent different contexts in which to view development of the skull. This volume – Craniofacial Sutures – elegantly demonstrates both of these contexts.

The book is divided into 12 sections. David Rice himself is responsible for three of these: (a) Developmental Anatomy of Craniofacial Sutures; (b) Locate, Condense, Differentiate, Grow and Confront: Developmental Mechanisms Controlling Intramembranous Bone and Suture Formation and Function, and (c) Clinical Features of Syndromic Craniosynostosis.
He has invited a number of world class biologists, geneticists, and clinicians to join him by writing intriguing chapters on a variety of different sutural topics. The molecular biology of craniosynostosis is advancing at a very rapid pace since my last reviews of the subject [3, 4].

I highly recommend this magnificent book to evolutionary biologists, craniofacial biologists, anthropologists, geneticists, craniofacial surgeons, plastic surgeons, oral and maxillofacial surgeons, orthodontists, and others with an interest in craniofacial and sutural biology.

David Rice is to be congratulated for spearheading this splendid volume.

M. Michael Cohen Jr.
Professor Emeritus of Pediatrics,
Dalhousie University, Halifax, N.S., Canada

ORAL CANCER IN TEHRAN, IRAN: AN APPROACH FOR UNDERSTANDING DISEASE BURDEN.

SARGERAN KATAYOUN

The present study investigated the burden of oral cancer in Tehran, Iran in terms of patient and tumour characteristics, survival rate, and delay in diagnosis, with the main focus on oral cavity cancers.

For exploring the characteristics of malignant oral tumours, data were obtained from records of 1042 patients diagnosed with invasive oral cancers during 1993-2003 in 30 major hospitals in Tehran, and analysed in three groups: tumours of the lips, oral cavity, and major salivary glands. For survival analysis, 470 primary oral cavity and 82 lip cancer patients diagnosed during 1996-2003 were followed from the date of diagnosis to late 2005. To assess the time elapsed between patients’ first awareness of symptoms and the final diagnosis (diagnostic delay) 100 consecutive patients with primary squamous cell carcinoma (SCC) of the oral cavity who were referred to three university hospitals in Tehran during September 2004 to September 2006 were studied. Diagnostic delay was analysed in two phases: 1) time from onset of symptoms to the patient’s first professional visit (patient delay) and 2) time from the first professional visit to the final diagnosis (professional delay).

At the time of diagnosis, most oral cavity cancer patients were at advanced stages. The overall five-year survival rates of patients with oral cavity and lip cancer were 30% and 62%, lower than rates reported from western countries. Oral cancer patients’ survival was negatively associated with the tumour stage at diagnosis. The findings of this study revealed that the mean diagnostic delay was high (7.2 months, SD 7.5), in particular, higher than that reported from developed countries. In general, “patient delay” constitutes
a substantial part of the total time elapsed between the onset of symptoms and diagnosis.

Based on the findings of this study, developing preventive programmes that focus on raising public awareness about the signs and symptoms of oral cancer is essential in promoting earlier diagnosis. In addition, health care professionals, especially dentists and oral hygienists, should be empowered to improve early diagnosis and gain better treatment outcomes for oral cancer patients in Tehran, Iran.

ORAL HEALTH IN THE FINNISH ADULT POPULATION. HEALTH 2000 SURVEY.

SUOMINEN-TAIPALE LIISA
Helsinki: National Public Health Institute, Kansanterveyslaitoksen julkaisuja, KTL B 25 / Kansanterveyslaitos; pp. 95, tbl., 2008
ISBN 978-951-740-851-6 (nid.)

A comprehensive Health 2000 Survey was carried out in 2000–2001. The survey was conducted in two nationally representative random population samples and in a third sample that was followed-up for 20 years. The sample that was studied in most detail comprised 8,028 adults aged 30 years or over. The other two populations surveyed were young adults aged 18 to 29 years and subjects who had participated in the Mini-Finland Survey 20 years earlier.

The Health 2000 Survey included an examination of oral health. In subjects aged 30 or over, data on oral health were collected by means of interviews, postal questionnaires, clinical oral examinations (6,335 participants) and panoramic radiography (6,115 participants). This report describes the findings concerning adults aged 30 or over and compares the findings with those obtained in the nationally representative Mini-Finland Survey 20 years earlier.

Oral health behaviour
The coverage of dental care was high: 69% of all adults and 78% of the dentate adults had visited a dentist during the past two years. Most dentate adults visited a dentist regularly. With respect to dental care received, preventive measures were alarmingly infrequent: only 7% reported having received instructions how to brush teeth. Of men, 46%, and of women, 77%, reported brushing their teeth twice a day.

Oral health
Among Finnish adults, periodontal diseases and caries were still common, periodontal diseases being the single most common type of oral diseases. Deepened periodontal pockets (4 mm or more) were found in two out of three dentate subjects; even in the youngest age group (30–34) half of the subjects had deepened pockets. Among men 69% and among women 78% of all teeth with periodontal pockets were diagnosed in 25% of the dentate subjects. Caries occurred in 31% of dentate subjects. Of all decayed teeth,
70% was diagnosed in 10% of all dentate subjects. Among subjects aged 30–64 years, 6% had lost all teeth, among subjects aged 65 years or over 44%. Every other subject aged 75 years or over had a full denture, and one-fifth of those aged over 55 had a partial removable denture.

Oral mucosal lesions occurred frequently in persons who wore removable dentures, and many of the dentures were in need of repair. Of the dentate, 60% had radiographically diagnosed, endodontically treated teeth. Vertical infrabony pockets were seen in 10% of the dentate subjects, and apical periodontitis in 27%, most often in endodontically treated teeth.

**Differences between population groups**
Marked socio-economic variety occurred in adult oral health, and it showed a particularly strong association with level of education. People with the least education had the most oral diseases. They also were the least active in oral self-care and thus constitute a highrisk group for poor oral health. There were marked differences in oral health between the age groups, too. Although the youngest adults aged 30–34 enjoyed the best clinically assessed oral health, many of them reported oral health-related symptoms and problems. In the age group 45–64, the dominant characteristics were high numbers of filled teeth, periodontal diseases and radiographic findings. In the oldest age groups a large percentage was edentulous, and many dentate persons wore removable dentures. Among the middleaged and the elderly there was considerable need for prosthetic dental treatment. Women had better oral health than men. Substantial gender differences were observed in health behaviour and oral self-care. Women visited a dentist more often and more regularly than men. Women also took better care of their oral hygiene than men. In northern and eastern Finland edentulousness was more frequent and dentate persons had fewer teeth than in other parts of the country.

**Changes over the past 20 years**
Oral health has improved over the past 20 years. The most prominent improvements were the decrease in the prevalences of edentulousness and caries. There have also been significant increases in the use of dental care services in the past 20 years. In 2000, dental check-ups were more frequent than 20 years ago, particularly among those aged 55 or over.

In that age group, one in two dentate adults (65% of women and 49% of men) reported having a dental check-up at least once every two years. Brushing teeth at least twice a day was more frequent than 20 years ago, but even so the frequency of brushing among men in 2000 was lower than the frequency was for women 20 years ago. Adult oral health has improved across the whole population. The most prominent improvements were seen in the youngest age groups and in persons with the most education.
ARTICLES IN ENGLISH

ASSOCIATIONS OF REPORTED BRUXISM WITH INSOMNIA AND INSUFFICIENT SLEEP SYMPTOMS AMONG MEDIA PERSONNEL WITH OR WITHOUT IRREGULAR SHIFT WORK [ ELEKTRONINEN AINEISTO. ]

AHLBERG KRISTIINA, JAHKOLA ANTTI, SAVOLAINEN ASLAK, KÖNÖNEN MAUNO, PARTINEN MARKKU, HUBLIN CHRISTER, SINISALO JUHA, LINDHOLM HARRI, SARNIA SEppo, AHLBERG JARI

Head & face medicine 4: 4, 2008

BACKGROUND: The aims were to investigate the prevalence of perceived sleep quality and insufficient sleep complaints, and to analyze whether self-reported bruxism was associated with perceptions of sleep, and awake consequences of disturbed sleep, while controlling confounding factors relative to poor sleep. METHODS: A standardized questionnaire was mailed to all employees of the Finnish Broadcasting Company with irregular shift work (n = 750) and to an equal number of randomly selected controls in the same company with regular eight-hour daytime work. RESULTS: The response rate in the irregular shift work group was 82.3% (56.6% men) and in the regular daytime work group 34.3% (46.7% men). Self-reported bruxism occurred frequently (often or continually) in 10.6% of all subjects. Altogether 16.8% reported difficulties initiating sleep (DIS), 43.6% disrupted sleep (DS), and 10.3% early morning awakenings (EMA). The corresponding figures for non-restorative sleep (NRS), tiredness, and sleep deprivation (SLD) were 36.2%, 26.1%, and 23.7%, respectively. According to logistic regression, female gender was a significant independent factor for all insomnia symptoms, and older age for DS and EMA. Frequent bruxism was significantly associated with DIS (p = 0.019) and DS (p = 0.021). Dissatisfaction with current work shift schedule and frequent bruxism were both significant independent factors for all variables describing insufficient sleep consequences. CONCLUSION: Self-reported bruxism may indicate sleep problems and their adherent awake consequences in non-patient populations.
The present study comprised 101 (48 men) employees of the Finnish Broadcasting Company with or without irregular shift work, but all with a work week of five shifts in a row followed by 2 days off. The mean age of the subjects was 41.0 years (SD = 9.9). The BiteStrip, a single-use disposable EMG device was used for one night during the work week to detect sleep bruxism. The Actiwatch Plus actigraph was worn on the non-dominant wrist for the entire week to evaluate sleep. Total sleep time and fragmentation index, the latter as a measure of sleep efficiency was calculated for the present study. The BiteStrip scores among the participants were: 0- no bruxism: 52.2% (according to the manufacturer, comparable to a sleep laboratory bruxism count of up to 39 over 5 h), 1- mild: 29.3% (40-74 counts), 2- moderate: 12.0% (75-124 counts) and 3- severe: 6.5% (>125 counts). Severe bruxers slept less during the work week than non-bruxers (P = 0.009), but severe bruxers slept slightly more than non-bruxers during days off. The group means of the sleep fragmentation index decreased from start towards the middle of the work week and increased during days off (P = 0.016). The levels of the fragmentation indices were consistently higher in accordance with bruxism severity (P = 0.013). It was concluded that bruxism has a coherent relationship with sleep efficiency and it can be detected at home with a low cost device.

OBJECTIVE: To explore the reliability of identification of anatomic landmarks on lateral skull radiographs of young unaffected individuals that has conventionally been used to diagnose pathologic relationships in the craniovertebral junction. MATERIAL AND METHODS: From the Helsinki longitudinal growth study, 20 randomly selected lateral radiographs were analyzed and re-analyzed by two examiners. Both located seven cephalometric landmarks based on which five measurements were calculated. The differences of results were compared. With similar method three radiographs were analysed by 11 examiners and results were compared. RESULTS: Some anatomic landmarks were easier to locate than others on lateral skull radiographs leading to differences in measurements based on them. We found the magnitude of the difference to be dependent on the landmark serving as reference. Inter- and intra-examiner errors were of similar magnitude, although intra-examiner error declined in the repeated landmark
Identification. Variation in a single landmark location had in general little effect on the measurement value. CONCLUSION: Variations in landmark location lead to differences in numeric evaluation of the anatomic relationships in the skull base area. These differences were, however, shown to have little clinical significance. Hence, the documented methods are applicable for screening of basilar pathology.

IN VIVO DEGRADATION OF POLY(DTE CARBONATE) MEMBRANES: ANALYSIS OF THE TISSUE REACTIONS AND MECHANICAL PROPERTIES

ASIKAINE ANTII, PELTO MIKA, NOPONEN JUKKA, KELLOMAKI MINNA, PIHLAJAMAKI HARRI, LINDQVIST CHRISTIAN, SUURONEN RIITTA

Different bioabsorbable polymers and their co-polymers have been used to construct an optimal material for guided bone regeneration applications. Our aim was to evaluate a novel bioabsorbable material in a soft tissue environment. In this study, a poly(DTE carbonate) membrane (0.2-0.3 mm) was implanted into 20 NZW rabbits’ subcutaneous pouches for 6, 12, 24 and 52 weeks. The material was evaluated by means of histological reactions to the material and mechanical properties of the membrane. Based on this study, it can be concluded that poly(DTE carbonate) elicited a very modest foreign body reaction in the soft tissues. This reaction was uniform throughout the study. Varying amounts of calcification was seen in the fibrous capsule surrounding the implant. The number of calcified bodies did not correlate to healing time.

EXPERIMENTAL TOOTH PAIN ELEVATES SUBSTANCE P AND MATRIX METALLOPROTEINASE-8 LEVELS IN HUMAN GINGIVAL CREVICE FLUID

AVELLÁN NINA-LI, SORSA TIMO, TERVAHARTIALA TAINA, FORSTER CLEMENS, KEMPFPAINEN PENTTI

OBJECTIVE: Tooth pain can induce a neurogenic inflammatory reaction in gingiva in association with local elevations of matrix metalloproteinase (MMP)-8, which is considered the major tissue destructive protease in gingival crevice fluid (GCF). The pro-inflammatory neuropeptides released by sensory nerves coordinate the activities of the immuno-effector cells and may influence the secretion of MMP-8. With this background, we studied whether experimental tooth pain can trigger changes in GCF levels of the neuropeptide substance P (SP) and MMP-8. MATERIAL AND METHODS: The GCF SP levels of stimulated and non-stimulated teeth were analyzed for SP using a competitive enzyme immunoassay (EIA). The GCF MMP-8 levels were determined by quantitative immunofluorometric assay (IFMA). RESULTS: Painful stimulation of the
upper central incisor caused significant elevations in GCF SP and MMP-8 levels of the stimulated tooth. At the same time, the GCF SP and MMP-8 levels of non-stimulated control teeth were unchanged. CONCLUSIONS: These data indicate that experimental tooth pain can induce local elevations of SP and MMP-8 levels in GCF simultaneously. This supports the possibility of a local neurogenic spread of inflammatory reactions from intrapulpal to surrounding periodontal tissues.

**DENTAL FINDINGS IN DIABETIC ADULTS**

BAKHSHANDEH S, MURTOMAA HEIKKI, VEHKALAHTI MIIRA, MOFID R., SUOMALAINEN KIMMO  
Caries research 42: 14-18, 2008

The dental status of dentate diabetic adults (n = 299) and its associations with diabetes-related factors was explored in Tehran, Iran. Presence of diabetes-related complications made no difference in mean values of DMFT, but was associated with a higher number of decayed and missing teeth, and fewer filled teeth. Higher level of HbA1c was associated with higher DMFT for men, but not for women. In conclusion, the results suggest a possible association between the level of metabolic control of diabetes mellitus and cumulative caries experience.

**ORAL SELF-CARE AND USE OF DENTAL SERVICES AMONG ADULTS WITH DIABETES**

BAKHSHANDEH SOHELLA, MURTOMAA HEIKKI, VEHKALAHTI MIIRA, MODIF RASOUL, SUOMALAINEN KIMMO  

PURPOSE: To investigate the oral health behaviour and the smoking habits among diabetic adults with regard to diabetes-related factors and their background information. MATERIALS AND METHODS: In 2005, a questionnaire was conducted among diabetic adults (N = 299) in Tehran, Iran. The subjects were invited to the dental clinic and were asked to complete a self-administered questionnaire. In addition to their background information, the questionnaire requested information on smoking, oral self-care, dental attendance, year of onset of diabetes and organ complications related to diabetes. The data related to the type of diabetes and the latest value of glycosylated haemoglobin level (HbA1c) were obtained from the patient records at the diabetic clinic. Chi-square test and binary logistic regression model were used for statistical analyses. RESULTS: Of all the subjects, 29% reported brushing their teeth on a twice-daily basis. Women (P = 0.05) reported higher frequencies of twice-daily tooth brushing. Subjects with moderate diabetic control (HbA1c = 7.6-8.5%) showed the highest rate for twice-daily tooth
brushing (P < 0.001). Of all the subjects, 47% reported having visited a clinician within
the past 12 months; this rate was the highest among those without diabetes-related
complications (52% versus 41%; P = 0.05). Subjects who had a physician referral were
more likely to report having had a dental visit within the past 12 months (OR = 4.4; CI =
1.9-10.2). CONCLUSIONS: The present results call for improvement in the level of oral
self-care and the regularity of dental checkups among diabetic adults to compensate for
their increased risk for oral diseases.

IMPACT OF INSURANCE SCHEME ON ADULTS' DENTAL CHECK-UPS IN A
DEVELOPING ORAL HEALTH CARE SYSTEM

BAYAT FAIBORZ, VEHKALAHTI MIIRA, ZAFARMAND A HAMID, TALA
HEIKKI
European journal of dentistry 2 (1): 3-10, 2008

OBJECTIVES: To find out the relationship between dental insurance and demand for
dental care, the present study evaluated impact of insurance scheme on adults' dental
check-ups in a developing oral health care system. METHODS: The target population
included adults in the city of Tehran where the only telecommunication company
provides 90% of the 1.9 million households with a fixed telephone. Of the 1531 subjects
who answered the phone call, 224 were outside the target age (under 18), 67 said that
they never had visited a dentist, and 221 refused to respond, leaving 1019 subjects in the
final sample. Each interview lasted 15 minutes and was carried out using a structured
questionnaire with fixed and open-ended questions. RESULTS: 71% of the subjects
reported having dental insurance and 16% having visited a dentist for a check-up; 55%,
more women than men, reported having had a dental visit within the past 12 months.
CONCLUSIONS: The present results revealed the positive relationship between
insurance and demand for dental care. Those having dental insurance were more likely to
go to check-ups despite their generally low rate found in this country with a developing
oral health care system. In such countries, health insurance schemes should therefore
include obligatory regular dental check-ups to emphasize prevention-oriented dental care.

CHRONIC SINUSITIS ASSOCIATED WITH THE USE OF UNRECOGNIZED
BONE SUBSTITUTE

BEKLEN ARZU, PIHAKARI ANTTI, RAUTEMAA RIINA, HIETANEN JARKKO,
ALI AHMED, KONTTINEN YRJÖ T.

Bone grafts are used for bone augmentation to ensure optimal implant placement.
However, this procedure may sometimes cause sinusitis. The case of a 44-year-old
woman with the diagnosis of recurrent and chronic sinusitis of her right maxillary sinus with a history of dental implant surgery is presented. After several attempts with normal standard sinusitis therapy, unrecognized bone substitute was removed from the sinus cavity, which finally led to resolution of the sinusitis. This case reiterates the importance of a careful examination, consultation, and second opinion for the selection of optimal treatment.

CHARACTERIZATION OF COMPLEMENT FACTOR H BINDING TO YERSINIA ENTEROCOLITICA SEROTYPE O:3.

BIEDZKA-SAREK M, JARVA H, HYYTIÄINEN H, MERI S, SKURNIK M
Infection and immunity 76 (9): 4100-4109, 2008

A number of bacteria bind factor H (FH), the negative regulator of the alternative complement pathway, to avoid complement-mediated killing. Here we show that a gram-negative enteric pathogen, Yersinia enterocolitica serotype O:3, uses two virulence-related outer membrane (OM) proteins to bind FH. With Y. enterocolitica O:3 mutant strains displaying different combinations of surface factors relevant to complement resistance, we demonstrated that the major receptor for FH is the OM protein YadA. Another OM protein, Ail, also contributes to FH binding provided that it is not blocked by distal parts of the lipopolysaccharide (i.e., the O antigen and the outer core hexasaccharide). Importantly, we demonstrated that surface-bound FH was functional; both YadA- and Ail-bound FH displayed cofactor activity for factor I-mediated cleavage of C3b. With truncated recombinant FH constructs, we located the binding site of Ail specifically to short consensus repeats 6 and 7 of FH, while YadA showed a novel type of FH-binding pattern and appears to bind FH throughout the entire FH molecule. We thus conclude that Y. enterocolitica, via YadA and Ail, recruits functionally active FH to its surface. FH binding appears to be an important mechanism of the complement resistance of this pathogen.

AMYLASE-BINDING PROTEIN B OF STREPTOCOCCUS GORDONII IS AN EXTRACELLULAR DIPEPTIDYL-PEPTIDASE

CHAUDHURI B, PAJU S, HAASE EM, VICKERMAN MM, TANZER JM, SCANNAPIECO FA.
Infection and immunity 76(10): 4530-4537, 2008

The oral commensal bacterium Streptococcus gordonii interacts with salivary amylase via two amylase-binding proteins, AbpA and AbpB. Based on sequence analysis, the 20-kDa AbpA protein is unique to S. gordonii, whereas the 82-kDa AbpB protein appears to share sequence homology with other bacterial dipeptidases. The aim of this study was to verify
the peptidase activity of AbpB and further explore its potential functions. The abpB gene was cloned, and histidine-tagged AbpB (His-AbpB) was expressed in Escherichia coli and purified. Its amylase-binding activity was verified in an amylase ligand binding assay, and its cross-reactivity was verified with an anti-AbpB antibody. Both recombinant His-AbpB and partially purified native AbpB displayed dipeptidase activity and degraded human type VI collagen and fibrinogen, but not salivary amylase. Salivary amylase precipitates not only AbpA and AbpB but also glucosyltransferase G (Gtf-G) from S. gordonii supernatants. Since Streptococcus mutans also releases Gtf enzymes that could also be involved in multispecies plaque interactions, the effect of S. gordonii AbpB on S. mutans Gtf-B activity was also tested. Salivary amylase and/or His-AbpB caused a 1.4- to 2-fold increase of S. mutans Gtf-B sucrase activity and a 3- to 6-fold increase in transferase activity. An enzyme-linked immunosorbent assay verified the interaction of His-AbpB and amylase with Gtf-B. In summary, AbpB demonstrates proteolytic activity and interacts with and modulates Gtf activity. These activities may help explain the crucial role AbpB appears to play in S. gordonii oral colonization.

INDIVIDUAL AND MATERNAL DETERMINANTS OF SELF-REPORTED DENTAL HEALTH AMONG TURKISH SCHOOL CHILDREN AGED 10-12 YEARS

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Community dental health 25: 84-88, 2008

OBJECTIVE: To assess the influence of maternal and individual characteristics on self-reported dental health of Turkish school children aged 10-12 years with different socio-economic backgrounds. METHOD: A cross-sectional study of children aged 10 to 12 (n = 611) using paired matches of self-administered questionnaires for children and their mothers. Clinical examinations based on World Health Organization criteria were conducted. The participation rate was 97% (n = 591) for the children, 87% (n = 533) for the mothers, and 95% (n = 584) for the clinical examinations. Multiple linear regression, descriptive statistics, Spearman correlation coefficient and chi-square test were applied. RESULTS: Private school children’s mothers were more likely to have had higher education (95% at least high school) than public school children’s mothers (11%); they reported better dental health (above average) than did mothers of public school children (p = 0.001). Among all mothers, those with above average self-reported dental health reported more regular dental visits than did those with below average scores (p = 0.001). Frequency of regular dental visits and toothbrushing among children attending public schools (5%, 65%) were lower than those attending private school (43%, 79%), (p = 0.001). The mean DMFS was negatively correlated with self-reported dental health (r(s) = -0.187, p = 0.001). Toothbrushing frequency and school performance were the common factors positively associated with self-reported dental health, among all children. CONCLUSION: The results emphasize the important role of mothers and their socio-economic background in enhancement of children's dental health. Their active role in
conjunction with the potential of self-assessment provides a good basis for establishing and improving self-care among children, in developing countries in particular.

CLUSTERING OF OBESITY AND DENTAL HEALTH WITH LIFESTYLE FACTORS AMONG TURKISH AND FINNISH PRE-ADOLESCENTS

CINAR BASAK, MURTOMAA HEIKKI

**Background:** This study aims to assess any clustering between obesity, number of decayed, missing, and filled teeth (DMFT), television (TV) viewing, and lifestyle factors among pre-adolescents living in 2 countries with different developmental status and oral health care systems - Turkey and Finland. **Patients and Methods:** A cross-sectional study of Finnish (n = 338) and Turkish (n = 611) preadolescents, 10-12 years old, was undertaken with preadolescent oral health data and health behavior questionnaires for preadolescents and their mothers. The parameters examined were DMFT, body mass index (BMI), leisure time activities (TV viewing), and lifestyle factors (family dinners and dietary habits) of pre-adolescents. Data analysis included factor analysis, Student's t-test, and Chi-square tests by cross tabulation. **Results:** Turkish pre-adolescents were more obese and had poorer dental health than their Finnish counterparts (p < 0.05). Turkish and Finnish pre-adolescents drinking fizzy drinks more than 3 times a week were more likely to watch TV for 22 h/school day (odds ratio (OR) = 1.51, 95% confidence interval (CI) 1.00-2.28) than those consuming them once a week or less (OR = 3.06, 95% CI 1.39-6.75; p < 0.05). Factor analysis revealed that DMFT and obesity shared the same cluster among Turkish and Finnish pre-adolescents. **Conclusion:** Both medical and dental examination of any pediatric patient should include BMI, leisure time activities, and dietary habits as well as socio-economic status.

THE LIFE-COURSE APPROACH IN ASSESSMENT OF DENTAL HEALTH

CINAR BASAK AYSE, MURTOMAA HEIKKI, TSEVEENJAV BATTSETSEG

**OBJECTIVES:** Interest is growing on conceptualizing dental disease aetiology under the life-course approach. The aim of this study was to assess the association of dental caries experience with the major components of life-course approach, health- and behavioral capital, among Turkish and Finnish pre-adolescents, with different family-related characteristics, as this association has not been explored yet. **METHODS:** A cross-sectional study of Finnish (n=338) and Turkish (n=611) pre-adolescents was undertaken with questionnaires and oral health data. **RESULTS:** Turkish pre-adolescents, more dentally diseased (84%) than the Finnish (33%) (P<.01), had lower means of health (body
height-weight) and behavioural (self-esteem, tooth-brushing self-efficacy) capital, (P<.01). Finnish pre-adolescents were less likely to live in two-parent families (P=.001) and spent less time with their mothers (P<.05). Turkish pre-adolescents with high levels of self-esteem were more likely to spend time with their mothers and less likely to live in families with three or more children (28%) than were their counterparts with low levels of self-esteem (41%). Such associations were not evident among Finnish pre-adolescents (P>.05). Health capital, in terms of body height, and family-related characteristics in differing patterns, contributed to DMFT, in common, among Turkish and Finnish pre-adolescents. Self-esteem, behavioural capital was explanatory variable for DMFT only for the Turks. CONCLUSIONS: Dental health of pre-adolescents was associated with health- and behavioural capital in different pathways under the influence of family-related characteristics. The cooperation of paediatricians and dentists is vital in assessment of general and dental health in a holistic context throughout the life-course, to enhance the well-being of pre-adolescents.

BY MISTAKES WE LEARN: DETERMINATION OF MATRIX METALLOPROTEINASE-8 AND TISSUE INHIBITOR OF MATRIX METALLOPROTEINASE-1 IN SERUM YIELDS DOUBTFUL RESULTS

EMINGIL GÜLNUR, AFACAN BERAL, TERVAHARTIALA TAINA, TÖZ HÜSEYIN, ATILLA GÜL, SORSA TIMO

GINGIVAL CREVICULAR FLUID AND SERUM MATRIX METALLOPROTEINASE-8 AND TISSUE INHIBITOR OF MATRIX METALLOPROTEINASE-1 LEVELS IN RENAL TRANSPLANT PATIENTS UNDERGOING DIFFERENT IMMUNOSUPPRESSIVE THERAPY

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AIM: We investigated gingival crevicular fluid (GCF) and serum matrix metalloproteinase-8 (MMP-8) and tissue inhibitor of matrix metalloproteinase-1 (TIMP-1) levels from renal transplant patients receiving cyclosporine-A (CsA) and having gingival overgrowth (GO), from patients receiving CsA therapy and having no GO and patients receiving tacrolimus therapy. MATERIAL AND METHODS: GCF samples were collected from sites with GO (GO+) and without GO (GO-) in CsA patients having GO; and GO- sites in CsA patients having no GO; sites from tacrolimus, gingivitis and healthy subjects. GCF and serum MMP-8 and TIMP-1 levels were determined by a time-resolved immunofluorometric assay (IFMA) and enzyme-linked immunosorbent assay.
RESULTS: GO+ sites in CsA patients having GO had elevated GCF MMP-8 levels compared with those of CsA patients having no GO, tacrolimus and healthy subjects (p<0.005), but these levels were similar to those of gingivitis. The GCF MMP-8 level was higher in GO+ compared with GO- sites in CsA patients having GO (p<0.05). GCF TIMP-1 levels were similar between groups. Tacrolimus patients had lower GCF MMP-8 levels than gingivitis (p<0.005), but levels similar to the healthy group. CONCLUSION: These results show that CsA and tacrolimus therapy has no significant effect on GCF MMP-8 levels, and gingival inflammation seems to be the main reason for their elevations.

THE EFFECT OF ADJUNCTIVE SUBANTIMICROBIAL DOSE DOXYCYCLINE THERAPY ON GCF EMMPRIN LEVELS IN CHRONIC PERIODONTITIS

EMINGIL GULNUR, ATILLA GUL, SORSA TIMO, TERVAHARTIALA TAINA

BACKGROUND: The aim of the present randomized, double-masked, placebo-controlled, parallel-arm study was to examine the effectiveness of a 3-month regimen of subantimicrobial dose doxycycline (SDD) in combination with scaling and root planing compared to scaling and root planing alone on levels of gingival crevicular fluid (GCF) extracellular matrix metalloproteinase inducer (EMMPRIN) in patients with chronic periodontitis. METHODS: GCF samples were collected, and clinical parameters, including probing depth (PD), clinical attachment level, gingival index (GI), and plaque index, were recorded. Thirty chronic periodontitis subjects were randomized to receive SDD or placebo. The SDD group received SDD (20 mg, twice a day) for 3 months plus scaling and root planing, whereas the placebo group took placebo capsules twice a day for 3 months and received scaling and root planing. The subjects were reevaluated at 3 and 6 months. At each visit, all clinical parameters were measured and GCF was sampled. GCF EMMPRIN levels were determined by Western immunoblotting assay. Intragroup comparisons were tested by the Friedman test followed by the Wilcoxon signed-rank test to analyze the significance of changes over time. The Mann-Whitney test was used to determine differences between the SDD and placebo groups. RESULTS: Significant improvements were observed in all clinical parameters in the SDD group over the 6-month study period (P <0.025). The SDD group showed a significantly greater reduction in mean PD scores at 6 months and in mean GI scores at 3 and 6 months than the placebo group (P <0.05). From baseline to 6 months, the GCF EMMPRIN levels were reduced significantly in the SDD group (P <0.025). The GCF EMMPRIN level in the SDD group was significantly lower than that of the placebo group at 3 and 6 months (P <0.05). CONCLUSIONS: SDD therapy in combination with scaling and root planing reduced GCF EMMPRIN levels and improved clinical periodontal parameters in subjects with chronic periodontitis. The ability of SDD to downregulate, in vivo, the GCF levels of EMMPRIN, a unique upregulator of matrix metalloproteinase expression, is one of its
beneficial host-modulatory properties. These results expand the usefulness of SDD therapy as an adjunct to scaling and root planing in the long-term management of periodontal disease.

MECHANICAL INDUCTION OF AN EPITHELIAL CELL CHYMASE ASSOCIATED WITH WOUND EDGE MIGRATION

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Chymase is a chymotrypsin-like serine protease predominantly produced by mast cells. In this study, human cutaneous and gingival keratinocytes, ovary surface epithelia, and a porcine epithelial cell line were assayed by homology-based cloning, and the amplified DNA fragment was identified as a chymase. In vitro, chymase could not be induced by serum or cytokine treatment alone. Chymase was activated 3-fold within 60 min in basal media by scratch wounding cultured monolayers and further potentiated over 10-fold at 18 h by additional serum and cytokine treatment. Chymase activity was cell-associated and found to peak within 24 h of wounding and then steadily decreased as cultures healed, reaching baseline levels before confluence was reestablished. Affinity column purified enzyme effectively degraded fibronectin and was found by Western blot analysis using a human chymase antibody to be of about 30 kDa. Immunostaining revealed chymase activation at the wound edge colocalizing with reactive oxygen species generation. Specifically, chymase activation was attenuated by inhibition of nitric oxide, superoxide, and peroxynitrite. Exogenous peroxynitrite but not hydrogen peroxide also resulted in chymase activation in unwounded monolayers. Disruption of cytoskeletal stress fibers by cytochalasin D attenuated both wound-activated chymase and reactive oxygen species generation. Chymase inhibitor chymostatin reduced the loss of cell-cell contacts and the onset of porcine and human skin epithelial cell migration at the wound edge. This shows that an epithelial chymase is rapidly activated by a ligand-independent mechanism following mechanical stress via cytoskeletal and reactive oxygen species signaling and is associated with the onset of epithelial cell migration.

EFFECTS OF FLUORIDES ON CANDIDA ALBICANS

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AIMS: To assess whether a short exposure of Candida albicans to commonly used fluorides would affect growth, cell surface hydrophobicity, and adherence to buccal epithelial cells. METHODS: Candida albicans ATCC 90028 and 11 clinical isolates were used. Minimal inhibitory concentrations (MICs) of sodium fluoride (NaF) and of an
amine fluoride / stannous fluoride combination (AmF / SnF2) were determined. Yeasts were exposed to MICs of tested agents for 1 h. Subsequently, their growth was recorded spectrophotometrically. Their cell surface hydrophobicity was assessed with n-hexadecane. Adherence to buccal epithelial cells was determined microscopically. Phosphate buffered saline (PBS) and chlorhexidine digluconate (CHX) served as controls. All results were analyzed by one-way ANOVA. RESULTS: MICs of AmF / SnF(2) and CHX varied between 1 and 4 microg ml(-1), whereas those of NaF were 15 000 microg ml(-1). Statistically significant growth inhibition was detected after AmF / SnF(2) (OD(24 h) +/- SD 0.457 +/- 0.059) and CHX (0.175 +/- 0.065) in comparison with PBS (0.925 +/- 0.087) and NaF (0.813 +/- 0.081). All strains demonstrated uniform behavior. Only minor changes in cell surface hydrophobicity and adherence to buccal epithelial cells (BEC) were detected. CONCLUSION: Growth inhibition of AmF / SnF(2) was comparable with that of CHX whereas NaF had a weaker effect. Exposure to the fluorides did not seem to alter the cell surface hydrophobicity nor adherence to BEC.

THE EXPRESSION OF MYOGLOBIN AND ROR2 PROTEIN IN DUPUYTREN'S DISEASE

FORSMAN MINNA, PÄÄKKÖNEN VIRVE, TJÄDERHANE LEO, VUORISTO JUSSI, KALLIOINEN LEENA, SALO TUULA, KALLIOINEN MATTI, RYHÄNEN JORMA


BACKGROUND: Dupuytren's disease (DD) is a hand disease inherited as an autosomal dominant trait with variable penetrance, especially among populations of northern European ancestry. The etiology and pathophysiology of DD are not clear. The purpose of this study was to examine the gene expression profiles of palmar fascia of DD and healthy patients using microarray analysis to highlight the genes that might contribute to the pathogenesis of DD. MATERIALS AND METHODS: Dupuytren contracture samples were taken from excised mature cords of DD patients during aponeurectomies. Control samples were collected from healthy hand trauma patients. Microarray analysis was performed with the Affymetrix HGU133A genome array (Affymetrix, Santa Clara, CA). Expression changes of selected proteins were confirmed at the protein level with Western and dot blotting or by immunohistochemistry. RESULTS: At least an 8-fold change in gene expression was found with 127 genes, including a 90-fold down-regulation of myoglobin and a 14-fold up-regulation of tyrosine kinase-like orphan receptor 2 (= ROR2) from absent to present during the disease. The changes in myoglobin and ROR2 expression were confirmed at the protein level. CONCLUSIONS: In this study, we showed for the first time the connection of ROR2 in Dupuytren's disease. ROR2 and myoglobin may play an important role in the pathophysiology of this disease.
RESTORATIVE TREATMENT THRESHOLD REPORTED BY IRANIAN DENTISTS

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OBJECTIVE: To study Iranian dentists' conceptions of the earliest stage to place a restoration on proximal caries lesions. BASIC RESEARCH DESIGN: A questionnaire survey was carried out among the participants of two annual dental meetings in Tehran, Iran, in December 2004 and July 2005. The questionnaire was filled in anonymously and returned during the meeting days. The questions covered two patient paper cases with schematic drawings of the radiolucency of proximal caries lesions according to bitewing radiographs from 20-year-old patients: one high-caries case and one low-caries case. Dentists' gender, age, working experience and place, and participation in continuing education served as background data. In total, 1,033 dentists completed the questionnaire, 63% were men. Statistical evaluation was by the Chi square test and logistic regression. MAIN OUTCOME MEASURES: Respondents were to select from four alternatives the earliest stage in the progression of a lesion at which they would intervene by restorative treatment. RESULTS: For the high-caries case, 77% of the respondents chose to restore a caries lesion confined to enamel; activity in continuing education was the strongest factor (OR = 1.4) to explain dentists' restoring a lesion no earlier than in dentine. For the low-caries case, 32% chose to restore a lesion in enamel. Restoring a lesion no earlier than in dentine was more likely (OR = 1.5) among female dentists. CONCLUSION: Iranian dentists seem to prefer early restorative intervention, which indicates a need to focus on the preventive aspects of caries treatment both in dental curricula and in continuing education.

RISK-BASED APPROACH IN PREVENTIVE PRACTICE AMONG IRANIAN DENTISTS

GHASEMI HADI, MURTOMAA HEIKKI, TORABZADEH HASSAN, VEHKALAHTI MIIRA

PURPOSE: To study risk-based preventive practice among Iranian dentists. MATERIALS AND METHODS: A questionnaire survey was conducted at two annual dental meetings in 2004 and 2005 in Tehran. Using a five-point Likert scale, respondents indicated their level of agreement with taking preventive measures including oral hygiene, use of fluoride, diet and dental check-up for a high- and a low-risk (HR and LR, respectively) hypothetical patient case. Respondent's smoking and activity in smoking cessation were enquired about as well. Of 1033 responding dentists, 980 (64% men) were eligible for this study. Statistical evaluation was by the chi-square test and logistic regression. RESULTS: The top four of the eight measures were instructions on tooth
brushing and flossing, advice related to fluoridated toothpaste, and regular dental check-ups, with the choice 'fully agree' being more prevalent for the HR (74%-58%) than for the LR case (59%-41%). For the HR case, 45% of the respondents fully agreed with applying chair-side tooth cleaning, 41% with advice on diet modification, and 38% with advice on home-use of sodium fluoride mouthwash. Of all respondents, 76% were nonsmokers and 56% reported that they always recommend their smoking patients to quit. Female gender and activity in professional reading were associated with higher levels of agreement for applying preventive measures to the HR case. Non-smoking was the strongest explanatory factor (OR = 3.6, 95% CI = 2.6-5.1) of dentist's higher involvement in smoking cessation. CONCLUSION: Risk-based preventive dental care should be emphasised and applied in order to maximise efficient use of resources.

SUBANTIMICROBIAL-DOSE DOXYCYCLINE MODULATES GINGIVAL CREVICULAR FLUID BIOMARKERS OF PERIODONTITIS IN POSTMENOPAUSAL OSTEOPENIC WOMEN


BACKGROUND: We recently demonstrated that a 2-year subantimicrobial-dose doxycycline (SDD) regimen (double-masked, placebo-controlled clinical trial) in postmenopausal (PM) women exhibiting mild systemic bone loss (osteopenia) and local bone loss (periodontitis) reduced the progression of periodontal attachment loss (intent-to-treat analysis) and the severity of gingival inflammation and alveolar bone loss (subgroups) without producing antibiotic side effects. We now describe SDD effects on biomarkers of collagen degradation and bone resorption in the gingival crevicular fluid (GCF) of the same vulnerable subjects. METHODS: GCF was collected from SDD- and placebo-treated PM subjects (n=64 each) at the baseline and 1- and 2-year appointments; the volume was determined; and the samples were analyzed for collagenase activity (using a synthetic peptide as substrate), relative levels of three genetically distinct collagenases (Western blot), a type-1 collagen breakdown product/bone resorption marker (a carboxyterminal telopeptide cross-link fragment of type I collagen [ICTP]; radioimmunoassay), and interleukin-1beta (enzyme-linked immunosorbent assay). Statistical analyses were performed using generalized estimating equations; primary analyses were intent-to-treat. RESULTS: Collagenase activity was significantly reduced by SDD treatment relative to placebo based on intent-to-treat (P=0.01). ICTP showed a similar pattern of change during SDD treatment, and GCF collagenase activity and ICTP were positively correlated at all time periods (P<0.001). Matrix metalloproteinase (MMP)-8 accounted for approximately 80% of total collagenase in GCF, with much less MMP-1 and -13, and SDD reduced the odds of elevated MMP-8 by 60% compared to placebo (P=0.006). CONCLUSION: These observations support the therapeutic potential of long-term SDD therapy to reduce periodontal collagen breakdown and alveolar bone.
resorption in PM women; effects on serum biomarkers of systemic bone loss in these subjects are being analyzed.

PSYCHOLOGICAL STRESS AND HEALTH IN UNDERGRADUATE DENTAL STUDENTS

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Psychological stress in undergraduate dental students: fifth year outcomes compared with first year baseline results from five European dental schools. OBJECTIVE: To compare the levels of a series of health-related indicators from a cohort of fifth year dental students from five European schools with their first year scores, and to investigate the relationship between these follow-up measures. METHODS: Burnout was measured using the Maslach Burnout Inventory (MBI), consisting of three scales: Emotional Exhaustion (EE, alpha = 0.90), Depersonalisation (alpha = 0.80) and Personal Accomplishment (alpha = 0.72). Physical health was measured by the Physical Symptoms Questionnaire (alpha = 0.82), psychological distress was measured using the General Health Questionnaire (GHQ, alpha = 0.89) and student stress was captured using seven subscales of the Dental Environment Stress questionnaire (DES, alpha = 0.92). A total of 132 fifth year students responded from five dental schools (Manchester, Belfast, Cork, Helsinki and Amsterdam), a 51% response. RESULTS: Fifth year students showed relatively high mean MBI scores when compared with first year results, especially on EE; 39% could be labelled 'high scorers'; 44% of the students met the criteria for 'cases' on the GHQ. Highest mean scores on the DES were obtained on the subscales: Study Obligations, Patient-Related Aspects and Study Pressure respectively. Between schools interesting differences were detected on all variables. As hypothesised, a clear direct effect of stress on both burnout and physical symptoms was shown. An indirect effect of stress on mental health via burnout was shown. CONCLUSIONS: Dental students showed a negative development through the years from first to fifth year with regard to EE and psychological distress. Both burnout constructs related to physical and mental health. It is recommended that dental faculty focus on the importance of prevention and intervention of stress amongst undergraduates.
BACKGROUND AND AIM: Pregnancy has been presented to increase susceptibility to gingival inflammation. It is unclear whether pregnancy gingivitis exposes or proceeds to periodontitis. We examined longitudinally the severity of periodontal changes during pregnancy and post-partum, and compared the findings with an age-matched group of non-pregnant women. MATERIAL AND METHODS: Thirty generally healthy, non-smoking women at an early phase of their pregnancy and 24 non-pregnant women as controls were recruited. The pregnant group was examined three times during pregnancy and twice during post-partum, and the non-pregnant group three times, once per subsequent month. At each visit, visible plaque index (VPI), bleeding on probing (BOP), probing pocket depth (PPD), and clinical attachment level (CAL) were measured from six sites per tooth. RESULTS: In the pregnant group, BOP and PPD increased simultaneously without relation to plaque between the first and second trimesters, and thereafter decreased during subsequent visits. No changes were detected in CAL during the study period. In the non-pregnant group, BOP stayed invariable during the follow-up and correlated with the amount of plaque. Neither periodontal pocket formation nor significant changes in attachment levels were observed. CONCLUSION: Based on this study, changes in clinical parameters during pregnancy are reversible, indicating that pregnancy gingivitis does not predispose or proceed to periodontitis.

We examined survival and replication of fusobacteria inside epithelial cells. Subconfluent cultures of HaCaT keratinocytes were infected with five bacterial strains representing three Fusobacterium species: F. nucleatum, F. necrophorum, and F. mortiferum. Adhesion and invasion of the bacteria were assayed before and after antibiotic treatment that killed the adhered and extracellular bacteria. The number of live fusobacteria was examined by bacterial culturing after sonication of the epithelial cells. The role of host cell cytoskeleton functions was examined by treating the epithelial cells with cell function inhibitors. Number of viable epithelial cells was measured with the CellTiter96 kit. The tested Fusobacterium species adhered to and invaded the epithelial cells, and multiplied intracellularly for several hours. Thereafter, the intracellular number of bacteria rapidly declined. Concomitantly, viable fusobacteria were detected in the culture medium. Treatment of the infected epithelial cells with an actin formation inhibitor markedly
reduced the number of living intracellular fusobacteria. Newly formed actin filaments were seen by confocal microscopy in the epithelial cells associated with the invaded bacteria. Fusobacteria infection did not reduce the number of viable epithelial cells in culture. Thus, fusobacteria are able to adhere to and invade epithelial cells, and survive under aerobic conditions. This property may enable them to survive in mucosa and participate in various disease processes of oral and pharyngeal tissues.

STIMULATION OF EPITHELIAL CELL MATRIX METALLOPROTEINASE (MMP-2, -9, -13) AND INTERLEUKIN-8 SECRETION BY FUSOBACTERIA

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BACKGROUND/AIMS: Bacterial pathogens involved in periodontal diseases exert their destructive effects primarily by stimulating the host cells to increase their secretion of proinflammatory cytokines and matrix metalloproteinases (MMPs). This study aimed to determine the epithelial cell matrix metalloproteinase and interleukin-8 (IL-8) secretion upon exposure to fusobacteria. METHODS: Eight different oral and non-oral Fusobacterium strains were incubated with HaCaT epithelial cells. Gelatin zymography and Western blot analysis were performed to detect collagenase 3 (MMP-13), gelatinase A (MMP-2), gelatinase B (MMP-9), and IL-8 secretion by epithelial cells. RESULTS: All Fusobacterium strains, especially Fusobacterium necrophorum ATCC 25286, Fusobacterium nucleatum ATCC 25586, and Fusobacterium varium ATCC 51644, increased MMP-9 and MMP-13 secretion. Fusobacterium simiae ATCC 33568, and to a lesser extent F. nucleatum and F. necrophorum, increased epithelial MMP-2 secretion. F. nucleatum and F. necrophorum also increased IL-8 secretion. F. varium ATCC 27725, a strain that only weakly stimulated MMP production, strongly increased the IL-8 production, suggesting that their expression is differently regulated. CONCLUSION: We conclude that the pathogenic potential of fusobacteria may partly result from their ability to stimulate secretion of MMP-9, MMP-13, and IL-8 from epithelial cells.

LOCALIZATION AND FATE OF FGF10-EXPRESSING CELLS IN THE ADULT MOUSE BRAIN IMPLICATE FGF10 IN CONTROL OF NEUROGENESIS

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We used Fgf10-lacZ reporter mice to investigate the distribution and fate of Fgf10-expressing cells in the developing and adult mouse brain. We find that the domain of
Fgf10 expression expands post-natally and new niches emerge in the adult brain. Fgf10 is expressed in the adult cerebellum, thalamic, mid- and hindbrain nuclei and hippocampal CA fields, as previously reported in the rat brain. In addition though, we have discovered expression in: the hippocampal dentate gyrus; a discrete trail linking the ventral telencephalon with the olfactory bulbs; ventral ependyma of the third ventricle from where cells appear to disperse into the hypothalamus; and in the pituitary gland. Most Fgf10-expressing cells or their immediate descendants appear immature but a subset differentiates into neurons and glial cells. The manner in which Fgf10 is expressed in these active and quiescent neurogenic niches implicates it in control of neurogenesis and/or conservation of neurogenic potential.

THE EFFECT OF SMOKING ON PERIODONTAL HEALTH OF 15- TO 16-YEAR-OLD ADOLESCENTS

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BACKGROUND: Smoking is a severe risk factor for periodontal health in adults, but data on the effect of smoking on periodontal health in teenage populations are sparse. The aim of this study was to investigate the effect of duration and quantity of smoking on periodontal health in teenagers and possible differences between genders. METHODS: The oral health of 501 adolescents (15- to 16-year-old boys [n = 258] and girls [n = 243]) was examined. A structured questionnaire about self-reported smoking and health habits was filled out, and bitewing x-rays were taken. Clinical examinations included measuring periodontal indexes, such as visible plaque index, bleeding on probing, root calculus (RC), probing depth, and attachment loss. Results were analyzed by generalized linear logistic regression. RESULTS: Twenty-five percent of boys and 27% of girls were smokers. The boys and girls who smoked had higher RC values than non-smokers (P <0.001). The adjusted scores for smoking boys and girls were 17.3 (95% confidence interval [CI]: 8.6 to 31.7) and 13.6 (95% CI: 5.5 to 29.7), respectively. The adjusted scores for non-smokers were 10.4 (95% CI: 5.7 to 18.3) and 7.7 (95% CI: 3.3 to 17.3), respectively. Smoking boys and girls also had more periodontal pockets > or =4 mm than non-smokers: the score for boys was 4.6 (95% CI: 2.2 to 9.1), and the score for girls was 5.4 (95% CI: 1.1 to 23.2; P <0.001). CONCLUSION: Smoking significantly impaired periodontal health in teenagers.
POSTPARTUM ORAL HEALTH PARAMETERS IN WOMEN WITH PRETERM BIRTH

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OBJECTIVE: It has been suggested that poor oral health and periodontal disease, in particular, associate with adverse birth outcomes. However, previous reports on the topic are conflicting. The objective of the present cross-sectional study was therefore to compare the oral health parameters of a racially and socio-economically homogeneous group of women who gave birth before 259 gestational days (37 weeks) with those of women who went full-term. MATERIAL AND METHODS: We studied various dental parameters, including prevalence of dental caries, gingival bleeding on probing, the probing periodontal pocket depths, and the carriage of periodontal pathogens in 328 all-Caucasian women with singleton births. Seventy-seven of the women had preterm births, while 251 had full-term. Dental data were recorded within 2 days postpartum and analyzed with data from medical history, prenatal care, and delivery records. RESULTS: Preterm mothers had more dental caries (93.5%) than full-term mothers (85.3%) when assessed as carious teeth in the mouth (p=0.06). In clinical and microbiological periodontal health parameters, however, no differences could be seen between the preterm and full-term mothers. Primiparity, low weight-gain, and antimicrobial drug use during pregnancy were the significant predictors for preterm birth. CONCLUSIONS: Although we cannot make any causal linkage, the oral health parameters were no different in women who experienced preterm births compared with those who had full-term births in this cohort. Only established systemic risk factors explained the preterm birth.

ORAL HEALTH AND TREATMENT NEEDS AMONG 18-YEAR-OLD IRANIANS

HESSARI HOSSEIN, VEHKALAHTI MIIRA, EGBHAL MOHAMMAD J., SAMADZADEH HAMID, MURTOMAA HEIKKI
Medical principles and practice. 17 (2008), s. 302-307, 2008

OBJECTIVE: To investigate the oral health status of 18-year-old Iranians in relation to their gender, place of residence and level of education. SUBJECTS AND METHODS: Thirty-three calibrated examiners in 2002 collected data as part of a national survey, according to World Health Organization criteria for sampling and clinical diagnoses, across 28 provinces. The study sample was 4,448; male: 2,021 and female: 2,427 made up of urban: 2,564 and rural: 1,884. Oral health status was assessed in terms of number of teeth, decayed teeth (DT), filled teeth (FT), decayed, missing or filled teeth (DMFT), community periodontal index and plaque index. RESULTS: The mean number of teeth
was 27.4, with DMFT: 4.3, DT: 3.0 and FT: 0.7. The mean number of sound teeth was higher (p < 0.01) in men (24.1 vs. 23.3 in women), FT in urban residents (1.0 vs. 0.2 in rural residents) and DT in women (3.3 vs. 2.8 in men). Three of 4 subjects were in need of restorative treatments. All subjects had dental plaque; 387 (8%) healthy gingiva; 1,016 (23%) exhibited bleeding; 2,025 (48%) calculus and 1,020 (21%) deepened pockets. Men's periodontal status was worse than women's (p < 0.002). Low level of education was associated with having 27 or fewer teeth (OR = 1.7), calculus (OR = 1.5) or deep periodontal pockets (OR = 2.7). CONCLUSION: A majority of 18-year-old Iranians seem to enjoy a full dentition. High prevalence of dental plaque, calculus, periodontal pockets and untreated dental caries especially among underprivileged groups may put them at risk for tooth loss in adulthood. (c) 2008 S. Karger AG, Basel

TOOTH LOSS AND PROSTHODONTIC REHABILITATION AMONG 35- TO 44-YEAR-OLD IRANIANS

HESSARI HOSSEIN, VEHKALAHTI MIIRA, EGHBAL MOHAMMAD J., MURTOMAA HEIKKI


This study aimed to investigate the frequency of tooth loss and the magnitude of prosthodontic rehabilitation based on socio-demographic information among 35- to 44-year-old Iranians. Data (n = 8240) were collected by 33 examiners as part of a national survey using WHO criteria for sampling and clinical diagnosis. Gender, age, place of residence and level of education served as socio-demographic information. The number of teeth, functional dentition (subjects with 20 or more teeth) and prosthodontic rehabilitation were used as clinical variables. The chi-square test and logistic regression analysis were the methods of statistical evaluation. Of all subjects, 3% were edentulous. Of dentate subjects, 3% had 1-9 teeth, 21% had 10-19 teeth, 37% had 20-24 teeth and 39% had 25-28 teeth. In total, 76% of dentate subjects enjoyed a functional dentition. Among dentate subjects, 11% of the men and 16% of the women had prosthodontic rehabilitation with higher figures (P < 0.001) among women, older subjects and urban residents. Having a functional dentition was more likely among those with higher levels of education [odds ratios (OR) = 1.8, 95% confidence intervals (CI) = 1.6-2.1]. Women (OR = 2.4, 95% CI = 1.8-3.0) and urban residents (OR = 2.4, 95% CI = 1.8-3.3) were the most likely groups to have prosthodontic rehabilitation. Having prosthodontic rehabilitation was more likely among those lacking a functional dentition (OR = 6.0, 95% CI = 4.8-7.6). The greatest unmet treatment needs were found among those without a functional dentition. Functional dentition should be set as a primary oral health goal among working-age adults.
TRANSIENT ELEVATION OF NEUTROPHIL PROTEINASES IN INDUCED SPUTUM DURING COPD EXACERBATION

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Scandinavian journal of clinical and laboratory investigation 68 (7): 1-6, 2008

Objective. Patients with chronic obstructive pulmonary disease (COPD) are prone to acute exacerbations associated with increased morbidity and mortality. One potential group of enzymes causing tissue destruction in this disease includes neutrophil proteinase elastase (NE), collagenase-2 (matrix metalloproteinase-8 (MMP-8)) and gelatinase B (MMP-9). We investigated the activity of NE and the levels of MMP-8 and MMP-9 in a longitudinal setting at and after COPD exacerbation using a non-invasive technique, i.e. induced sputum, to ascertain whether these proteinases play a role in COPD exacerbation.

Material and methods. The study included healthy non-smokers (n = 32), healthy smokers (n = 28), patients with stable COPD (n = 15), COPD patients with acute exacerbations (exa) (n = 10) and their recovery (n = 8) after 4 weeks. NE activity by synthetic peptide substrate and spectrophotometry, MMP-8 levels by immunofluorometry and MMP-9 levels by ELISA were analysed from induced sputum supernatants. Results. NE activity and the level of MMP-8 increased highly significantly in patients with COPD exacerbation compared to stable COPD and controls (NE: p = 0.001 and p<0.0001; MMP-8: p<0.001 and p<0.0001). Paired samples showed a decrease of these proteinases during the recovery period after exacerbation (p = 0.03, p = 0.04). The proteinase levels correlated not only with the percentage and number of neutrophils but also with the lung function parameters (FEV1/FVC and diffusion capacity).

Conclusions. COPD exacerbations are associated with neutrophil recruitment into the airways but also transient activation and/or elevation of tissue destruction proteinases, such as NE and MMP-8, which can be detected from the induced sputum supernatants of these COPD patients.

ORAL INFECTION, HYPERGLYCEMIA, AND ENDOTHELIAL DYSFUNCTION

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Metabolic syndrome and type 2 diabetes (T2DM) resulting from sustained hyperglycemia are considered as risk factors for cardiovascular disease (CVD) but the mechanism for their contribution to cardiopathogenesis is not well understood. Hyperglycemia induces nonenzymatic glycation of protein-yielding advanced glycation end products (AGE), which are postulated to stimulate interleukin-6 (IL-6) expression, triggering the liver to secrete tissue necrosis factor alpha (TNF-alpha) and C-reactive protein (CRP) that
contribute to CVD pathogenesis. Although the high prevalence of periodontitis among individuals with diabetes is well known by dental researchers, it is relatively unrecognized in the medical community. The expression of the same proinflammatory mediators implicated in hyperglycemia (i.e., IL-6, TNF-alpha, and CRP) have been reported to be associated with periodontal disease and increased risk for CVD. We will review published evidence related to these 2 pathways and offer a consensus.

PROTEOLYTIC ACTIVITIES OF ORAL BACTERIA ON PROMMP-9 AND THE EFFECT OF SYNTHETIC PROTEINASE INHIBITORS [ ELEKTRONINEN AINEISTO.]

JIE BAO GUANG, KARI KIRSTI, TERVAHARTIALA TAINA, SORSA TIMO, MEURMAN JUKKA H.
The open dentistry journal  2 (7):  e96-102, 2008

Tissue reactions to bacteria lead to proinflammatory reactions involving matrix metalloproteinases (MMPs). Synthetic protease inhibitors may offer new possibilities to regulate bacterial proteases. We investigated proteolytic activities of certain periodontal bacteria, their effects on the latent proMMP-9, and the effects of synthetic MMP inhibitors and a serine protease inhibitor Pefabloc. The strains studied were Porphyromonas gingivalis, Prevotella intermedia, Peptostreptoccus micros, Prevotella nigrescens, Fusobacterium nucleatum, and 5 Aggregatibacter actinomycetemcomitans serotypes. Their gelatinolytic activities and the effects of certain synthetic MMP inhibitors and Pefabloc were analyzed by zymography. Bacterial effects on proMMP-9 conversion were investigated by Western immunoblot. All investigated periodontal bacteria produced gelatinolytic cell-bound and extracellular proteinases which could fragment latent proMMP-9, suggesting co-operative processing cascades in oral tissue remodeling. A. actinomycetemcomitans produced the weakest gelatinolytic activity. Synthetic proteinase inhibitors exhibited slight but clear reductive effects on the bacterial proteolytic activities. We conclude that targeted anti-proteolytic treatment modalities against bacterial-host proteolytic cascades can be developed.

LIPOPOLYSACCHARIDE ASSOCIATES WITH PRO-ATHEROGENIC LIPOPROTEINS IN PERIODONTITIS PATIENTS

KALLIO K. A. ELISA, BUHLIN KARE, JAUHIAINEN MATTI, KEVA RITVA, TUOMAINEN ANITA M, KLINGE BJORN, GUSTAFSSON ANDERS, PUSSINEN PIRKKO

INTRODUCTION: Periodontitis patients are known to suffer from endotoxemia, which
may be among the major risk factors for atherosclerosis. In health, lipopolysaccharide (LPS) is mainly carried with high density lipoprotein (HDL) particles. Shift of LPS toward lipoproteins with lower densities may result in less effective endotoxin scavenging. Our aim was to determine plasma LPS activity and lipoprotein-distribution before and after treatment in periodontitis patients. PATIENTS AND METHODS: Very low and intermediate density (VLDL-IDL), low density (LDL), HDL 2, HDL 3, and lipoprotein-deficient plasma (LPDP) were isolated by sequential ultracentrifugation. Patients included 34 subjects aged 53.5 +/- 8.3 years, before and 6 months after periodontal treatment. RESULTS: The mean LPS distribution decreased among lipoprotein classes as follows: VLDL-IDL 41.3 +/- 12.1%, LPDP 25.0 +/- 7.0%, HDL3 13.1 +/- 5.2%, LDL 11.5 +/- 3.7%, and HDL 2 9.2 +/- 2.8%. Plasma and VLDL-IDL-associated LPS correlated positively, and LDL- and HDL-associated LPS negatively with clinical periodontal parameters and plasma cytokine concentrations. Mean plasma LPS activity increased after periodontal treatment from 44.0 +/- 17.0 to 55.7 +/- 24.2 EU/ml (P = 0.006). No significant changes were found in LPS lipoprotein distribution and lipoprotein compositions after the treatment. CONCLUSIONS: Endotoxemia increases with severity of periodontitis. In periodontitis, LPS associates preferentially with the proatherogenic VLDL-IDL fraction. Periodontal treatment has only minor effects on plasma LPS activity or distribution, which reflects persistence of the disease.

THE SEVEN-YEAR OUTCOME OF AN EARLY ORTHODONTIC TREATMENT STRATEGY

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Journal of dental research 87: 584-588, 2008

The benefits of early orthodontic treatment are continuously discussed, but studies are few. We examined whether definite need for orthodontic treatment could be eliminated in public health care by systematically focusing on early intervention. One age cohort living in a rural Finnish municipality (N = 85) was regularly followed from ages 8 to 15 years, and persons with malocclusions were treated according to a pre-planned protocol. Treatment need was assessed according to the Dental Health Component (DHC) of the Index of Orthodontic Treatment Need, and treatment outcome by the Peer Assessment Rating Index (PAR). Fifty-two percent of the cohort received treatment, and definite treatment need decreased from 33% to 9%. In the treated group, the mean PAR score reduction was 63%, and 51% showed more than 70% improvement. The results suggest that an early treatment strategy may considerably reduce the need for orthodontic treatment in public health care with limited specialist resources.
COMPARING THE CARIES-PREVENTIVE EFFECT OF TWO FISSURE SEALING MODALITIES IN PUBLIC HEALTH CARE: A SINGLE APPLICATION OF GLASS IONOMER AND A ROUTINE RESIN-BASED SEALANT PROGRAMME. A RANDOMIZED SPLIT-MOUTH CLINICAL TRIAL.

KERVANTO-SEPPÄLÄ SARI, LAVONIUS EEVA, PIETILÄ ILPO, PITKÄNIEMI JANNE, MEURMAN JUKKA H., KEROSUO EERO


AIM: The aim of this study was to compare the caries-preventive effect of two types of sealant modalities and to evaluate whether the caries-preventive effect is related to sealant retention. A hypothesis was tested in which a glass ionomer sealant, once applied to the occlusal surface, was able to protect the fissure from caries even if the sealant appeared lost at visual inspection. DESIGN: A 3-year randomized split-mouth trial evaluating two sealant modalities was performed at a public health centre in Finland. A chemically curing glass ionomer cement (GIC) and light-curing resin-based (RB) sealant material were applied randomly to the permanent second molars. Sealant application as a routine treatment procedure was carried out to 599 children in the age group of 12-16 years. Caries rate of the sealed teeth and sealant retention with both materials were analysed by a modified McNemar's test. The effectiveness, rate difference, and relative risk with both sealant materials were measured. RESULTS: The difference in caries rate between the two modalities was highly significant. When compared to the GIC sealant method, the effectiveness of RB sealant method was 74.1% and the rate difference 3.2% (95% CI 1.44%, 4.98%). The relative risk for RB-sealed surfaces vs. GIC-sealed surfaces of having detectable dentin caries was 0.26 (95% CI 0.12, 0.57). The retention rate of sealants was higher with RB than GIC (P < 0.001). The effectiveness of the retention rate for RB sealants was 94.8% and the rate difference 87.2% (95% CI 83.86%, 90.50%). The relative risk during the 3-year study period of having a defective or lost RB sealant was 0.052 (95% CI 0.036, 0.075) when compared to having a defective or lost GIC sealant. CONCLUSION: It is concluded that in preventing dentin caries a RB sealant programme including resealing when necessary was more effective than a single application of GIC. The original hypothesis was thus falsified.

STUDY MOTIVES AND CAREER CHOICES OF IRANIAN DENTAL STUDENTS

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Medical principles and practice 17: 221-226, 2008

OBJECTIVES: To investigate the study motives and career choices of Iranian senior dental students in relation to their background factors. SUBJECTS AND METHODS:
During the spring term 2005, a questionnaire survey was administered to 327 senior dental students in seven randomly selected state dental schools in Iran. The questionnaire requested information on age, gender, parents’ employment in dentistry, previous education and employment in dental hygiene, study motives, and career choices. Statistical analyses were made using independent sample t test, factor analysis, and binary logistic regression model. RESULTS: Based on the factor analysis, which explained 73% of the total variance, five motive dimensions were identified: altruism and intellectual challenges, characteristics of the profession, social status and security, other person’s recommendation, and failure to be admitted to other study programmes. The mean for the 'characteristics of the profession' dimension was lower among the students with at least one parent employed in dentistry (p = 0.03). The 'altruism and intellectual challenges' dimension was reported to be more influential by the students with background in dental hygiene (32 students) compared to the others (p < 0.001). Engaging in postgraduate studies was the first career preference of 189 (70%) of the respondents. Those with a background in dental hygiene were less inclined to enter postgraduate courses (p < 0.001), but more eager to be employed in either the public or the private sector (p < 0.001), and to enter the community oral health and research field (p < 0.001) than the others. CONCLUSION: Personal characteristics and motives of the students play a major role in shaping their career preferences. (c) 2008 S. Karger AG, Basel

TEMPOROMANDIBULAR DISORDERS

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COLLAGENASE-2 (MATRIX METALLOPROTEINASE-8) PLAYS A PROTECTIVE ROLE IN TONGUE CANCER

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Squamous cell carcinoma (SCC) of the tongue is the most common cancer in the oral cavity and has a high mortality rate. A total of 90 mobile tongue SCC samples were analysed for Bryne's malignancy scores, microvascular density, and thickness of the SCC sections. In addition, the staining pattern of cyclooxygenase-2, alphavbeta6 integrin, the
laminin-5 gamma2-chain, and matrix metalloproteinases (MMPs) -2, -7, -8, -9, -20, and -28 were analysed. The expression of MMP-8 (collagenase-2) was positively associated with improved survival of the patients and the tendency was particularly prominent in females. No sufficient evidence for a correlation with the clinical outcome was found for any other immunohistological marker. To test the protective role of MMP-8 in tongue carcinogenesis, MMP-8 knockout mice were used. MMP-8 deficient female mice developed tongue SCCs at a significantly higher incidence than wild-type mice exposed to carcinogen 4-Nitroquinoline-N-oxide. Consistently, oestrogen-induced MMP-8 expression in cultured HSC-3 tongue carcinoma cells, and MMP-8 cleaved oestrogen receptor (ER) alpha and beta. According to these data, we propose that, contrary to the role of most proteases produced by human carcinomas, MMP-8 has a protective, probably oestrogen-related role in the growth of mobile tongue SCCs.

ROLE OF MATRIX METALLOPROTEINASES IN CHRONIC RHINOSINUSITIS

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Current opinion in allergy and clinical immunology  8: 21-27, 2008

PURPOSE OF REVIEW: In this review, we discuss the role of matrix metalloproteinases and the potential therapeutic inhibition of metalloproteinases in chronic rhinosinusitis. Metalloproteinases control tissue remodelling along with several other physiologic processes. Failures may cause extracellular matrix deposition and sustained inflammation, which are common features in chronic rhinosinusitis. RECENT FINDINGS: Metalloproteinases are rarely studied in chronic rhinosinusitis. Upregulation of certain metalloproteinases (gelatinases, collagenases and matrilysin) is described in the literature. The results are partly controversial, suggesting that metalloproteinases are implicated in the destructive processes in the disease pathogenesis, but also demonstrate that they may exert an anti-inflammatory function in chronic rhinosinusitis. The imbalance between metalloproteinases and the tissue inhibitor of metalloproteinases is proposed to be crucial in the extracellular matrix deposition in asthma, and it may also lead to pathologic tissue remodelling in chronic rhinosinusitis. SUMMARY: Metalloproteinases are implicated in the chronic respiratory-tract diseases, but little is known about their detailed functions in disease pathogenesis. Metalloproteinases may serve as tools in evaluating prognosis and provide a target for novel therapies, highlighting the need for better understanding of metalloproteinase functions in chronic rhinosinusitis.
OBJECTIVE: Aberrant matrix metalloproteinase (MMP) and human beta-defensin (HBD) functions have been found in inflammatory diseases. The objectives of this study were to investigate the immunolocalisation, mRNA expression and molecular forms of MMP-25, MMP-26, HBD-1 and HBD-2 in chronic and aggressive periodontitis and in peri-implantitis. The expression of MMP-25 by cultured human plasmacytoma cells and macrophages, and the effects of MMP-26 and Porphyromonas gingivalis trypsin-like proteinase on HBD-1 and -2 were also studied. DESIGN: Immunohistochemistry, immunofluorescent analysis, reverse transcriptase polymerase chain reaction and immunoblotting were used to assess localisation, mRNA expression and molecular forms of MMP-25, MMP-26, HBD-1 and HBD-2. HBD degradation by MMP-26 and P. gingivalis proteinase was studied by sodium dodecyl sulphate-polyacrylamide gel electrophoresis. RESULTS: MMP-25 was present in plasma cells and polymorphonuclear leucocytes, and MMP-26 was present in oral and sulcular basement membrane zones. HBD-1 was distributed perivascularly in gingival connective tissue and in oral and sulcular epithelium, and HBD-2 was found to a lesser extent in the perivascular space. Low MMP-25, MMP-26, HBD-1 and HBD-2 mRNA expression was found. Immunoblot revealed 29-57-kDa MMP-25 in myeloma cell lysates, but not in macrophages, and partly activated MMP-25 and -26 in diseased gingival crevicular fluid and peri-implant sulcular fluid. P. gingivalis trypsin-like proteinase degraded HBD-1 and -2. CONCLUSIONS: Both MMP-25 and -26 were expressed more strongly in extensively inflamed gingiva compared with healthy gingiva. The expression of HBD-1 was stronger than that of HBD-2 in periodontitis and peri-implantitis. De-novo expression of MMP-25 and -26 is associated with periodontal and peri-implant inflammation. Furthermore, P. gingivalis trypsin-like proteinase, but not MMP-26, can degrade HBD-1 and -2, which could lead to a weakened innate immune response.
THE ENAMEL MATRIX DERIVATIVE (EMDOGAIN) ENHANCES HUMAN TONGUE CARCINOMA CELLS GELATINASE PRODUCTION, MIGRATION AND METASTASIS FORMATION

LAAKSONEN MATTI, SUOJANEN JUHO, NURMENNIEMI SINI, LÄÄRÄ ESA, SORSA TIMO, SALO TUULA

Oral oncology 44 (8): 733-742, 2008

Enamel matrix derivative Emdogain (EMD) is widely used in periodontal treatment to regenerate lost connective tissue and to improve the attachment of the teeth. Gelatinases (MMP-2 and -9) have an essential role in the promotion and progression of oral cancer growth and metastasis formation. We studied the effects of EMD on human tongue squamous cell carcinoma (HSC-3) cells in vitro and in vivo. In vitro, EMD (100 microg/ml and 200 microg/ml) remarkably induced the MMP-2 and -9 production from HSC-3 cells analysed by zymography and enzyme-linked immunosorbent assay. EMD also slightly induced the MMP-2 and -9 production from benign human mucosal keratinocytes (HMK). Furthermore, EMD clearly induced the transmigration of HSC-3 cells but had no effect on the HMK migration in transwell assays. The in vitro wound closure of HSC-3 cells was notably accelerated by EMD, whereas it had only minor effect on the wound closure of HMKs. The migration of both cell lines was inhibited by a selective cyclic anti-gelatinolytic peptide CTT-2. EMD had no effect on HSC-3 cell proliferation or apoptosis and only a limited effect on cell attachment to various extracellular matrix components. The in vivo mice experiment revealed that EMD substantially induced HSC-3 xenograft metastasis formation. Our results suggest that the use of EMD for patients with oral mucosal carcinomas or premalignant lesions should be carefully considered, possibly avoided.

MOLAR-INCISOR-HYPOMINERALISATION AND DIOXIN

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AIM: According to our earlier study, molar-incisor-hypomineralisation (MIH) was associated with the exposure of a child via mother's milk to polychlorinated dibenzo-p-dioxins/dibenzofurans (PCDD/Fs) in a group of Finnish children born in 1987. Since the levels of PCDD/Fs and PCBs in mother's milk/placenta have remarkably decreased, it was important to find out if an association still exists. METHODS: The study group was composed of 167 mothers and their children. Placental samples from the mothers were collected in maternity hospitals in Helsinki and Oulu in 1995--1999 and concentrations of the 17 most toxic PCDD/PCDF and 36 PCB congeners were measured. After 7-10 years the children were examined for MIH and the mothers were interviewed on the duration of breast-feeding. RESULTS: MIH was found in 24 children (14.4%). The duration of
breast-feeding ranged from 0 to 30 months (mean=7.2+/-.4.7). WHOPCDD/FTEQ ranged from 2.5 to 39.1 pg/g fat (mean=13.7+/-.6.8) and WHOPCBTEQ from 0.7 to 9.8 pg/g fat (mean=2.7+/-.1.4). The mean sum of PCDD/Fs was 196+/-.105 pg/g fat and that of PCBs was 57.2+/-.28.1ng/g fat. The total exposure to PCDD/Fs, which was calculated from the placental concentration (used as a proxy for the milk concentration) and duration of breastfeeding, was not associated with the occurrence or severity of MIH. Neither was the total exposure to PCBs associated with the occurrence or severity of MIH.

CONCLUSION: At prevailing levels, exposure of a child via placenta/mother’s milk to PCDD/Fs and PCBs is not associated with MIH.

CHLAMYDIAL LPS AND HIGH-SENSITIVITY CRP LEVELS IN SERUM ARE ASSOCIATED WITH AN ELEVATED BODY MASS INDEX IN PATIENTS WITH CARDIOVASCULAR DISEASE

LAJUNEN TAINA, VIKATMAA PIRKKA, BLOIGU AINI, IKONEN TUIJA, LEPANTALO MAURI, PUSSINEN PIRKKO, SAIKKU PEKKA, LEINONEN MAIJA

OBJECTIVE: Seropositivity for Chlamydia pneumoniae has been associated with an elevated body mass index (BMI). Our aim was to study if serum chlamydial lipopolysaccharide (cLPS), C. pneumoniae antibodies and high-sensitivity C-reactive protein (hsCRP) levels are associated with BMI. PATIENTS AND METHODS: The study population consisted of 174 patients with symptomatic carotid stenosis, abdominal aortic aneurysm or occlusive aortic disease. Information on BMI, diabetes, smoking, hypercholesterolemia, and statin medication was available. Serum C. pneumoniae IgG and IgA antibodies, cLPS, hsCRP and total endotoxin activity (totLPS) were measured. RESULTS: BMI correlated with cLPS (r = 0.197; P < 0.01) and with hsCRP (rho = 0.195; P < 0.01); in addition, there was a positive correlation between cLPS and hsCRP (rho = 0.499; P < 0.01). A trend of an increasing proportion of C. pneumoniae IgG positivity (titre > or = 64; P = 0.018) and higher serum cLPS (P = 0.01) and hsCRP (P = 0.01) concentrations was observed across the BMI groups (BMI < or = 24.9 kg/m(2), BMI = 25.0-29.9 kg/m(2), and BMI > or = 30.0 kg/m(2)). Among the three BMI groups, 24.6%, 38.8%, and 48.3% were C. pneumoniae IgG-positive and the median (IQR) cLPS concentrations (ng/ml) of the groups were: 92.6 (50.8-167.0), 128.9 (76.4-163.9), and 146.4 (105.8-175.8), respectively. The median (IQR) hsCRP (mg/l) concentrations of the groups were: 1.70 (0.70-3.05) 1.70 (0.80-5.20), and 3.40 (1.45-8.55), respectively. These associations remained statistically significant in a multivariate analysis. CONCLUSIONS: Elevated serum cLPS levels were associated with an elevated BMI. This is a novel finding and it strengthens the link between chlamydial infection and obesity. A lack of association between totLPS and BMI suggests that the association between infection and an elevated BMI may be specific to certain pathogens.
URINARY MATRIX METALLOPROTEINASE -8, -9, -14 AND THEIR REGULATORS (TRY-1, TRY-2, TATI) IN PATIENTS WITH DIABETIC NEPHROPATHY

LAUHIO ANNELI, SORSA TIMO, SRINIVAS RAVI, STENMAN MATIAS, TERAHARTIALA TAINA, STENMAN ULF-HÅKAN, GRÖNHAGEN-RISKA CAROLA, HONKANEN EERO

Matrix metalloproteinase-9 (MMP-9) has been shown to be involved in the development of diabetic nephropathy (DNP). We studied the levels, molecular forms, and degree of activation of urinary MMP-8, -9, -14, trypsin-1 and -2, as well as tumor-associated trypsin inhibitor (TATI) of DNP patients and healthy controls. Urinary samples were analyzed for MMPs by Western blotting and gelatin zymography and for trypsin-1, -2, and TATI by time-resolved immunofluorometric assays. Total MMP-8 immunoreactivity, the proportion of active MMP-9, and gelatinolytic activity in urine were significantly higher in DNP patients than in controls. In urine of DNP patients the proportion of active polymorphonuclear neutrophil (PMN)-type (but not fibroblast-type) MMP-8 was increased. MMP-8 and MMP-9 were found to form high molecular weight complexes in DNP urine. Total immunoreactivity of soluble urinary MMP-14 and the levels of trypsin (TRY)-1 and TRY-2, but not of TATI, were also significantly increased in DNP. Zymography, Western blotting, and immunofluorometric analysis of DNP urine showed a significant association especially between activation of MMP-9 as well as PMN-type MMP-8 and TRY-2. Our findings suggest that a trypsin-MMP cascade is involved in the pathogenesis of DNP, which may offer new possibilities for diagnosis and treatment of DNP with MMP inhibitors.

PHARMACOLOGICAL CHARACTERIZATION OF NOROXYMORPHONE AS A NEW OPIOID FOR SPINAL ANALGESIA

LEMBERG KIM, SIISKONEN ANTTI, KONTINEN VESA K., YLI-KAUHALUOMA JARI, KALSO EIJA

BACKGROUND: Noroxymorphone is one of the major metabolites of oxycodone. Although oxycodone is commonly used in the treatment of acute and chronic pain, little is known about the antinociceptive effects of noroxymorphone. We present an in vivo pharmacological characterization of noroxymorphone in rats. METHODS: The antinociceptive properties of noroxymorphone were studied with thermal and mechanical models of nociception in rats. RESULTS: Intrathecal noroxymorphone (1 and 5 microg/10 microL) induced a significantly longer lasting antinociceptive effect compared with oxycodone (200 microg/10 microL) and morphine (1 and 5 microg/10 microL). Pretreatment with subcutaneous naloxone (1 mg/kg) 15 min before intrathecal drug
administration significantly decreased the antinociceptive effect of both noroxymorphone and morphine, indicating an opioid receptor-mediated antinociceptive effect. In the hotplate, paw pressure, and tail flick tests, subcutaneous noroxymorphone was inactive in doses of 5, 10, and 25 mg/kg. Also, no effect on motor function was observed in the rotarod test with doses studied. No antihyperalgesic effect was observed in the carrageenan model for inflammation in rats with subcutaneous noroxymorphone 25 mg/kg. CONCLUSIONS: The results of this study indicate that noroxymorphone is a potent mu-opioid receptor agonist when administered intrathecally. The lack of systemic efficacy may indicate reduced ability of noroxymorphone to penetrate the blood-brain barrier due to its low calculated logD value (log octanol/water partition coefficient). Thus, noroxymorphone should have a negligible role in analgesia after systemic administration of oxycodone. Because of its spinal efficacy and long duration of effect, noroxymorphone is an interesting opioid for spinal analgesia with a low potential for abuse. Its safety for spinal administration should be assessed before clinical use.

ELEVATED EXPRESSION AND ACTIVATION OF MATRIX METALLOPROTEINASE 8 IN TEAR FLUID IN ATOPIC BLEPHAROCONJUNCTIVITIS

MÄÄTTÄ MARKO, KARI OSMO, TERVAHARTIALA TAINA, WAHLGREN JAANA, PELTONEN SIRJE, KARI MARJATTA, RYTILÄ PAULA, SAARI MATTI, SORSA TIMO
Cornea 27 (3): 297-301, 2008

PURPOSE: Matrix metalloproteinase 8 (MMP-8) is an effective collagenolytic enzyme that is associated with many ocular inflammatory diseases, such as uveitis, keratitis, and ocular rosacea. We studied the tear fluid concentration and activation of MMP-8 in atopic blepharoconjunctivitis (ABC) and the presence of the enzyme in conjunctival inflammatory cells in vivo. METHODS: Tear fluid samples were collected from 26 patients with ABC and 26 healthy controls. MMP-8 concentrations were determined by immunofluorometric assay, and its molecular forms and degrees of activation were studied by Western blotting. Conjunctival brush cytology samples from patients with ABC were used for MMP-8 immunocytochemistry. RESULTS: The mean MMP-8 concentration was statistically significantly higher among the patients with ABC (545.6 +/- 879.3 microg/L) than among the healthy controls (50.4 +/- 62.3 microg/L, P = 0.0001). There was a statistically significant correlation between neutrophils detected in brush cytology and tear fluid MMP-8 (P = 0.032, r = 0.47). Both the control and ABC tear fluid samples contained predominantly the larger (60-80 kDa), highly glycosylated polymorphonuclear leukocyte-type MMP-8 isoform, as identified by Western blotting, but neither was found to contain the mesenchymal-type isoform. The active enzyme was in practice present only in the ABC samples. Immunostainings show the MMP-8 protein to be present in all the main inflammatory cell types within the conjunctiva. CONCLUSIONS: A higher mean concentration and activation of MMP-8 is present in
tear fluid in ABC. This finding probably reflects persistent inflammatory and collagenolytic activity associated with the disease.

**IMMUNOHISTOCHEMICAL IDENTIFICATION OF MMP-2 AND MMP-9 IN HUMAN DENTIN: CORRELATIVE FEI-SEM/TEM ANALYSIS**

MAZZONI ANNALISA, PASHLEY DAVID H., TAY FRANKLIN R., GOBBI PIETRO, ORSINI GIOVANNA, RUGGERI ALESSANDRA JR., CARRILHO MARCELA, TJADERHANE LEO, DI LENARDA ROBERTO, BRESCHI LORENZO


Matrix metalloproteinases (MMPs) are a family of peptidases trapped within mineralized dentin matrix and involved with degradation of the extracellular matrix components in hybrid layers and caries. Despite their identification through indirect evidences and biochemical assays, MMP-2 and -9 have not been localized within the human dentin extracellular organic matrix. Thus, this study aimed to assess the localization and distribution of MMP-2 and -9 in human dentin organic matrix by employing a correlative field emission in-lens-scanning electron microscopy (FEI-SEM) and transmission electron microscopy (TEM) immunohistochemical approach. Dentin specimens were submitted either to a preembedding or to a postembedding immunolabeling technique using primary monoclonal antibodies anti-MMP-2 and anti-MMP-9 and exposed to a secondary antibody conjugated with gold nanoparticles. MMP-2 and -9 labelings were identified in the demineralized dentin matrix as highly electron-dense gold particles dispersed on the collagen fibrils. Correlative FEI-SEM/TEM observations confirmed that MMP-2 and MMP-9 are endogenous components of the human dentin organic matrix and revealed the three-dimensional relationship between these proteinases and the collagen fibrils, showing that both antibodies yielded a similar labeling pattern. In conclusion, the results of the study contribute to reveal distinct distribution pattern of gelatinases and support the hypothesis that these enzymes are intrinsic constituents of the dentin organic matrix after decalcification. (c) 2008 Wiley Periodicals, Inc.

**INFECTIVE ENDOCARDITIS**

MEURMAN JUKKA H.


ISBN: 978-1-60456-761-8
MICRO-COSMOS OF THE MOUTH

MEURMAN JUKKA H.
ISSN 0783-5892

ORAL MICRO-ORGANISMS IN THE ETIOLOGY OF CANCER

MEURMAN JUKKA H., UITTAMO JOHANNA

We present a novel concept on carcinogenesis mediated by oral microbiota. Oral micro-organisms are capable of metabolizing alcohol to acetaldehyde. This finding casts light on the observed association between poor oral hygiene and oral cancer. Ethanol, as such, is not carcinogenic, but its first metabolite acetaldehyde is indisputably carcinogenic. Several gastro-intestinal microbial species possess the enzyme alcohol dehydrogenase (ADH), which is also the enzyme responsible for alcohol metabolism in the liver. In oral microbiota, we observed that species such as the ubiquitous viridans streptococci and Candida also possess ADH. Ethanol can be detected in the mouth hours after the consumption of alcoholic beverages. Patients with poor oral health status have shown higher salivary acetaldehyde concentrations than those with better oral health. It is thus understandable that ADH-containing micro-organisms in the mouth present a risk for carcinogenic acetaldehyde production, with subsequent potential for the development of oral cancer, particularly among heavy drinkers. In this article, we briefly review this area of investigation and conclude by highlighting some future possibilities for the control of carcinogenesis.

PROBIOTICS IN ORAL BIOLOGY AND DENTISTRY

MEURMAN, JUKKA H.
ISBN: 9781555814038
A REGULATORY RELATIONSHIP BETWEEN TBX1 AND FGF SIGNALING DURING TOOTH MORPHOGENESIS AND AMELOBLAST LINEAGE DETERMINATION

MITSIADIS THIMIOS A., TUCKER ABIGAIL S., DE BARI COSIMO, COBOURNE MARTYN T., RICE DAVID

The Tbx1 gene is a transcriptional regulator involved in the DiGeorge syndrome, which affects normal facial and tooth development. Several clinical reports point to a common enamel defect in the teeth of patients with DiGeorge syndrome. Here, we have analyzed the expression, regulation, and function of Tbx1 during mouse molar development. Tbx1 expression is restricted to epithelial cells that give rise to the enamel producing ameloblasts and correlates with proliferative events. Tbx1 expression in epithelium requires mesenchyme-derived signals: dental mesenchyme induces expression of Tbx1 in recombined dental and non-dental epithelia. Bead implantation experiments show that FGF molecules are able to maintain epithelial Tbx1 expression during odontogenesis. Expression of Tbx1 in dental epithelium of FGF receptor 2b(-/-) mutant mice is downregulated, showing a genetic link between FGF signaling and Tbx1 in teeth. Forced expression of Tbx1 in dental explants activates amelogenin expression. These results indicate that Tbx1 expression in developing teeth is under control of FGF signaling and correlates with determination of the ameloblast lineage.

MOTHERS AS FACILITATORS OF ORAL HYGIENE IN EARLY CHILDHOOD

MOHEBBI SIMIN Z., VIRTANEN JORMA, MURTOMAA HEIKKI, VAHID-GOLPAYEGANI MOITABA, VEHKALAHTI MIIRA

BACKGROUND: Toothbrushing twice daily is a recommended component of oral self-care soon after the eruption of primary dentition. Aim. This study aims to investigate oral hygiene and frequency of oral cleaning in children up to 3 years, in relation to mother-related factors. DESIGN: A cross-sectional study of 504 children aged 12-36 months in Tehran, Iran was implemented. Mothers answered questions about their own oral self-care and their activity in their children's oral hygiene. The child's oral hygiene was assessed on the basis of visible dental plaque on the labial surfaces of the upper central incisors. Data analysis included chi-square test, analysis of variance (ANOVA) and logistic regression. RESULTS: Twice daily oral cleaning was reported for 5% of all children and once daily cleaning for 19% of the 12- to 15-month-old children, 18% of the 16- to 23-month-old children, and 48% of the 24- to 36-month-old children. Of the mothers, 59% stated that they lacked the skill to clean their children's teeth. Dental plaque was observed in 65-76% of the children. Clean teeth were more likely (OR = 1.7, 95% CI 1.3-2.3) in children of mothers who themselves have a higher toothbrushing frequency.
CONCLUSIONS: To improve oral hygiene in early childhood, more emphasis should be placed on mothers' own toothbrushing and their skills in their children's oral cleaning.

FEEDING HABITS AS DERMINANTS OF EARLY CHILDHOOD CARIES IN A POPULATION WHERE PROLONGED BREASFEEDING IS THE NORM

MOHEBBI SIMIN Z., VIRTANEN JORMA, VAHID-GOLPAYEGANI MOITABA, VEHKALAHTI MIIRA
Community dentistry and oral epidemiology 36: 363-369, 2008

OBJECTIVES: To investigate the impact of feeding habits and daytime sugar intake on the prevalence of early childhood caries in a population where prolonged breastfeeding is a norm. METHODS: A cross-sectional study was carried out at 18 of 102 public health centers in Tehran. During a 4-day period at each center, between 20 and 35 children aged 1-3 years were enrolled, resulting in a sample of 504 children. In structured interviews, mothers were asked to give information about their child's feeding habits, daytime sugar intake, and their family's background. Sugar intake during the night was operationalized as separately calculated burdens of nighttime breastfeeding and bottle-feeding. Clinical dental examinations followed the World Health Organization criteria. Data analysis included chi-square test, t-test, ANOVA, and logistic regression modeling. RESULTS: Of the children, 56% were solely breastfed (mean duration 16.6 months; 95% CI 16.0-17.2), 42% were both breastfed and bottle-fed, and 2% were solely bottle-fed. Mean duration of breastfeeding for the solely breastfed 24- to 36-month olds was 22.8 months (95% CI 21.8-23.9). At bedtime, 69% were breastfed, 11% bottle-fed, and 20% were not fed at all. With respect to feeding during the night, 72% of children were breastfed, 12% were bottle-fed with milk, 1% received a bottle with water, while 15% were not fed. Early childhood caries (ECC) occurred in 3-26% of the children, depending on age group (P < 0.001). The burden of milk-bottle feeding at night was a clear determinant for ECC (OR = 5.5) whereas breastfeeding per se, its duration, the burden of breastfeeding at night, and daytime sugar intake were not. CONCLUSION: On account of its association with ECC, milk-bottle feeding at night should be limited, whereas prolonged breastfeeding appears to have no such negative dental consequences.
PROTEIN ANTIGEN IN SEROTYPE K STREPTOCOCCUS MUTANS CLINICAL ISOLATES

NAKANO K., NOMURA R., NEMOTO H., LAPIRATTANAKUL J., TANIGUCHI N., GRÖNROOS LISA, ALALUUSUA SATU, OOSHIMA T.

Journal of dental research 87: 964-968, 2008

Streptococcus mutans, a major pathogen of dental caries and infective endocarditis, is classified into serotypes c, e, f, and k, with serotype k strains recently reported to be frequently detected in persons with infective endocarditis. Thus, we hypothesized that common properties associated with infective endocarditis are present in those strains. Fifty-six oral S. mutans strains, including 11 serotype k strains, were analyzed. Western blotting analysis revealed expression of the 3 types of glucosyltransferases in all strains, while expression of the approximately 190-kDa cell-surface protein (PA) was absent in 12 strains, among which the prevalence of serotype k (7/12) was significantly high. Furthermore, cellular hydrophobicity and phagocytosis susceptibility were lower in the group of serotype k strains. These results indicate that the absence of PA expression, low cellular hydrophobicity, and phagocytosis susceptibility are common bacterial properties associated with serotype k strains, which may be associated with virulence for infective endocarditis.

PREVALENCE OF REMOVABLE DENTURES AND NEED FOR REPAIR

NORDBLAD ANNE, KÖNÖNEN MAUNO, SUOMINEN-TAIPALE LIISA

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COMPARATIVE GENE EXPRESSION PROFILE ANALYSIS BETWEEN NATIVE HUMAN ODONTOBLASTS AND PULP TISSUE

PÄÄKKÖNEN V., VUORISTO J., SALO TUULA, TJÄDERHANE LEO

International endodontic journal 41: 117-127, 2008

AIM: To undertake a large-scale analysis of the expression profiles of native human pulp tissue and odontoblasts, and search for genes expressed only in odontoblasts.

METHODOLOGY: Microarray was performed to pooled pulp and odontoblasts of native human third molars and to pooled +/- TGF-beta1 cultured pulps and odontoblasts (137 teeth). The repeatability of microarray analysis was estimated by comparing the
experimental pulp samples with expression profiles of two pulp samples downloaded from the GEO database. The genes expressed only in the experimental pulp samples or in odontoblasts were divided into categories, and the expression of selected odontoblast-specific genes of extracellular matrix (ECM) organization and biogenesis category was confirmed with RT-PCR and Western blot. RESULTS: A 85.3% repeatability was observed between pulp microarrays, demonstrating the high reliability of the technique. Overall 1595 probe sets were positive only in pulp and 904 only in odontoblasts. Sixteen expressed sequence tags (ESTs), which represent transcribed sequences encoding possibly unknown genes, were detected only in odontoblasts; two consistently expressed in all odontoblast samples. Matrilin 4 (MATN4) was the only ECM biogenesis and organization related gene detected in odontoblasts but not in pulp by microarray and RT-PCR. MATN4 protein expression only in odontoblasts was confirmed by Western blot. CONCLUSIONS: Pulp tissue and odontoblast gene expression profiling provides basic data for further, more detailed protein analysis. In addition, MATN4 and the two ESTs could serve as an odontoblast differentiation marker, e.g. in odontoblast stem cell research.

LYMPHOTOXIN ALPHA LTA+496C ALLELE IS A RISK FACTOR FOR PERIODONTITIS IN PATIENTS WITH CORONARY ARTERY DISEASE

PALIKHE ANIL, LOKKI MARJA-LIISA, PUSSINEN PIRKKO, PAJU SUSANNA, AHLBERG JARI, ASIKAINEN S, SEPPÄNEN MIKKO, VALTONEN VILLE, NIEMINEN MARKKU S, SINISALO JUHA

Tissue antigens 71 (6): 530-537, 2008

Periodontitis and coronary artery disease (CAD) are inflammatory diseases and associated with each other. The major histocompatibility complex (MHC) region carries genes involved in immune response and inflammation. We investigated whether the MHC genes correlate with the presence of periodontitis or with the occurrence of periodontal pathogens in patients with CAD. Blood and saliva samples from CAD patients (n = 106) were collected at the time of hospitalization. Nine MHC genetic markers [human leukocyte antigen (HLA)-A, HLA-B, HLA-DRB1, lymphotoxin alpha (LTA) +253(a/g), +496(C/T), +633(c/g), +724(C/A), C4A and C4B] were typed. Based on panoramic tomography, patients were categorized into nonperiodontitis and periodontitis groups. Two major periodontal pathogens, Aggregatibacter (Actinobacillus) actinomycetemcomitans and Porphyromonas gingivalis, were cultivated and polymerase chain reaction-amplified from salivary samples. Serum immunoglobulin (Ig)A and IgG antibody levels to these pathogens were measured. In the univariate analysis, LTA+496C allele (OR = 5.29; 95% CI = 2.07-13.51, P = 0.00027), and the occurrence of P. gingivalis in saliva (OR = 4.74; 95% CI = 1.64-13.70; P = 0.002) were more frequent in periodontitis when compared with nonperiodontitis. Similarly, serum IgA antibody level against the pathogen was increased in periodontitis (P = 0.048). In the multiple logistic regression analysis, when a wide range of covariates was included, the LTA+496C allele
(OR = 10.87; 95% CI = 3.23-36.60; P = 0.00012) and the elevated serum IgA antibody level against P. gingivalis (OR = 1.56; 95% CI = 1.05-2.30; P = 0.026) remained as significant risk factors for periodontitis. In conclusion, the major finding of this study is that the LTA+496C allele is associated with periodontitis in patients with CAD.

**HUMAN LAMININ-332 DEGRADATION BY CANDIDA PROTEINASES**

PÄRNÄNEN PIRJO, KARI KIRSTI, VIRTANEN ISMO, SORSA TIMO, MEURMAN JUKKA H.


**BACKGROUND:** Human laminin-332 (Lm-332) degradation by 12 Candida strains and effects of synthetic proteinase inhibitors [Ilomastat (ILM), EDTA, chemically modified tetracycline-3(CMT-3), CMT-308, synthetic peptide CTT-2, and Pefabloc] were studied.

**MATERIALS AND METHODS:** Laminin-332 was incubated with sonicated cell fractions and 10 times concentrated cell-free fractions of reference and clinical strains of C. albicans, C. dubliniensis, C. guilliermondii, C. glabrata, C. krusei, and C. tropicalis. Proteolysis, pH effects, and inhibitors were analyzed by fluorography and zymography.

**RESULTS:** Cell fractions of all species except C. guilliermondii and cell-free fractions of C. albicans, and C. dubliniensis showed 20-70 kDa gelatinases at pH 5.0 and 6.0. At pH 7.6, C. glabrata, C. krusei, and C. tropicalis cell fractions and C. tropicalis cell-free fractions showed 55-70 kDa gelatinases. CMT-3, CMT-308, and CTT-2 inhibited Candida gelatinases slightly better than Pefabloc, ILM, and EDTA. No Candida fractions degraded Lm-332 at pH 7.6, but at pH 5.0, 100 kDa bands were generated by cell fractions of C. dubliniensis and C. tropicalis; C. albicans and C. glabrata clinical strains; and C. guilliermondii reference strain. C. krusei reference strain yielded three 100-130 kDa bands. C. albicans, C. dubliniensis, and C. tropicalis reference and clinical strain's cell-free fractions generated 100 kDa band.

**CONCLUSIONS:** Laminin-332 degradation is pH-dependent and differences exist between studied Candida strains. Lm-332 degradation can exert functional disturbances on basement membrane integrity, possibly aiding Candida cell invasion into tissues. Certain synthetic matrix metalloproteinase inhibitors (CMTs, CTT) can inhibit Candida proteinases and may be therapeutically useful in future.
EFFECT OF MMP-1 PROMOTER POLYMORPHISMS ON GCF MMP-1 LEVELS AND OUTCOME OF PERIODONTAL THERAPY IN PATIENTS WITH SEVERE CHRONIC PERIODONTITIS

PIRHAN D, ATILLA GUL, EMINGIL GULNUR, SORSA TIMO, TERVAHARTIALA TAINA, BERDELI A.

AIMS: The aims of this study were to investigate (1) the matrix metalloproteinase-1 (MMP-1) promoter polymorphisms in severe chronic periodontitis (CP), (2) the relationship of periodontal therapy outcome with these genotypes, and (3) the gingival crevicular fluid (GCF) MMP-1 levels-MMP-1 genotype correlation. MATERIAL AND METHODS: Genomic DNA was obtained from the peripheral blood of 102 patients with severe CP and 98 periodontally healthy subjects. MMP-1 -519A/G and -1607 1G/2G polymorphisms were determined by the polymerase chain reaction-restriction fragment length polymorphism (PCR-RFLP) method. Fifty-eight CP patients received non-surgical periodontal therapy and were followed for 6 months. Clinical periodontal parameters and GCF samples were collected at baseline and at 6 months. GCF MMP-1 levels were analysed by enzyme-linked immunosorbent assay (ELISA). RESULTS: The distribution of MMP-1 genotypes did not significantly differ between the study groups. On the other hand, the -1607 2G allele frequency of severe CP patients was higher than that of healthy subjects. MMP-1 -519G allele carriers had higher GCF MMP-1 levels and percentage of sites with 4-6 mm clinical attachment level (CAL) compared with AA genotypes after non-surgical periodontal therapy (p<0.05). CONCLUSIONS: These data suggest that the -1607 2G polymorphic allele of the MMP-1 gene could be associated with susceptibility to severe CP in the Turkish population. It seems that -519AG and GG genotypes could play a role in the outcome of periodontal therapy.

AGE-SPECIFIC ASSOCIATIONS BETWEEN DENTAL FEAR AND DENTAL CONDITION AMONG ADULTS IN FINLAND

POHJOLA V., LAHTI S., VEHKALAHTI MIIRA, TOLVANEN M., HAUSEN H.

OBJECTIVE: Our objective was to study whether dental condition, measured by numbers of sound, decayed, missing, and restored teeth, was associated with dental fear, and whether age, dental attendance, and/or gender modified this association. MATERIAL AND METHODS: The sample (n=8,028) comprised Finnish adults aged 30 years and older and the study included people (n=6,335) who participated in a home interview and a clinical dental examination. Dental fear was measured by the question: "How afraid are you of visiting a dentist?" Multiple logistic regression analysis was used to determine the association between dental fear and dental condition variables, i.e. numbers of decayed, missing, sound, and restored teeth considering the effects of age, attendance, and gender.
RESULTS: With the exception of number of restored teeth, all dental condition variables were associated with dental fear. The association between dental fear and number of decayed teeth was positive and was independent of age, gender, and attendance. Age modified the association between dental fear and number of missing and sound teeth. Among the oldest age group, the numbers of missing and sound teeth were positively associated with dental fear while being negatively associated among the youngest age group. CONCLUSIONS: People with high dental fear have poorer dental condition than those with lower fear. Neither gender nor dental attendance affects the association between dental fear and dental condition. The associations between dental fear and numbers of missing and sound teeth vary according to year of birth.

SALIVARY LYSOZYME AND PREVALENT HYPERTENSION

Journal of dental research 87: 480-484, 2008

Although the etiology of essential hypertension is not clearly understood, endothelial dysfunction from chronic infection and/or impaired glucose metabolism may be involved. We hypothesized that salivary lysozyme, a marker for oral infection and hyperglycemia, might display a significant relationship with hypertension, an early stage of cardiovascular disease. Logistic regression analyses of the Kuopio Oral Health and Heart Study demonstrated that persons with higher lysozyme levels were more likely to have hypertension, after adjustment for age, gender, smoking, BMI, diabetes, the ratio of total cholesterol to HDL cholesterol, and C-reactive protein. The exposure to increasing quartiles of lysozyme was associated with adjusted Odds Ratios for the outcome, hypertension, 1.00 (referent), 1.25, 1.42, and 2.56 (linear trend p < 0.003). When we restricted the sample to the individuals without heart disease (N = 250), we observed a non-significant trend for increasing odds. Our hypothesis--"high salivary lysozyme levels are associated with the odds of hypertension"--was confirmed.

CLINICAL FEATURES OF SYNDROMIC CRANIOSYNOSTOSIS

RICE DAVID
Craniofacial sutures 91-106, 2008

Disruption of normal suture development and function can result in premature suture fusion, craniosynostosis. This review focuses on syndromic forms of craniosynostosis. More than 100 syndromes in which craniosynostosis is a feature have been documented and here the most common conditions including Apert and Crouzon syndromes are
described as well as other conditions with a particularly interesting molecular etiology, such as Saethre-Chotzen and craniofrontonasal syndrome.

CRANIOFACIAL GENETICS AND DYSMORPHOLOGY

RICE DAVID

DEVELOPMENTAL ANATOMY OF CRANIOFACIAL SUTURES

RICE DAVID
e-ISBN: 978-3-8055-8152-3

Sutures are fibrous joints in the vertebrate skull. They consist of two bone ends and intervening fibrous tissue which differentiates from embryonic mesenchyme. Sutures are not merely articulations between bones they are primary sites of osteogenesis mediating much of the growth of the face and skull vault. In this chapter the development of sutures will be described including the origin of sutural tissues, the determinants of suture location, and suture morphology. Also, the main functions of sutures will be explained.

LOCATE, CONDENSE, DIFFERENTIATE, GROW AND CONFRONT: DEVELOPMENTAL MECHANISMS CONTROLLING INTRAMEMBRANOUS BONE AND SUTURE FORMATION AND FUNCTION

RICE DAVID
e-ISBN: 978-3-8055-8152-3

The key mechanisms controlling where and when craniofacial bones and hence sutures form are discussed in this review. These include the formation and growth of skeletogenic
condensations, tissue to tissue interactions between the epithelium, skeletogenic mesenchyme and the underlying dural and neural tissues. Also discussed are the key processes determining intramembranous bone growth, namely osteoblastogenesis and osteoclastogenesis.

PREFACE

RICE DAVID

e-ISBN: 978-3-8055-8152-3

Craniofacial sutures are important sites of facial and calvarial bone growth. Sutures therefore contribute to differences in the shape, size and character of our face and skull and as a result in the way in which we perceive each other. Suture development, which occurs mainly during embryogenesis, has to be carefully synchronized with the development of the neighboring organs. These organs are primarily the brain, eyes, nose and mouth. If sutures close prematurely, a condition called craniosynostosis, further bone growth is not possible at the site of fusion. This results in uncoordinated compensatory craniofacial development and consequently produces deformity of the calvaria, orbits or face and may also result in dental malocclusion. This book brings together leading basic science researchers and clinicians to produce a review of craniofacial suture development and the clinical conditions that can result from abnormal suture development. The book is broadly divided into five sections. First, there is a developmental biology section in which the developmental anatomy of both calvarial and facial sutures is described, and the key molecular mechanisms controlling intramembranous bone and suture formation are detailed. In addition, the factors controlling suture patency are discussed. Following this there is a chapter on how, from an evolutionary aspect, sutures form and why they form at specific locations and at specific times. The third section gives a synopsis of the major clinical conditions affecting craniofacial sutures, a comprehensive overview of human genetic mutations causing craniosynostosis, and evidence of genotype-phenotype correlations. In the fourth section the major molecular pathways involved in normal and abnormal suture development are described. It is intended that this section combined with the clinical sections provides an insight into the molecular etiology of sutural disorders. Finally, there is a review of current treatment philosophies and a look to the future.

David P. Rice, Helsinki
A NOVEL METHOD FOR SAMPLING THE MICROBIOTA FROM THE ORAL MUCOSA

RUSANEN PETER, SIICKALA EMILIA, UITTAMO JOHANNA, RICHARDSON MALCOLM, RAUTEMAA RIINA

The purpose of this study was to develop a site-specific sampling method that could give representative and quantitative results for defined areas of the oral mucosa and would be easy to use. Two site-specific sampling methods (swab and filter paper imprint) were compared. The filter paper sampling method was developed for this study. Samples were collected from 14 volunteers. All samples were cultured under aerobic and anaerobic conditions. The number of viable bacteria and yeasts was determined and expressed per unit area. The filter paper recovered a significantly higher number of colony types of bacteria compared to the swab sample. Both collected a large number and variety of different oral microbes. The filter paper sampling method could be the optimal technique for quantitative site-specific oral mucosal samples and is highly suitable for both culture-based and non-culture-based identification of oral microbes.

MOTHERS AS FACILITATORS OF PREADOLESCENTS’ ORAL SELF-CARE AND ORAL HEALTH

SAIED-MOALLEMI ZAHRA, VEHKALAHTI MIIRA, VIRTANEN JORMA, TEHRANCHI AZITA, MURTOMAA HEIKKI

PURPOSE: This study investigated the role of mothers in their preadolescents' oral self-care (OSC) and oral health in Tehran, Iran. MATERIALS AND METHODS: In 2005, two self-administered questionnaires provided data on a random sample of 9-year-old children (N = 416) and their mothers. Brushing frequency, use of fluoridated dentifrice and the number of sugary snacks between meals served as OSC assessment criteria for both children and their mothers. Supervision of the child's tooth brushing and control of the child's sugary snacking indicated the mother's role that was defined as either active or inactive. Decayed, missing or filled teeth (DMFT + dmft) values facilitated the assessment of children's dental status in a voluntary clinical examination for children. The child's twice-daily tooth brushing, sound dentition and good oral hygiene were taken as the outcome measures for evaluating the impact of the mother's role. The chi-square test and logistic regression model were used for the analyses. RESULTS: Half of the mothers were assessed as active in the supervision of their children's tooth brushing. Supervision was clearly more frequently reported by the mothers whose own OSC was favourable. In
the logistic regression model, the strongest factors contributing to the explanation of twice-daily tooth brushing were the child's female gender (odds ratio, OR = 1.6; 95% confidence interval, 95% CI = 1.1 to 2.4) and the mother's active supervision (OR = 1.5; 95% CI = 1.0 to 2.2). Having sound dentition was most strongly explained by the mothers' active supervision of their children's tooth brushing (OR = 2.4; 95% CI = 1.3 to 4.5). CONCLUSIONS: The mothers' supporting role positively reflects on twice-daily tooth brushing and sound dentition in preadolescents. More preventive efforts through mothers should be considered during the planning of promotion programmes for preadolescents.

INFLUENCE OF MOTHERS' ORAL HEALTH KNOWLEDGE AND ATTITUDES ON THEIR CHILDREN'S DENTAL HEALTH

SAIED-MOALLEMI Z., VIRTANEN JORMA, GHOFRANIPOUR F., MURTOMAA HEIKKI

AIM: This was to evaluate the influence of mothers' oral health-related knowledge and attitudes on the tooth-brushing behaviour and dental health of their children and to compare the effect of these maternal aspects on child's oral health. STUDY DESIGN AND METHODS: In 2005, an oral health study conducted among a random sample of 457 mother and child pairs in Tehran, Iran, used self-administered questionnaires to provide data on mothers' oral health-related knowledge and attitudes and children's tooth-brushing behaviour. Clinical data allowed assessment of dental status of the primary and permanent dentition. STATISTICS: Chi-square test and binary logistic regression models were employed. RESULTS: Generally, mothers had extensive knowledge of and positive attitudes towards oral health. Mothers' higher level of oral health knowledge and better attitude scores were associated with children's sound dentition (p<0.05), while only mothers' better attitude was associated with children's twice-daily tooth brushing (p=0.001). The multivariate analyses showed that children of mothers with higher attitude scores were more likely to brush their teeth twice daily (OR = 2.1; 95% CI 1.2 - 3.7) and have sound dentition (OR = 12.4; 95% CI 1.8 - 85.9). The models revealed that mother's knowledge per se had no effect on children's sound dental health, but showed an additive effect with mother's attitudes. CONCLUSIONS: Because twice-daily tooth-brushing behaviour and sound dentition in 9-year-olds were associated with their mothers' positive oral health-related attitudes, in developing oral health promotion programs for children and adolescents, the considerable potential of mothers should be a major focus of oral health professionals.
TRIBUTYL Tin IMPAIRS DENTIN MINERALIZATION AND ENAMEL FORMATION IN CULTURED MOUSE EMBRYONIC MOLAR TEETH

SALMELA EIJA, SAHLBERG CARIN, ALALUUSUA SATU, LUUKINMAA PIRO- LIISA
Toxicological sciences 106:(1) 214-222, 2008

Tributyltin (TBT), earlier used as an antifouling agent in marine paints, causes damage to the aquatic ecosystem, for example, impaired shell calcification in oysters. TBT affects hard tissue mineralization even in mammals: delayed bone mineralization has been observed in rodents exposed to TBT in utero. To see if TBT interferes with tooth development, especially dental hard tissue formation, we exposed mouse E18 mandibular first and second molars to 0.1, 0.5, 1.0, and 2.0 microM TBT chloride in organ culture for 7-12 days. The amount of enamel was assessed and the sizes of the first molars were measured from photographs taken after the culture. TBT concentration dependently impaired enamel formation (p < 0.001) and reduced tooth size (p < 0.001). Histological analysis showed slight arrest of dentin mineralization and enamel formation in first molars exposed to 0.1 microM TBT. At the concentration of 1.0 microM the effect was overt. The differentiation of ameloblasts in the mesial cusps was retarded but TBT had no effect on odontoblast morphology. The dental epithelium showed enhanced apoptosis. The failure of ameloblasts to form enamel was likely to be secondary to the effect of TBT on dentin mineralization. In the second molars, where predentin deposition had not started, ameloblasts and odontoblasts were nonpolarized and proliferative. The results showed that TBT concentration dependently impairs dental hard tissue formation and reduces tooth size in cultured mouse embryonic molars. The effects depend on the stage of tooth development at the start of exposure and may involve epithelial-mesenchymal interactions.

ACUTE FACIAL TRAUMA IN FALLING ACCIDENTS: MDCT ANALYSIS OF 500 PATIENTS

SALONEN ELINA, KOIVIKKO MIKA, KOSKINEN SEppo

The aim of this study is to assess multidetector computed tomography (MDCT) findings of facial trauma due to a falling accident. Using picture-archiving and communications system, we retrieved all MDCT requests for suspected facial injury during a 62-month period. Images were interpreted by two researchers. Five hundred patients met the inclusion criteria and 329 (66%) had a total of 515 fractures. Falls on stairs were seen in 109 (22%) patients and slips or trips in 391 (78%). The corresponding number of fractures was 169 (33%) and 346 (67%). Males (N = 241) had more fractures than females (N = 259), 327 vs. 188, respectively. The zygomatic complex was the most common fracture, seen in 40% of patients suffering a fracture. Twenty patients (4%) had
fractures involving the sinus walls without paranasal sinus effusions. Facial fractures due to falls are common. The zygomatic complex is the most common fracture. A clear sinus sign may be less reliable than previously thought.

SURVIVAL AFTER DIAGNOSIS OF CANCER OF THE ORAL CAVITY

SARGERAN K., MURTOMAA HEIKKI, SAFAVI S. M., VEHKALAHTI MIIRA, TERONEN OLLI

In this retrospective study we analysed the survival in 470 patients with oral cancer. Patients who attended five university hospitals in Tehran, Iran, during the period 1996-2002 were included. Data were obtained from a combination of sources including patients' records, telephone calls, and deaths registered by the Ministry of Health. Survival curves were generated using Kaplan-Maier curves. Univariate and multivariate analyses of the relations between survival and age, sex, site of primary tumour, stage, and histopathological type were made using the log-rank test and Cox’s regression analysis. Sex and age were not associated with survival. Treatment and stage of tumour at the time of diagnosis were related to survival. The overall survival rates were higher in patients with stages I or II cancer than those in stages III (OR=2.8, 95% CI=1.8 to 4.4) or IV (OR=4.6, 95% CI=3.1 to 6.8) at the time of diagnosis. Patients treated with radiotherapy had lower survival than those who had been operated on and had radiotherapy or operation alone (OR=2.8, 95% CI=1.7 to 4.5). There was no difference in survival depending on the histological type of tumour. To achieve higher survival, early detection and diagnosis of oral cancers should be emphasised in oral health programmes to improve public awareness and preventive activities among dentists in Iran.

PREVENTIVE ASPECTS IN CHILDREN'S CARIES TREATMENTS PRECEDING DENTAL CARE UNDER GENERAL ANAESTHESIA

SAVANHEIMO NORA, VEHKALAHTI, MIIRA

BACKGROUND: In Helsinki Public Dental Service (PDS) the Special Oral Health Care Unit (SOHCU) provides comprehensive dental treatments under general anaesthesia (GA). For the present study, all dental treatment given under GA for generally healthy children (n = 102) below 16 years of age (range 2.3-15.8) during a 1-year period and dental treatment and visits of these children in the preceding 2 years in Helsinki PDS was recorded in detail. These children were referred to the SOHCU because of serious difficulties in dental care due to large treatment needs or failures in psychological and chemical management, including sedation. AIM: To describe treatments given to
generally healthy children under GA and to evaluate preventive aspects of their dental care in the preceding 2 years. DESIGN: The study was cross-sectional and retrospective. Data came from the patients’ individual records. RESULTS: Treatments under GA included an average of 6.0 restorations (SD = 2.7, range 0-12) and 1.7 extractions (SD = 2.1, range 0-10). In the 2 preceding years, these children had visited dentist an average of 5.1 times (SD = 2.7, range 1-14) with an average of 2.4 restorations (SD = 1.9, range 0-12) and 0.5 extractions (SD = 1.4, range 0-10). Of the restorations made, 36% were temporary. Of all visits, those with an operative approach accounted for 35%, preventive for 37%, operative and preventive for 5%, and visits with total uncooperation for 23%. Of the children, 90% had at least one preventive visit. Children treated under conscious sedation in the preceding 2 years received less prevention (P = 0.02). Remaining without preventive measures was most likely for those children exhibiting visits with total uncooperation (odds ratio = 4.6; P = 0.004) and for those receiving numerous temporary fillings (odds ratio = 4.1; P = 0.0005). CONCLUSIONS: The uncooperative high-caries children pose a demanding challenge to PDS. The early identification of high-caries risk and efforts of intensive preventive care are in key position to reduce the number of children receiving treatment under GA due to high levels of dentinal decay.

ANALYSIS OF SYSTEMIC AND LOCAL ODONTOGENIC INFECTION COMPLICATIONS REQUIRING HOSPITAL CARE

SEPPÄNEN LOTTA, LAUHIO ANNELI, LINDQVIST CHRISTIAN, SUURONEN RIIITA, RAUTEMAA RIIINA

OBJECTIVE: Analysis of systemic and local odontogenic infection complications requiring hospital care. METHODS: All cases of odontogenic infections requiring hospital care, which were adjudicated in the Finnish Patient Insurance Centre during 2000-2003, were analysed. Patient characteristics, and the course and outcome of infection were reviewed. RESULTS: The study material consisted of 35 patient cases; 15 male, 20 female; mean age 38.4 (16-67) years. The mean length of hospital stay was 14.8 (2-81) days. Nine patients required intensive care for mean 6.2 (2-19) days. Twenty-five (71%) patients developed local infection complications with cellulitis and abscess formation, and 10 (29%) patients a generalised or metastatic infection complication. The length of hospital stay among patients with systemic complications was longer than with local complications, 30.2 (2-81) days vs. 8.0 (2-34) days (p=0.0144). All patients with local complications survived but three of the 10 patients with systemic complications died. Medically compromised patients with underlying disease developed more often systemic infection complications than previously healthy patients (p=0.0028). CONCLUSIONS: Medically compromised patients appear more susceptible to systemic rather than local infection complications with a need for significantly longer hospital stay and with an increased risk for fatal complications.
The final goal of mandibular reconstruction following ablative surgery for oral cancer is often considered to be dental implant-supported oral rehabilitation, for which bone grafts should ideally be placed in a suitable position taking subsequent prosthetic restoration into account. The aim of this study was to evaluate the efficacy of a standardized treatment strategy for mandibular reconstruction according to the size of the bony defect and planned subsequent dental prosthetic rehabilitation. Data of 56 patients, who had undergone such a systematic mandibular fibula free flap reconstruction, were retrospectively analyzed. Early complications were observed in 41.5% of the patients but only in those who had been irradiated. Late complications were found in 38.2%. Dental implant survival rate was 92%, and dental prosthetic treatment has been completed in all classes of bony defects with an overall success rate of 42.9%. The main reasons for failure of the complete dental reconstruction were patients' poor cooperation (30.4%) and tumour recurrence (14.3%) followed by surgery-related factors (10.8%) such as implant failure and an unfavourable intermaxillary relationship between the maxilla and the mandible. A comparison of our results with the literature findings revealed no marked differences in the complication rates and implant survival rates. However, a systematic concept for the reconstructive treatment like the method presented here, plays an important role in the successful completion of dental reconstruction. The success rate could still be improved by some technical progress in implant and bone graft positioning.

Background and Objectives: An association has been found between periodontal disease and the development of atherosclerosis. We investigated the hypothesis that periodontal disease triggers the expression of matrix metalloproteinase-9 (MMP-9) and tissue inhibitor of matrix metalloproteinase-1 (TIMP-1) in blood. Increased levels of these parameters might then indicate early atherosclerosis. Material and Methods: In this cross-sectional study, the material comprised 80 subjects with chronic periodontitis and 31 subjects with no periodontal disease. Sixteen years after diagnosis of periodontal disease
ultrasonography revealed a statistically significant difference (p < 0.001) of carotid intima-media thickness between the subjects with chronic periodontitis and the periodontally healthy subjects. Matrix metalloproteinase-9 and TIMP-1 were analyzed from blood as periodontal and systemic inflammatory markers. The relationship between MMP-9, TIMP-1 and MMP-9/TIMP-1 as dependent variables and several independent variables (age, sex, smoking, education, body mass index, hypertension, periodontal disease and cholesterol) were analyzed in multiple logistic regression models to assess the value of the inflammatory markers in predicting carotid atherosclerosis. Results: Matrix metalloproteinase-9 and TIMP-1 were significantly higher in plasma from subjects with periodontal disease and atherosclerosis. Periodontal disease was identified as the principal independent predictor both for atherosclerosis (odds ratio 3.89 for increase in bilateral carotid intima-media thickness) and for increased MMP-9, TIMP-1 and MMP-9/TIMP-1 (odds ratio 2.58, 5.53 and 3.41, respectively). Classical atherosclerosis risk factors, such as increased total cholesterol, age and sex (women), were significant predictors in the model. Conclusion: Matrix metalloproteinase-9, TIMP-1 and MMP-9/TIMP-1 in blood from subjects with periodontal disease could be useful laboratory markers for increased carotid artery intima-media thickness.

ACCURACY OF LINEAR MEASUREMENTS USING DENTAL CONE BEAM AND CONVENTIONAL MULTISLICE COMPUTED TOMOGRAPHY

SUOMALAINEN ANN, VEHMAS TAPIO, KORTESNIEMI MIKA, ROBINSON SORAYA, PELTOLA JAAKKO
Dento-maxillo-facial radiology 37 (1): 10-17, 2008

OBJECTIVES: The aim of this study was to evaluate the accuracy of linear measurements obtained with dental cone beam CT (CBCT) and multislice CT (MSCT) by altering radiation doses using pre-operative planning of the placement of oral implants as a model. METHODS: A human cadaver mandible was examined in two edentulous areas and one dentate area using CBCT and MSCT. The mandible was examined both dry and immersed in sucrose solution isointense with soft tissue. Two readers measured four linear distances twice from each section. The mandible was cut into 4 mm thick slices at three marked places. These slices were microradiographed and used as the gold standard for measurements from each section. RESULTS: The intraclass correlations between the intra- and interobserver readings obtained with the different methods showed almost perfect matches. The measurement error (ME) showed significant differences between the methods studied (P = 0.022): the mean ME was 4.7% for CBCT and 8.8% for MSCT of the dry mandible, 2.3% and 6.6%, respectively, for the mandible immersed in sucrose solution and 5.4% for low-dose MSCT. Lowering the MSCT radiation dose to less than a quarter of its conventional original value did not significantly affect the ME. CONCLUSIONS: CBCT is a reliable tool for implant-planning measurements when compared with MSCT. In this study, a considerable radiation dose reduction could be achieved with low-dose MSCT examinations without a major loss of measurement accuracy.
EDENTULOUSNESS AND NUMBER OF TEETH

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UTILIZATION OF SERVICES

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INVESTIGATING THE ETIOLOGY OF MULTIPLE TOOTH AGENESIS IN THREE SISTERS WITH SEVERE OLIGODONTIA

SWINNEN S., BAILLEUL-FORESTIER I., ARTE SIRPA, NIEMINEN PEKKA, DEVRIENDT K., CARELS C.
Orthodontics & craniofacial research 11: 24-31, 2008

OBJECTIVES: To describe the dentofacial phenotypes of three sisters with severe non-syndromic oligodontia, to report on the mutation analysis in three genes, previously shown to cause various phenotypes of non-syndromic oligodontia and in two other suspected genes. Based on the phenotypes in the pedigree of this family, the different possible patterns of transmission are discussed. METHODS: Anamnestic data and a panoramic radiograph were taken to study the phenotype of the three sisters and their first-degree relatives. Blood samples were also taken to obtain their karyotypes and DNA samples. Mutational screening was performed for the MSX1, PAX9, AXIN2, DLX1 and DLX2 genes. RESULTS: The probands’ pedigree showed evidence for a recessive or multifactorial inheritance pattern. Normal chromosomal karyotypes were found and - despite the severe oligodontia present in all three sisters - no mutation appeared to be present in the five genes studied so far in these patients. CONCLUSIONS: In the three sisters reported, their common oligodontia phenotype is not caused by mutations in the coding regions of MSX1, PAX9, AXIN2, DLX1 and DLX2 genes, but genetic factors most probably play a role as all three sisters were affected. Environmental and epigenetic factors as well as genes regulating odontogenesis need further in vivo and in vitro investigation to explain the phenotypic heterogeneity and to increase our understanding of the odontogenic processes.

ORAL HEALTH IN PERIMENOPAUSAL AND EARLY POSTMENOPAUSAL WOMEN FROM BASELINE TO 2 YEARS OF FOLLOW-UP WITH REFERENCE TO HORMONE REPLACEMENT THERAPY

TARKKILA L., FURUHOLM J., TIITINEN AILA, MEURMAN JUKKA H.

Female sex hormones also affect the mouth but there are little data on oral health of menopause age women. This 2-year follow-up study investigated oral health of perimenopausal and early postmenopausal women. Because hormone replacement therapy (HRT) users have been reported to be more health conscious than nonusers, we expected differences between women using and women not using HRT. Of 3,173 women, a random sample of 400 (200 using and 200 not using HRT) was examined. Of them, 161 case-control pairs of women using/not using HRT were reexamined 2 years later. Dental and periodontal status was recorded according to the WHO criteria and resting and
stimulated saliva flow was measured. Panoramic tomography of the jaws was taken at baseline and at follow-up. The patients also filled in a structured questionnaire on their systemic health, medication, and health habits. The results were analyzed statistically between and within the groups. No difference was observed in any dental parameters or salivary flow rates between the groups. However, during the follow-up, women in HRT group had received more dental restorations (p<0.05) and they also reported more often recent dental appointments (p<0.05). Although no difference in oral health status or salivary flow rates between women using or not using HRT was found, the observation on dental restorations may indicate a more health conscious attitude in the HRT group.

CHANGING TRENDS IN CAUSES AND PATTERNS OF FACIAL FRACTURES IN CHILDREN.

THORÉN HANNA, ISO-KUNGAS P., IIZUKA T., LINDQVIST CHRISTIAN, TÖRNWALL J.

OBJECTIVE: To review the epidemiology of facial fractures in children and to analyze whether it has changed over time. STUDY DESIGN: Retrospective review of records of children aged < or = 15 years diagnosed for fracture during 2 10-year periods. RESULTS: A total of 378 children were diagnosed with fractures, 187 in 1980-1989 and 191 in 1993-2002. The proportion of children with mandibular fractures decreased by 13.6 percentage-points from the first period to the second, whereas the proportion of patients with midfacial fractures increased by 18.7 percentage-points. Assault as a causative factor increased by 5.5 percentage-points, almost exclusively among children aged 13-15 years, with a high percentage (23.5%). CONCLUSIONS: Recognition of a change in fracture patterns over time is probably due to the increased use of computerized tomographic scanning.

POLICY OF ROUTINE TITANIUM MINIPLATE REMOAL AFTER MAXILLOFACIAL TRAUMA

THOREN HANNA, SNÄLL J, HALLERMANN W., KORMI E., TÖRNWALL J.

PURPOSE: The literature shows that hardware removal rates after the fixation of maxillofacial fractures with miniplates are not insignificant. The aim of the present survey was to clarify the policies of Finnish oral and maxillofacial consultants for the removal of titanium miniplates after the treatment of facial fractures in adults. Additional aims were to clarify the factors influencing plate removal policy in general, and the
reasons for routine plate removal in particular. MATERIALS AND METHODS: Twenty-six consultant oral and maxillofacial surgeons responded to a questionnaire about miniplate removal policy after treating 5 types of simple, noncomminuted fractures. RESULTS: Overall, routine plate removal was uncommon. However, 12 consultants (46.2%) routinely removed the plate after treating mandibular angle fractures, and simultaneously extracted the third molar because of an increased risk of infection. Most respondents (88.5%) stated that clinical experience guided their plate-removal policy. A policy of routine plate removal was most infrequent among the consultants who had the most experience. CONCLUSIONS: The literature provides no definitive answer to the question of whether routine removal of miniplates could or should be indicated, and in what situations. Considering the fairly significant frequency of plate-related complications in general and infection-related complications in particular, long-term follow-up after treatment is indicated.

AGGREGATIBACTER ACTINOMYCETEMCOMITANS INDUCES MMP-9 EXPRESSION AND PROATHEROGENIC LIPOPROTEIN PROFILE IN APOE-DEFICIENT MICE

TUOMAINEN ANITA, JAUHAINEN MATTI, KOVANEN PETRI T., METSO JARI, PAJU SUSANNA, PUSSINEN PIRKKO

Microbial pathogenesis 44: 111-117, 2008

Periodontitis increases the atherosclerosis risk, but information on the role of periodontal pathogens in atherogenesis is limited. In the present study we have investigated, whether the major periodontal pathogen, Aggregatibacter (Actinobacillus) actinomycetemcomitans, induces development of atherosclerosis in apolipoprotein E-deficient mice. The mice received 4, 6, or 8 weekly i.v. injections of live pathogen (10^7 CFU/50 microl/mouse) or saline as control, and were killed 1 week after the last injection. The atherosclerotic lesion formation was examined from whole aortas and aortic sinus cryosections after lipid staining. Neither the lesion area in the aortas or en face analyses, nor their immunoreactivity to the macrophage-marker CD68 differed significantly between the infected and the control mice. However, the pathogen administration increased serum C-reactive protein (CRP) concentrations, and induced proatherogenic lipoprotein profiles with smaller particle sizes in very-low density (VLDL), low density (LDL), and high density (HDL) lipoprotein fractions. It also caused elevated matrix metalloproteinase-9 expression in the aortas and increased serum gelatinase level. Lipopolysaccharide deriving from the pathogen was associated with proatherogenic lipoprotein fractions: VLDL and especially LDL. The results indicate that A. actinomycetemcomitans contributes to disturbed lipoprotein profiles, inflammatory reaction, and matrix remodelling which are known to promote the development of atherosclerosis.
THE EFFECTS OF SELECTIVE COX-2 INHIBITOR/CELECOXIB AND OMEGA-3 FATTY ACID ON MATRIX METALLOPROTEINASES, TIMP-1, AND LAMININ-5GAMMA2-CHAIN IMMUNOLOCALIZATION IN EXPERIMENTAL PERIODONTITIS

VARDAR-SENGUL S, BUDUNELI ERLAP, TURKOGLU O., BUDUNELI NURCAN, ATILLA GUL, WAHLGREN JAANA, SORSA TIMO, BAYLAS HALUK


BACKGROUND: Matrix metalloproteinases (MMPs) play important roles in tissue-destruction mechanisms-associated periodontitis. MMP-8 and -13 are the predominant collagenases that are important in the extracellular matrix degradation in periodontal tissues. MMP-14 is a membrane-type MMP, whereas laminin-5 indicates basal membrane modification and epithelial induction. The purpose of the present study was to evaluate the effects of celecoxib and omega-3 fatty acid administration on the gingival tissue expression of MMP-8, -13, and -14, tissue inhibitor of MMP (TIMP)-1, and laminin (Ln)-5gamma2-chain in rat experimental periodontitis induced by Escherichia coli endotoxin (lipopolysaccharide [LPS]).

METHODS: Experimental periodontitis was induced in rats by repeated LPS injection. Fifty-one adult male Sprague-Dawley rats were divided into six study groups: saline control, LPS, LPS + celecoxib, LPS + therapeutic omega-3 (TO3), prophylactic omega-3 + LPS + omega-3 (P+TO3), and LPS + celecoxib + omega-3 fatty acid. Celecoxib and omega-3 fatty acid were given as a single agent or as combination therapy for 14 days. On day 15, all rats were sacrificed, and gingival tissues were analyzed immunohistochemically for the expression of MMP-8, -13, and -14, TIMP-1, and Ln-5gamma2-chain. Alveolar bone loss was evaluated morphometrically under a stereomicroscope. Data were tested statistically by Kruskal-Wallis and Mann-Whitney tests and Spearman correlation analysis.

RESULTS: Alveolar bone loss was significantly higher in all study groups compared to the saline control group (all P <0.01). MMP-8 expression was significantly higher in the LPS group than in the saline group (P = 0.001). Very low expression of MMP-8 was found in the celecoxib, P+TO3, and combination groups. TO3 increased TIMP-1 expression significantly compared to the LPS group (P <0.05). Individual celecoxib and P+TO3 administration increased MMP-14 significantly compared to saline control and LPS groups (P <0.05). No significant differences were found among the study groups with regard to Ln-5gamma2-chain and MMP-13 expressions (P >0.05).

CONCLUSIONS: Selective cyclooxygenase-2 inhibitor, prophylactic omega-3 fatty acid, and a combination of these two agents can inhibit gingival tissue MMP-8 expression. Moreover, the individual administration of therapeutic omega-3 may increase gingival TIMP-1 expression in contrast to no effect on MMP-8, -13, and -14 expressions in experimental periodontitis. These experimental findings in a rat model of LPS-induced periodontitis need to be verified by clinical human studies.
CHANGES IN ORAL HEALTH AND HEALTH BEHAVIOUR 1980-2000

VEHKALAHTI MIIRA
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SPACES IN DENTAL ARCHES

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DENTAL STATUS

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ORAL SELF-CARE

VEHKALAHTI MIIRA, KNUUTTILA MATTI
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SERUM MATRIX METALLOPROTEINASE-8 IS ASSOCIATED WITH ULCERATION AND VASCULAR INVASION OF MALIGNANT MELANOMA

VIHINEN PIA, KOSKIVUO ILKKA, SYRJÄNEN KARI, TERVAHARTIALA TAINA, SORSA TIMO, PYRHÖNEN SEppo


Serological markers of malignant melanoma have failed to provide prognostic significance in patients who are tumour-free after surgery. Immune response regulation is important regarding progression and therapeutic interventions of malignant melanoma. Matrix metalloproteinase (MMP)-8 is one of the collagenases involved in the regulation of tissue remodelling and immune response, being incompletely studied in melanoma as yet. We assessed whether serum MMP-8 is of prognostic value in malignant melanoma.

We studied serum samples of 117 patients, of which 63 were stage I, 13 stage II, 12 stage III and 29 stage IV. The mean serum MMP-8 levels (47.5 ng/ml) did not significantly correlate with patient or tumour characteristics, that is, patient sex, age, tumour Clark’s or Breslow’s classification, sentinel lymph node status or to survival. Importantly, high serum MMP-8 levels were significantly related to presence of vascular invasion (P=0.001) in primary tumour, tumour ulceration (P=0.003) and tumour bleeding (P=0.033). Tendency to increased serum MMP-8 levels in patients with coronary heart disease or type II diabetes mellitus was detected. These data imply that high serum MMP-8 level is associated with earlier recognized histopathology markers of melanoma progression. Results also suggest that elevated serum MMP-8 might be related to haematogenous spreading of melanoma through vascular invasion.
INTRACELLULAR CO-LOCALIZATION OF TRYPSIN-2 AND MATRIX METALLOPROTEASE-9

VILEN SUVI-TUULI, NYBERG PIA, HUKKANEN MIKA, SUTINEN MEERI, YLIPALOSAARI MERJA, BJARTELL ANDERS, PAJU ANNUKKA, HAAPARANTA VIRPI, STENMAN ULF-HÅKAN, SORSA TIMO, SALO TUULA

Experimental cell research 314 (4): 914-926, 2008

Tumor-associated trypsin-2 and matrix metalloprotease-9 (MMP-9) are associated with cancer, particularly with invasive squamous cell carcinomas. They require activation for catalytical competence via proteolytic cascades. One cascade is formed by enterokinase, trypsin-2 and MMP-9; enterokinase activates trypsinogen-2 to trypsin-2, which is an efficient proMMP-9 activator. We describe here that oral squamous cell carcinomas express all members of this cascade: MMP-9, trypsin-2 and enterokinase. The expression of enterokinase in a carcinoma cell line not derived from the duodenum was shown here for the first time. Enterokinase directly cleaved proMMP-9 at the Lys65-Ser66 site, but failed to activate it in vitro. We demonstrated by confocal microscopy that MMP-9 and trypsin-2 co-localized in intracellular vesicles of the carcinoma cells. This co-localization of trypsin-2 and MMP-9 resulted in intracellular proMMP-9 processing that represented fully or partially activated MMP-9. However, although both proteases were present also in various bone tumor tissues, MMP-9 and trypsin-2 never co-localized at the cellular level in these tissues. This suggests that the intracellular vesicular co-localization, storage and possible activation of these proteases may be a unique feature for aggressive epithelial tumors, such as squamous cell carcinomas, but not for tumors of mesenchymal origin.

EVIDENCE-BASED CARE AND THE CURRICULUM


An evidence-based (EB) approach has been a significant driver in reforming healthcare over the past two decades. This change has extended across a broad range of health professions, including oral healthcare. A key element in achieving an EB approach to oral healthcare is educating our practitioners, both current and future. This involves providing opportunities integrated within simulated and actual clinical settings for practitioners to learn and apply the principles and processes of evidence-based oral healthcare (EBOHC). Therefore, the focus of this discussion will be on ways in which EBOHC and associated research activities can be implemented into curricula, with the aim of improving patient care. This paper will initially define the scope of EBOHC and research, what these
involve, why they are important, and issues that we need to manage when implementing EBOHC. This will be followed by a discussion of factors that enable successful implementation of EBOHC and research into curricula. The paper concludes with suggestions on the future of EBOHC and research in curricula. Key recommendations related to curricula include strengthening of the culture of a scientific approach to education and oral healthcare provision; complete integration of EBOHC into the curriculum at all levels; and faculty development to implement EBOHC based on their needs and evidence of effective approaches. Key recommendations to support implementation and maintenance of EBOHC include recognition and funding for high-quality systematic reviews and development of associated methodologies relevant for global environments; building global capacity of EBOHC researchers; research into improving translation of effective interventions into education and healthcare practice, including patient-reported outcomes, safety and harms, understanding and incorporation of patient values into EB decision-making, economic evaluation research specific to oral healthcare and effective methods for changing practitioner (faculty) behaviours; and extend access to synthesized research in 'user friendly' formats and languages tailored to meet users’ needs. Realizing these recommendations may help to improve access to effective healthcare as a basic human right.

CHARACTERISTICS OF COLLAGENASE-2 FROM GINGIVAL CREVICULAR FLUID AND PERI-IMPLANT SULCULAR FLUID IN PERIODONTITIS AND PERI-IMPLANTITIS PATIENTS: PILOT STUDY

XU LING, YU ZHAO, LEE HSI-MING, WOLFF MARK, GOLUB LORNE, SORSA TIMO, KUULA HEIDI


OBJECTIVE: To compare collagenase activity and collagenolytic matrix metalloproteinase (MMP) levels in gingival crevicular fluid (GCF) and in peri-implant sulcular fluid (PISF) in gingivitis (G), chronic periodontitis (CP), and peri-implantitis (PI) human subjects. MATERIAL AND METHODS: GCF and PISF were collected on filter paper strips, volume was determined, and samples were extracted in buffer containing general proteinase but not MMP inhibitors. Collagenase activity was measured using a DNP-synthetic octapeptide, and molecular and activation forms of collagenase-2 by Western immunoblotting. RESULTS: GCF from CP and G sites exhibited elevated collagenase activity and flow, but collagenase concentrations expressed per microl were not significantly different between the healthy and G sites. Minimal fluid was obtained from healthy PISF, and collagenase concentration was the same or lower than in healthy GCF. Although PISF flow was 34% lower than GCF flow in CP subjects, collagenase concentration in CP and in PI sites was 78% and 971% greater, respectively, than in the appropriate healthy sites. Western immunoblot revealed MMP-8 in both PISF and GCF; fibroblast-type MMP-8 was not detected in healthy GCF and PISF. Immunoreactivity level and inactive and activated forms of PMN-type MMP-8 in GCF and PISF increased with the severity of periodontitis and peri-implantitis. Enhanced levels of fibroblast-type
MMP-8 in active form were detected only in severe CP GCF and PI PISF. CONCLUSIONS: Peri-implantitis PISF contained higher collagenase-2 levels and activity than GCF from similar deep CP sites. GCF and PISF from severe CP and PI exhibited the highest activation of MMP-8 isoenzymes species (PMN and fibroblast-type).

FUNCTIONAL OUTCOME AFTER TOTAL AND SUBTOTAL GLOSSECTOMY WITH FREE FLAP RECONSTRUCTION

YANAI C., KIKUTANI T., ADACHI M., THOREN HANNA, SUZUKI M., IIZUKA T.
Head and neck  30 (3): 909-918, 2008

BACKGROUND: The aim of this study was to evaluate postoperative oral functions of patients who had undergone total or subtotal (75%) glossectomy with preservation of the larynx for oral squamous cell carcinomas. METHODS: Speech intelligibility and swallowing capacity of 17 patients who had been treated between 1992 and 2002 were scored and classified using standard protocols 6 to 36 months postoperatively. The outcomes were finally rated as good, acceptable, or poor. RESULTS: The 4-year disease-specific survival rate was 64%. Speech intelligibility and swallowing capacity were satisfactory (acceptable or good) in 82.3%. Only 3 patients were still dependent on tube feeding. Good speech perceptibility did not always go together with normal diet tolerance, however. CONCLUSIONS: Our satisfactory results are attributable to the use of large, voluminous soft tissue flaps for reconstruction, and to the instigation of postoperative swallowing and speech therapy on a routine basis and at an early juncture.

ORAL HEALTH AND TREATMENT NEEDS AMONG 15-YEAR-OLDS IN TEHERAN, IRAN

YAZDANI R., VEHKALAHTI MIIRA, NOURI M., MURTOMAA HEIKKI
Community dental health  25: 221-225, 2008

OBJECTIVES: To study oral health status and treatment need among 15-year-olds in Tehran, Iran in relation to their parents' level of education. METHODS: A cross-sectional study based on the WHO criteria, was carried out in 2004 among 15-year-olds (n=506) in Tehran. Data collection was by a self-administered questionnaire and a clinical dental examination to assess dental caries, periodontal conditions and orthodontic treatment needs. RESULTS: Mean DMFT was 2.1 (95%CI=1.9, 2.4), which comprised DT=0.9, MT=0.2, and FT=1.0. The mean SiC index was 5.2 (95%CI=4.8, 5.5). Mean numbers of sextants with PI scores 0, 1, and 2 were 0.6, 2.1, and 3.3 respectively, and with CPI scores 0, 1, and 2, were 2.1, 3.5 and 0.4 respectively. Need for caries (DT>0) treatment existed in 40% of subjects, for scaling (CPI=2) in 24%, for oral hygiene instructions in 100%, and for orthodontic treatment in 26%. Subjects with caries and dental plaque were fewer
among those whose parents had a high level of education (p<0.05). Presence of dental plaque was associated with DT>0 (OR=1.8, p=0.01) and CPI>0 (OR=11.2, p<0.001). CONCLUSION: Poor level of oral hygiene among the present 15-year-olds calls for school-based oral health promotion activities focusing on oral self-care.

SMOKING, TOOTH BRUSHING AND ORAL CLEANLINESS AMONG 15-YEAR-OLDS IN TEHRAN, IRAN

YAZDANI REZA, VEHKALAHTI MIIRA, NOURI MAHTAB, MURTOMAA HEIKKI
Oral health & preventive dentistry 6: 45-51, 2008

PURPOSE: To assess smoking, tooth brushing and oral cleanliness and their relationships among 15-year-olds in Tehran, Iran. MATERIALS AND METHODS: A cross-sectional study based on World Health Organization criteria and the methods of the Second International Collaborative Study was carried out in autumn 2004 among 15-year-olds (n=502) in Tehran. Data were based on a self-administered questionnaire and a clinical dental examination. RESULTS: Smokers comprised 5% of the boys and 2% of the girls (p = 0.02). Smoking was more common among students of less-educated parents (50% vs. 30%, p < 0.05). Of all students, 26% reported twice-daily tooth brushing; those of higher socio-economic backgrounds and girls did so more frequently. Of the smokers, 11% reported no tooth brushing compared to 6% of the non-smokers. Oral cleanliness was good for 13%, moderate for 32%, and poor for 55%; the rates associated positively with female gender (p = 0.002), having higher-educated parents (p = 0.03), and reporting a higher frequency of tooth brushing (p < 0.001). Those students reporting twice-daily tooth brushing had less dental plaque and gingival bleeding (p < or = 0.01) on both anterior and posterior teeth. In multivariable analyses, the best predictors for a good level of oral cleanliness were female gender (OR = 2.0) or twice-daily tooth brushing (OR = 1.7). CONCLUSION: Oral cleanliness and tooth brushing among 15-year-olds were at poor levels, particularly among boys. Such poor levels call for intensive attempts to enhance rates of twice-daily tooth brushing and to improve its quality. For this age group, anti-smoking purposes should be combined into school-based oral health promotion programmes as well.

VALIDITY OF SELF ASSESSMENT OF ORAL HEALTH AMONG 15-YEAR-OLDS IN TEHERAN, IRAN

YAZDANI R., VEHKALAHTI MIIRA, NOURI M., MURTOMAA HEIKKI

PURPOSE: The objective of the present study was to compare the self-assessed and the clinically determined findings of oral health and their determinants among 15-year-olds in
Teheran, Iran. MATERIALS AND METHODS: A cross-sectional study based on World Health Organization criteria and the methods of the Second International Collaborative Study was carried out among the 15-year-olds (N = 509). The data were based on a self-administered questionnaire and a clinical dental examination. RESULTS: Altogether 78% of the 15-year-olds assessed their oral health as good or better. Based on self-assessment, 46% reported gingival bleeding, 28% reported the need for a filling and 23% for teeth straightening. Clinical examinations showed that 40% of the students had sound dentition (decayed, missing or filled teeth, DMFT = 0), 40% had current caries (decayed teeth, DT > 0), 92% had gingival bleeding and 26% had a definite need for orthodontic treatment. Most of those with DMFT = 0 and DT = 0 assessed their oral health as good or better. Compared with clinical findings, sensitivity for self-assessed need for fillings, gingival bleeding and the need for teeth straightening were 42%, 49% and 37%, respectively, whereas the corresponding specificities were 82%, 80% and 81%, respectively. Good or better self-perceived oral health was more likely among those with sound dentition (odds ratio, OR = 2.1, P = 0.01), with no self-assessed need for fillings (OR = 2.1, P = 0.01), with a self-assessed absence of gingival bleeding (OR = 2.9, P < 0.001) or with highly educated parents (OR = 1.2, P = 0.007). CONCLUSIONS: When compared with clinical evaluations, the students most accurately detected healthy conditions. Educating the students on the signs of dental diseases could increase the reliability of self-assessment to provide a useful method for reporting oral conditions, especially in countries with developing oral health care systems.
Self-reported bruxism among media personnel.
The general aim was to examine the relationships of self-reported bruxism and sleep quality among employees with or without irregular shift work. The study also focused on the possible associations of bruxism and orofacial pain.
A questionnaire with several standard questions was mailed to all employees of the Finnish Broadcasting Company with irregular shift work (n=750; 57.0% men) and to an equal number of randomly selected controls in the same company with regular eight-hour daytime work (42.4% men). The mean age of invited subjects was 43.0 (SD 10.4) years in irregular shift work and 44.8 (sq 10.2) years in day work. The response rate in the irregular shift work group was 82.3% (56.6% men) and in the regular daytime work group 4.3% (46.7% men).

Frequent self-reported bruxism was found among 10.6% of subjects overall. Similarly, a total of 43.6% reported disrupted sleep and 36.2% perceived their sleep as non-restorative. Current orofacial pain was found overall in 19.6% of the study population. Among those reporting current pain 88.3% had experienced it for over six months.

Self-reported bruxism and dissatisfaction with current work shift schedule were significantly associated with most studied sleep variables. Frequent bruxism and severe stress tended to occur more often among those subjects dissatisfied with their work shift schedule. In addition, frequent self-reported bruxism was associated with increased numbers of health care visits. The results also revealed significant associations between self-reports of bruxism and anxiety, and bruxism and orofacial pain experience.
It can be concluded that disrupted sleep and bruxism may be concomitantly involved in the development of orofacial pain. It may also be possible that self-reported bruxism indicates sleep problems and their adherent awake consequences in non-patient populations. It was suggested that subjectively conceptualized awareness of bruxism may be linked to stress-related states and behavior which could be useful knowledge for health care professionals.

Kristiina Ahlberg selvitti väitöskirjatyössään koetun bruksismin yhteyttä universalvehäröihin ja kasvokivun esiintyvyyteen ja voimakkuuteen epäsäännöllistä vuorotyötä ja säännöllistä päivätyötä tekevillä mediatyöntekijöillä. Kyselylomakkeella selvitettiin myös muita bruksisiin mahdollisesti vaikuttavia tautatekijöitä, kuten yleistä terveydentilaa, ahdistuneisuutta, koettua stressiä ja tyttävällisyttä työaikamuotoon.

Bruksismi liittyi unetomuuteen, virkistämättömiin uineen, stressiin ja kasvokipuun. Bruksismi ja runsaampien läääkärikäyntien välillä oli selvä yhteys. Myös...
Periodontal risk assessment- model (PRA-model) – model for assessment of periodontal risk

Periodontitis is a common infectious disease of the mouth. Several factors have to be considered and evaluated during the diagnosis, treatment planning and treatment of this disease. The PRA-model has been designed by professors N.P. Lang and M.S. Tonetti (1) to evaluate periodontitis risk profiles using six parameters. This individual risk profile conveys the risk for onset of periodontitis as well as the risk for susceptibility to progression of periodontal disease. The PRA-model may be useful in customizing the frequency of supportive periodontal therapy visits and may also be used when planning treatment within the team of periodontal specialist, dentist and oral hygienist cost-effectively. The visual diagram of the PRA-model can also be useful in informing patients about periodontitis at an individual level and in the education of dental students.

Oral immune defense against chronic hyperplastic candidosis

As a model for candidal-host interaction, sections of chronic hyperplastic candidosis were used and compared with sections of non-infected leukoplakia and healthy tissue. In this thesis work, neutrophil-derived anti-candidal α-defensin was found in the epithelium, not only diffusely allover, but as α-defensin-rich front. Once they reach the epithelium, neutrophils, which form the major immigrant host defense cell, organize themselves into microabscess structures (study I). Mast cells, in addition to tumour

87
necrosis factor-α, were found to contain preformed receptor activator of nuclear factor kappa B ligand (study II). This is important for the recruitment and maturation of antigen presenting dendritic cells and T lymphocyte activation (study III). The presence and effects of the chemokine interleukin-8 on the chemotaxis and transmigration of neutrophils was studied (study IV). For the immune system to operate, it has to be invoked first by a set of innate receptors known as Toll-like receptors (TLRs). Only three classes of TLRs seem to be engaged in recognizing C. albicans, i.e. TLR2, TLR4 and TLR6. Hypha-rich candidal infection appears to try to elude the host response through stimulating TLR2 rather than TLR 4 (study V).


KIVUN AIHEUTTAMAT TULEHDUSMEKANISMIT MYÖTÄVAIKUTTAVAT IENKUDOKSEN VAURIOITUMISEEN

AVELLÁN NINA-LI
Suomen hammaslääkärilehti N.S. 13 (8): 30-31, 2008

Pain-evoked alterations on gingival blood flow and gingival crevicular fluid (GCF) neuropeptide SP and collagenase-2 (MMP-8) levels.

Vasoactive agents such as substance P are known to contribute to the inflammatory type of pain. Pain-associated inflammatory reactions may initiate expression of several pro- and anti-inflammatory mediators. MMP-8 has been considered to be the major destructive protease, especially in the periodontitis-affected gingival crevice fluid (GCF). Experiments were carried out to study whether tooth stimulation and capsaicin stimulation of alveolar mucosa would induce changes in GCF MMP-8 levels and whether tooth stimulation would release neuropeptide SP in GCF. Painful tooth stimulation was performed by a constant current tooth stimulator. Painful stimulation of the gingiva was achieved by capsaicin-moistened filter paper. Pain-evoked vasoactive changes in gingivomucosal tissues were mapped by laser Doppler imaging. Pain-evoked release of MMP-8 in GCF samples was studied by immunofluorometric assay and Western immunoblotting. The SP levels in GCF were analysed by Enzyme immunoassay. Unilateral stimulation of alveolar mucosa and attached gingiva by capsaicin evoked a
distinct neurogenic vasodilatation in the ipsilateral gingiva, which attenuated at the midline. In contrast to capsaicin stimuli, tooth stimulation produced symmetrical vasodilatations bilaterally. Capsaicin stimulation of the alveolar mucosa induced elevations in MMP-8 levels in GCF of the adjacent teeth. Painful stimulation of the upper incisor provoked elevations in GCF MMP-8 and SP levels of the stimulated tooth.

HLL Nina-Li Avellánin väitöstutkimus osoitti, että kokeellinen hammaskipu lisää paikallisesti ientaskuneestä keskeisten tulehdusreaktion välittäjäaineiden (SP) ja kudostuhojien (MMP-8) määrää. Näiden yhteisvaikutuksella saattaa olla kroonisessa kiputilanteessa patofysiologiasta merkitystä hammasta ympäröivän kudoksen terveydelle.

Tulokset tukevat hypoteesia, että tulehdusreaktio voi levitä hermovälitteisesti hammasyntymästä sitä ympäröiviin kiinnityskudoksiin. Tutkimuksessa tärkeä havainto on, että kokeellinen paikallinen kipun ja limakalvon hermovälitteinen tulehdusreaktio ei ylittänyt yläleuan keskilinjaa. Hermovälitteinen tulehdus ikenessä laukaisi myös kudostuhojien vapautumisen läheisten hampaiden ientaskuneestä, mutta tämä kudostuhojien tason nousu ei myöskään jatunut yli keskilinjan viereiseen yläleuan puoliskoon. Erityisesti aikaisemmissa eläintutkimuksissa esiintyneet ristiriitaiset päätelmat yläleuan keskilinjan ylittävää hermotuksesta tulevat Avellánin havainnon myötä uudelleen arvioitaviksi.
AMALGAAMI TIENSÄ PÄÄSSÄ
MEURMAN JUKKA H.
Suomen hammaslääkärilehti N.S. 13 (7): 36, 2008

HAMMASHOITOYKSIKÖJEN VESILINJOJEN MIKROBIKYLVO
MEURMAN JUKKA H.
Suomen hammaslääkärilehti N.S. 13 (12): 38, 2008

HUSIN NYKYINEN RAKENNE EI OLE SATTUMA
MEURMAN JUKKA H.
Helsingin sanomat 21.9.2008

HYKS 50 VUOTTA
MEURMAN JUKKA H.
Helsingin yliopistollinen keskussairaala perustettiin vuonna 1958, joten tään vuonna viyetään sairaalan 50-vuotisjuhlavuotta.

MUUUTOKSEN TUULET
MEURMAN JUKKA H.
Suomen hammaslääkärilehti N.S. 13 (6): 52, 2008

PALJONKO ON PÄIVITTÄIN NAUITTAVA RIITTÄVÄ NESTEMÄÄRÄ
MEURMAN JUKKA H.
REFLUKSATAUTIPOTILAS SUUN- JA HAMPAIDEN HOIDON KANNALTA :
YLÄVATSAVAIVAT OVAT VÄESTÖSSÄ YLEISIÄ JA NE VOIVAT AIHEUTTAA HAITTAVAikutuksia MYÖS SUUSSA

MEURMAN JUKKA H.
Suuhygienisti (3): 6-9, 2008

VIELÄ ENOKARDIITPPROFYLAKSISTA

MEURMAN JUKKA H.
Suomen hammaslääkärilehti N.S. 13 (14): 34, 2008

BAKTEERIENDOKARDIITIN UUSI ANTIBIOOTITPROFYLAKSISUOSITUS

MEURMAN JUKKA H., LUMIO JUKKA, VALTONEN VILLE, JOKINEN EERO, NIEMINEN MARKU S., PELTOLA HEIKKI, KOIVULA IRMA, VANHANEN HANNU
Suomen lääkärilehti 63 (35): 2792 - 2794, 2008

English summary: Update on antibiotic prophylaxis of bacterial endocarditis
The article briefly outlines the latest American Heart Association (AHA) recommend-
dations for the use of antibiotics in the prevention of bacterial endocarditis. In endocarp-
ditis prophylaxis, amoxicillin 2 g one hour before treatment is the first drug of choice
while cephalexin 2 g one hour before treatment is the second choice. The indications for
prophylaxis are stricter than earlier in order to avoid unnecessary and potentially harmful
medication. This is also in line with the recent recommendations of the British National
Institute of Health and Clinical Excellence (NICE).

Tärkein tieto
Kansainväliset endokardiitin profylaksisuositukset ovat jälleen muuttuneet. Profylaksia
pohdittaessa haitan minimointi on edelleen tärkeää ja siksi kriteerit ovat tiukentuneet,
jotta turhilta lääkityksiltä välyttäisiin.
Amoksisilliini on edelleen ensisijainen suun kautta annettava antibiootti ja se on syytä
antaa kerta-annoksena kuten tähänkin asti. Toissijainen vaihtoehto on kefaleksiini.
Suomen terveydenhuollossa tulisi noudattaa yhtenäisiä ohjeita bakteeriendokardiitin
ehkäisemiseksi.
Update on antibiotic prophylaxis of bacterial endocarditis
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VARHAISLAPSUUDEN KARIES JA SEN EHKÄISY KEHITYVÄN TERVEYDENHUOLLON MAASSA

MOHEBBI SIMIN Z.
Suomen hammaslääkärilehti N.S. 13 (12): 30-31, 2008

Early childhood caries and a community trial of its prevention in Teheran, Iran. This study assessed the prevalence of and risk factors for Early Childhood Caries (ECC) in children 12- to 36-month-old and evaluated the impacts of an educational intervention on ECC prevention in the 12- to 15-month-old cohort.

The target population included 12- to 36-month-olds (n = 504) and their mothers attending the vaccination offices of 18 randomly selected public health centers of Tehran city. The mother was first interviewed by a structured questionnaire covering background factors, feeding habits, daytime sugar intake, mother’s and child’s oral cleaning habits, and mother’s perception toward her ability to maintain the child’s oral hygiene; then the child’s clinical dental examination was carried out covering caries experience and dental plaque status.
In addition, the 12- to 15-month-olds (n = 242) were assigned to a six-month interventional study. The 18 health centers were randomly allocated into two groups for intervention and one for control. The mothers in the intervention groups received education on caries prevention from the vaccination staff with extra motivation as reminder phone calls in one of the intervention groups. The outcome was measured as differences in increments of enamel and dentinal caries.

The results showed that the prevalence of ECC was rather high (3%-26%) in the three age groups, and almost all dmft was due to untreated caries. The majority of the children showed visible plaque on central upper incisors. Oral cleaning on a daily basis was reported for just 68% of mothers and 39% of children. The frequency of oral cleaning and good oral hygiene of the child were directly proportional to the mother’s own toothbrushing frequency. Of the children, 98% were solely or partly breastfed. ECC was more likely to occur among those for whom the burden of milk-bottle feeding at night existed (OR = 4.9), while breastfeeding per se, its duration, and its nighttime burden were not related to ECC. The indicator of daytime sugar intake also did not show a clear relationship with ECC. The educational intervention applying a pamphlet with some extra motivation and implemented by non-dental staff of public health centers appeared to be successful in preventing caries increments.

To improve oral health status among the young children in countries with a developing oral health system, community-based oral health educational programs should be established by involving non-dental staff of health settings who are more frequently in contact with these children. Parents should be encouraged to realize that they play the dominant role in the oral health care of their children. Parents’ own oral health behaviors should be emphasized in dental and general health settings.

Simin Mohebbi tutki varhaislapsuuden karieksen esiintymistä ja sen riskitekijöitä 1-3-vuotiailla Teheranissa, Iranissa, sekä arvioi 1-vuotiaan rokotuskäynnillä annetun karieksen ehkäisyneuvonnan tehoa puolen vuoden kuluttua.

SUUN TULEHDUKSET : RISKI SYDÄMELLE

PAJU SUSANNA
Pumppu (2): 7-8, 2008

Parin viime vuosikymmenen aikana useissa tutkimuksissa on havaittu, että suun tulehdukset ja erityisesti iensairauksilla saattaa olla yhteyys yleisterveydentilaan. Pitkäaikainen hampaiden kiinnityskudostulehdus saattaa altistaa sydän- ja verisuonitaudeille. Nämä tutkimustulokset painottavat suun terveyden tärkeyttä ja motivoivat toivottavasti myös sydänpotilaita hyvän suuhygienian ylläpitoon.

SÄTEILYN OIKEASTA KÄYTÖSTÄ VIELÄ

PELTOLA JAAKKO
Suomen hammaslääkärilehti N.S. 13 (8): 42, 2008

Kiitos Jukka Rosbergille hyvin tärkeästä suuradiologiaa koskevasta puheenvuorosta Hammaslääkärilehdessä 6/08.

SKRIANDE BRIST PÅ LÄRARE OCH FORSKARE

SALO TUULA, SORSA TIMO, KONTTINEN YRJÖ T., TJÄDERHANE LEO,
KEMPPAINEN PENTTI
Hufvudstadsbladet 8.10.2008, s. 18, 2008

OIKEIN KOHDENTTU ANESTESIAHAMMASHOITO ON LAPSEN EDUN MUKAISTA JA TALOUDELLISTA

SILVO ANNA-MAIJA, NUMMINEN MAURI, MURTOMAA HEIKKI

Yleisanestesiahammashoidon tulokset Vantaalla ovat hyvät.

LÄHTÖKOHDAT
Yleisanestesia tarvitaan toisinaan runsaasti reikiintyneen hampaiston laadukkaaseen hoitamiseen, mikäli potilaan yhteistyökyky ei riitä tavanomaiseen hammashoitoon. Vantaan suun terveydenhuollossa tutkittiin lasten yleisanestesiahammashoitojen aiheuttamia kustannuksia ja ammattihenkilöiden ajankäyttöä.

MENETELMÄT

94

TULOKSET

JOHTOPÄÄTÖKSET
Oikein kohdennettu yleisanestesiahammashoito säästää sekä lapsen ja hänen perheensä että hammashoitohenkilökunnan voimavaroja. Tutkimuksessa todettiin, että suorat kustannukset huomioidena on taloudellisesti edullisempaa hoitaa lapsi yleisanestesiassa, mikäli hänelle muutoin tulisi yli neljä hoitokäyntiä.

VÄITÖSKIRJAN TEKO EI OLE TUTTAVANKAUPPA
SORSA TIMO
Helsingin sanomat 7.3.2008

HAMMASLÄÄKETIEDE JA TUNTEET
VEHKALAHTI MARKUS


Päivi Hölttä: ”En kuvitellut tehtävää antaessani, että alkutilanteen mustasta hiilestä syntyy timantti!” oli upeaa huomata, että Markus ei mennyä siitä, missä aita on matalin. pian parikymmenvuotisen opettajauran aikana en muista kokeneeni vastaavaa yllättystä!” ”Viisautta on vaikea omaksua, ennen kuin siihen on omassa elämässä syntynyt tarvetta” Marraskuun lopussa 2007 Helsingin yliopistosta hammaslääkäräksi valmistuneen 28-vuotiaan Markus Vehkalahden opinnot kestivät 6,5 vuotta. ”Tuosta ajasta viimeiset puoli vuotta venyttelin kyseisen Kasvaminen hammaslääkäräksi –tehtävän parissa. Ilmeisesti ammatillinen murrosikäin oli kovempi kuin useilla kurssitövereilläni. En vaan millään

95
meinannut kasvaa hammalääkäriksi,” Markus veistelee. ”Niin kuin kaikki Helsingistä valmistuneet tietävät, Ruskeasuvo voi joskus tuntua syvältä, mutta useimmat nousevat sieltä suhteellisen terveinä ja pystyvät itsenäiseen toimintaan”.

Markus kertoo suhtauduneensa tehtävään ja muihin Kasvaminen hammaslääkäriksi – opintoihin hiukan varauksella, varsinkin niihin, jotka ajoittuvat aikaan ennen omia potilaita. ”Se tuntui siltä kuin lukisi 7-vuotiaana Dostojevskiä. Viisautta on vaikea omaksua, ennen kuin siihen on omassa elämässä syntynyt tarvetta. Siisien tarvittaisiin älykkyyttä”, kommentoi Markus.

Kirjoituksen ajatuksien Markus kertoo syntyneen oman työskentelyn herättäminä. ”Toisaalta kirjoitus oli pakko tehdä, jos mieli valmistua, mikä varmasti antoi syyyn selkeyttää ja kirjoittaa omia ajatuksia. Otsikon Tunteet ja hammaslääketiede alle mahtuu lähes mitä vaan.”

Viitaten kyseiseen tehtävään Markus sanoo itseironiseen tyyliinsä opetelleensa potilaan kohtaamista lähinnä kirjoittamalla pitkiä esseitä. Nuorella miehellä olevan asiasta hyvin sisäistettyjä ajatuksia: ”Itselleni on tärkeää tuntea omat rajat jaksamisessa. Vaikka osaisikin kohdata potilaan hyvin, ei se tarkoita sitä, että niin tapahtuu hoitotilanteessa. Liikka osaisinkin kohdata potilaan hyvin, ei se tarkoita sitä, että niin tapahtuu hoitotilanteessa. Liikka työ vääristää suhtautumista potilaisiin ja johtaa oman työölen menetykseen. Siinä vaiheessa potilas olisi parempi jättää kohtaamatta.”

FÖREBYGGANDE VÅRD FRÅMJBÄR ÄLDRES MUNHÄLSA: FINLAND VILL FLYTTA FOCUS FRÅN REPARATIV VÅRD TILL PROFYLAX

VEHKALAHTI MIIRA, KNUUTTILA MATTI


**IKÄÄNTYNEIDEN SUUNTERVEYDEN EDISTÄMINEN SUOMESSA**

VEHKALAHTI MIIRA, KNUUTTILA MATTI

LYHYESTI:
Maailman Terveysjärjestö on hiljattain kiinnittänyt vakavaa huomiota ikääntyneen väestön suunterveyden ongelmien laajuuteen ja niiden yleisterveyskytkentöihin. Väestön vanhetessa ja suun terveysongelmien muuttuessa suunterveyden edistäminen asettaa yhteiskunnalle lähivuosina suuria haasteita. Niiden ratkomiseen vanhat toimintamallit ovat riittämättömiä. Nyt on ennakoitava suun yleisimpien sairauksien, karieksen ja kiin-
nityskudossairauksien, riskiryhmät ja painotettava näiden tautien ehkäisyä, pysäyttämistä ja hallintaa. Ennakoivan ja ehkäisevän hoitotavan mahdollisuuksia ei valitettavasti vielä hyödynnetä täydessä laajuudessaan, vaan hammashoito painottuu korjaavaan hoitoon. Tämä artikkeli kannustaa uusimaan iäkkään väestön hammashoidon toimintatapoja.

HAMMASLÄÄKETIETEEN KOULUTUS KANSAINVÄLISTYY

VIRTANEN JORMA

Suomen hammaslääkärilehti N.S. 13 (14): 60, 2008

Eurooppalainen hammaslääketieteen koulutusyksiköitten ja kouluttajien yhteisö ADEE on toiminut aktiivisesti yhteistyössä kansainvälisten IFDEA-verkoston kanssa. ADEE:n seuraava vuosikokous järjestetään Helsingissä ensi vuonna. Konferenssin teemana on elinkäinen oppiminen ja hammaslääketieteen täydennyskoulutus.
INDEX OF AUTHORS

A

Adachi M......................................................................................................................83
Afacan Beral.................................................................................................................33
Ahlberg Jari..................................................................................................................25, 26, 61
Ahlberg Kristiina........................................................................................................25, 26, 86
Ahmed S.......................................................................................................................87
Aho Sanni.....................................................................................................................87
Alaluusua Satu........................................................................................................52, 60, 69
Ali Ahmed...................................................................................................................29
Ali Musrati ...................................................................................................................87
Arinen S.......................................................................................................................80
Arponen H....................................................................................................................26
Arte Sirpa.....................................................................................................................75
Asikainen Antti...........................................................................................................27
Asikainen S ..................................................................................................................61
Aström P......................................................................................................................49
Atilla Gu.....................................................................................................................33, 34, 63, 78
Avellán Nina-Li.........................................................................................................27, 88

B

Bailleul-Forestier I........................................................................................................75
Baird A. E. ..................................................................................................................64
Baird Alison ...............................................................................................................45
Bakhshandeh Sohella...................................................................................................28
Bayat Faiborza ..........................................................................................................29
Baylas Haluk..............................................................................................................78
Beklen Arzu...............................................................................................................29
Bellusci Saverio.........................................................................................................41
Berdeli A....................................................................................................................63
Biedzka-Sarek M......................................................................................................30
Bjartell Anders.........................................................................................................81
Blinkhorn A...............................................................................................................39
Bloigu Aini................................................................................................................53
Breschi Lorenzo........................................................................................................56
Broms Ulla...............................................................................................................42
Buduneli Eralp.........................................................................................................78
Buduneli Nurcan.......................................................................................................78
Buhlin Kare.................................................................................................................46
C
Carels C........................................................................................................................75
Carrassi A.....................................................................................................................81
Carrilho Marcela...........................................................................................................56
Chadwick B..................................................................................................................81
Chaudhuri B .................................................................................................................30
Cinar Basak Ayse ...........................................................................................................
Cobourne Martyn T. ......................................................................................................38

D
De Bari Cosimo ............................................................................................................58
De Langhe Stijn ............................................................................................................41
Devriendt K..................................................................................................................75
Di Lenarda Roberto ...................................................................................................56

E
Eaton K. .......................................................................................................................81
Eggensperger Nicole.....................................................................................................72
Eghbal Mohammad J. ............................................................................................. 43, 44
Elf H ............................................................................................................................26
Evælahti Marjut .............................................................................................................26

F
Firth J. D. .....................................................................................................................35
Flisfisch S.....................................................................................................................35
Forsman Minna.............................................................................................................36
Forster Clemens...........................................................................................................27
Freeman R....................................................................................................................39
Furuholm J. ..................................................................................................................43, 75

G
Ghasemi Hadi ..............................................................................................................17, 37
Ghofranipour F. ..........................................................................................................68
Gobbi Pietro ................................................................................................................56
Golub L. M....................................................................................................................38
Golub Lorne ..................................................................................................................82
Gorter, R ......................................................................................................................39
<table>
<thead>
<tr>
<th>Name</th>
<th>Page(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jauhiainen Matti</td>
<td>46, 77</td>
</tr>
<tr>
<td>Jie Bao Guang</td>
<td>46</td>
</tr>
<tr>
<td>Jogestrand T.</td>
<td>72</td>
</tr>
<tr>
<td>Johnsen D.</td>
<td>81</td>
</tr>
<tr>
<td>Jokinen Eero</td>
<td>91, 92</td>
</tr>
<tr>
<td>Jones J. A.</td>
<td>64</td>
</tr>
<tr>
<td>Jones Judith</td>
<td>45</td>
</tr>
<tr>
<td>Kaaaja R.</td>
<td>43</td>
</tr>
<tr>
<td>Kallio K. A. Elisa</td>
<td>46</td>
</tr>
<tr>
<td>Kallioinen Leena</td>
<td>36</td>
</tr>
<tr>
<td>Kallioinen Matti</td>
<td>36</td>
</tr>
<tr>
<td>Kalso Eija</td>
<td>54</td>
</tr>
<tr>
<td>Kantola S.</td>
<td>49</td>
</tr>
<tr>
<td>Kari Kirsti</td>
<td>46, 62</td>
</tr>
<tr>
<td>Kari Marjatta</td>
<td>55</td>
</tr>
<tr>
<td>Kari Osmo</td>
<td>55</td>
</tr>
<tr>
<td>Kellomäki Minna</td>
<td>27</td>
</tr>
<tr>
<td>Kelly Robert</td>
<td>41</td>
</tr>
<tr>
<td>Kemppainen Pentti</td>
<td>27, 94</td>
</tr>
<tr>
<td>Kerosuo Eero</td>
<td>48</td>
</tr>
<tr>
<td>Kerosuo H.</td>
<td>47</td>
</tr>
<tr>
<td>Kervanto-Seppälä Sari</td>
<td>48</td>
</tr>
<tr>
<td>Kervinen V.</td>
<td>49</td>
</tr>
<tr>
<td>Keva Ritva</td>
<td>46</td>
</tr>
<tr>
<td>Khami M. R.</td>
<td>48</td>
</tr>
<tr>
<td>Kikutani T.</td>
<td>83</td>
</tr>
<tr>
<td>Kinnula Vuokko</td>
<td>45</td>
</tr>
<tr>
<td>Kiviranta H.</td>
<td>52</td>
</tr>
<tr>
<td>Klinge Björn</td>
<td>46</td>
</tr>
<tr>
<td>Knuuttila Matti</td>
<td>79, 96, 97, 80</td>
</tr>
<tr>
<td>Koivikko Mika</td>
<td>69</td>
</tr>
<tr>
<td>Koivula Irma</td>
<td>91, 92</td>
</tr>
<tr>
<td>Kontinen Vesa K.</td>
<td>54</td>
</tr>
<tr>
<td>Kontinen Yrjö T.</td>
<td>29, 94</td>
</tr>
<tr>
<td>Kormi E.</td>
<td>76</td>
</tr>
<tr>
<td>Korpi J. T.</td>
<td>49</td>
</tr>
<tr>
<td>Kortesniemi Mika</td>
<td>73</td>
</tr>
<tr>
<td>Koskenvuor Markku</td>
<td>42</td>
</tr>
<tr>
<td>Koskinen Seppo</td>
<td>69</td>
</tr>
<tr>
<td>Koskivuo Ilkka</td>
<td>80</td>
</tr>
<tr>
<td>Kosku N.</td>
<td>31</td>
</tr>
<tr>
<td>Kostamo Katriina</td>
<td>50</td>
</tr>
<tr>
<td>Name</td>
<td>Page(s)</td>
</tr>
<tr>
<td>-------------------------------</td>
<td>-----------</td>
</tr>
<tr>
<td>Kovanen Petri T</td>
<td>77</td>
</tr>
<tr>
<td>Kraehenbuehl Michel</td>
<td>72</td>
</tr>
<tr>
<td>Kuula Heidi</td>
<td>51, 82</td>
</tr>
<tr>
<td>Könönen Eija</td>
<td>40, 41</td>
</tr>
<tr>
<td>Könönen Mauno</td>
<td>25, 26, 49, 60, 80</td>
</tr>
<tr>
<td>Lakaonen Matti</td>
<td>52</td>
</tr>
<tr>
<td>Lahti S.</td>
<td>63</td>
</tr>
<tr>
<td>Lahtinen M.</td>
<td>49</td>
</tr>
<tr>
<td>Laisi S.</td>
<td>52</td>
</tr>
<tr>
<td>Lajunen Taina</td>
<td>53</td>
</tr>
<tr>
<td>Lana-Elola Eva</td>
<td>41</td>
</tr>
<tr>
<td>Lapirattanakul J</td>
<td>60</td>
</tr>
<tr>
<td>Lauhio Anneli</td>
<td>54, 71</td>
</tr>
<tr>
<td>Lavonius Eeva</td>
<td>48</td>
</tr>
<tr>
<td>Lee H. M.</td>
<td>38</td>
</tr>
<tr>
<td>Lee Hsi-Ming</td>
<td>82</td>
</tr>
<tr>
<td>Lehtonen Lasse</td>
<td>89</td>
</tr>
<tr>
<td>Leinonen Maija</td>
<td>53</td>
</tr>
<tr>
<td>Lekkas D.</td>
<td>81</td>
</tr>
<tr>
<td>Lemberg Kim</td>
<td>54</td>
</tr>
<tr>
<td>Lepäntalo Mauri</td>
<td>53</td>
</tr>
<tr>
<td>Li D.</td>
<td>81</td>
</tr>
<tr>
<td>Lindholm Harri</td>
<td>25</td>
</tr>
<tr>
<td>Lindqvist Christian</td>
<td>27, 71, 76</td>
</tr>
<tr>
<td>Lindy Otso</td>
<td>18</td>
</tr>
<tr>
<td>Lokki Marja-Liisa</td>
<td>61</td>
</tr>
<tr>
<td>Lopez-Otin C</td>
<td>49</td>
</tr>
<tr>
<td>Lukinmaa Pirjo-Liisa</td>
<td>52, 69</td>
</tr>
<tr>
<td>Lumio Jukka</td>
<td>91, 92</td>
</tr>
<tr>
<td>Luomanen Marita</td>
<td>51</td>
</tr>
<tr>
<td>Läärä Esa</td>
<td>49, 52</td>
</tr>
<tr>
<td>Mazzoni Annalisa</td>
<td>56</td>
</tr>
<tr>
<td>Meri S.</td>
<td>30</td>
</tr>
<tr>
<td>Metso Jari</td>
<td>77</td>
</tr>
<tr>
<td>Meurman Jukka H</td>
<td>35, 42, 43, 45, 46, 48, 56, 57, 62, 64, 72, 75, 90, 91, 92</td>
</tr>
<tr>
<td>Meyer J.</td>
<td>35</td>
</tr>
<tr>
<td>Mitsiadis Thimios A</td>
<td>58</td>
</tr>
<tr>
<td>Modif Rasoul</td>
<td>28</td>
</tr>
<tr>
<td>Name</td>
<td>Page Numbers</td>
</tr>
<tr>
<td>-------------------</td>
<td>--------------</td>
</tr>
<tr>
<td>Pashley David H.</td>
<td>56</td>
</tr>
<tr>
<td>Payne J. B.</td>
<td>38</td>
</tr>
<tr>
<td>Pelto Mika</td>
<td>27</td>
</tr>
<tr>
<td>Peltola Heikki</td>
<td>91, 92</td>
</tr>
<tr>
<td>Peltola Jaakko</td>
<td>73, 94</td>
</tr>
<tr>
<td>Peltonen Sirje</td>
<td>55</td>
</tr>
<tr>
<td>Pietilä Ilpo</td>
<td>48</td>
</tr>
<tr>
<td>Pietilä T.</td>
<td>80</td>
</tr>
<tr>
<td>Pietilä T.</td>
<td>29</td>
</tr>
<tr>
<td>Pihlaja Harri</td>
<td>27</td>
</tr>
<tr>
<td>Pirhan D.</td>
<td>63</td>
</tr>
<tr>
<td>Pirilä Emma</td>
<td>49, 51</td>
</tr>
<tr>
<td>Pitkäniemi Janne</td>
<td>42, 48</td>
</tr>
<tr>
<td>Pohjola V.</td>
<td>63</td>
</tr>
<tr>
<td>Pussinen Pirkko</td>
<td>46, 53, 61, 77</td>
</tr>
<tr>
<td>Putnins E. E.</td>
<td>35</td>
</tr>
<tr>
<td>Pyrhönen Seppo</td>
<td>80</td>
</tr>
<tr>
<td>Pärnänen Pirjo</td>
<td>62</td>
</tr>
<tr>
<td>Pääkkönen V.</td>
<td>60</td>
</tr>
<tr>
<td>Pääkkönen Virve</td>
<td>36</td>
</tr>
</tbody>
</table>

Q

Qvarnstrom M. ................................................................. 64

R

Rautemaa Riina ................................................................. 29, 67, 71
Reinhardt R. A. ............................................................... 38
Reynolds P. ......................................................................... 81
Rice David ......................................................................... 21, 41, 58, 64, 65, 66
Richardson Malcolm ....................................................... 67
Rintamäki H ........................................................................ 43
Ristimäki Ari .................................................................... 49
Robinson Soraya .............................................................. 73
Rohlin M. .......................................................................... 81
Romanos Georgios ............................................................ 51
Ruggeri Alessandra Jr. .................................................... 56
Rusanen Peter .................................................................... 67
Ryan M. E. .......................................................................... 38
Ryhänen Jorma .................................................................... 36
Rytilä Paula ....................................................................... 45, 55
Saari Matti ................................................................. 55
Safavi S. M. ............................................................... 70
Sahlberg Carin ........................................................... 69
Saied-Moallemi Zahra ............................................... 67, 68
Saikku Pekka ............................................................. 53
Salmela Eija ............................................................... 69
Salo Tuula ................................................................. 36, 49, 51, 52, 60, 81, 94
Salonen Elina ............................................................. 69
Samadzadeh Hamid ................................................... 43
Sandalli N ................................................................. 31
Sargeran K ................................................................. 70
Sargeran Katayoun ..................................................... 22
Sarna Seppo ............................................................. 25
Savinheimo Nora ..................................................... 70
Savolainen Aslak ....................................................... 25, 26
Scannapieco FA ........................................................ 30
Seppänen Mikko ........................................................ 61
Seppänen Lotta ........................................................ 71
Sharpe James ............................................................ 41
Siikala Emilia ............................................................ 67
Siiskonen Antti .......................................................... 54
Silvo Anna-Maija ........................................................ 94
Sinisalo Juha ............................................................. 25, 61
Skurnik M ................................................................. 30
Smolka Koord .......................................................... 72
Smolka Wenko ........................................................ 72
Snäll J .......................................................... 76
Soikkonen K ............................................................. 80
Sorsa Timo ............................................................... 27, 33, 34, 38, 40, 42, 45, 46, 49, 50, 51, 52, 54, 55, 56, 60, 62, 63, 78, 80, 81, 82, 94, 95
Soijärvi Anssi ........................................................... 45
Sparshott Neil ............................................................ 41
Srinivas Ravi ............................................................. 54
Stenman Matias ......................................................... 54
Stenman Ulf-Håkan .................................................. 54, 81
Stoner J. A ............................................................... 38
Suojanen Juho ........................................................... 52
Suomalainen Anni ..................................................... 73
Suomalainen Kimmo ................................................ 28
Suominen-Taipale Liisa ............................................. 23, 49, 60, 74, 80
Sutinen Meeri ........................................................... 81
Suuronen Riitta ........................................................ 27, 71
Suzuki M ................................................................. 83
<table>
<thead>
<tr>
<th>Name</th>
<th>Page Numbers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Swinnen S</td>
<td>75</td>
</tr>
<tr>
<td>Syrjänen Kari</td>
<td>80</td>
</tr>
<tr>
<td>Söder B</td>
<td>72</td>
</tr>
<tr>
<td>Söder P. O.</td>
<td>72</td>
</tr>
<tr>
<td>Söderholm Anna-Liisa</td>
<td>80</td>
</tr>
<tr>
<td>Tala Heikki</td>
<td>29</td>
</tr>
<tr>
<td>Taniguchi N.</td>
<td>60</td>
</tr>
<tr>
<td>Tanzer JM</td>
<td>30</td>
</tr>
<tr>
<td>Tarkkila L</td>
<td>75</td>
</tr>
<tr>
<td>Tay Franklin R.</td>
<td>56</td>
</tr>
<tr>
<td>Tehranchi Azita</td>
<td>67</td>
</tr>
<tr>
<td>Teronen Olli</td>
<td>70</td>
</tr>
<tr>
<td>Tervahartiala Taina</td>
<td>27, 33, 34, 45, 46, 50, 54, 55, 63, 80</td>
</tr>
<tr>
<td>Thomas G.</td>
<td>49</td>
</tr>
<tr>
<td>Thorén Hanna</td>
<td>72, 76, 83</td>
</tr>
<tr>
<td>Tiitinen Aila</td>
<td>75</td>
</tr>
<tr>
<td>Tjäderhane Leo</td>
<td>36, 56, 60, 94</td>
</tr>
<tr>
<td>Tolvanen M.</td>
<td>63</td>
</tr>
<tr>
<td>Tonni I</td>
<td>81</td>
</tr>
<tr>
<td>Torabzadeh Hassan</td>
<td>37</td>
</tr>
<tr>
<td>Toskala Elina</td>
<td>50</td>
</tr>
<tr>
<td>Tseveenjav Battsetseg</td>
<td>32</td>
</tr>
<tr>
<td>Tucker Abigail S</td>
<td>58</td>
</tr>
<tr>
<td>Tuomainen Anita M.</td>
<td>46, 77</td>
</tr>
<tr>
<td>Turkoglu O.</td>
<td>78</td>
</tr>
<tr>
<td>Törnwall J.</td>
<td>76</td>
</tr>
<tr>
<td>Töz Hüseyin</td>
<td>33</td>
</tr>
<tr>
<td>Uittamo Johanna</td>
<td>57, 67</td>
</tr>
<tr>
<td>Uitto Veli-Jukka</td>
<td>35, 40, 41, 87</td>
</tr>
<tr>
<td>Vahid-Golpayegani Moitaba</td>
<td>58, 59</td>
</tr>
<tr>
<td>Valtonen Ville</td>
<td>61, 91, 92</td>
</tr>
<tr>
<td>Van Dyke Thomas E</td>
<td>45, 64</td>
</tr>
<tr>
<td>Vanhanen Hannu</td>
<td>91, 92</td>
</tr>
<tr>
<td>Vanobbergen J.</td>
<td>81</td>
</tr>
<tr>
<td>Vardar-Sengul S</td>
<td>78</td>
</tr>
<tr>
<td>Name</td>
<td>Pages</td>
</tr>
<tr>
<td>-----------------------------</td>
<td>-------</td>
</tr>
<tr>
<td>Varsio Sinikka</td>
<td>79, 80</td>
</tr>
<tr>
<td>Vartiainen T</td>
<td>52</td>
</tr>
<tr>
<td>Vassileva R</td>
<td>81</td>
</tr>
<tr>
<td>Vehkalahti Markus</td>
<td>95</td>
</tr>
<tr>
<td>Vehkalahti Miira</td>
<td>28, 29, 37, 43, 44, 48, 58, 59, 63, 67, 70, 74, 79, 80, 83, 84, 96, 97</td>
</tr>
<tr>
<td>Vehmas Tapio</td>
<td>73</td>
</tr>
<tr>
<td>Vickerman MM</td>
<td>30</td>
</tr>
<tr>
<td>Vihinen Pia</td>
<td>80</td>
</tr>
<tr>
<td>Vikatmaa Pirkka</td>
<td>53</td>
</tr>
<tr>
<td>Vilen Suvi-Tuuli</td>
<td>81</td>
</tr>
<tr>
<td>Virtanen Ismo</td>
<td>62</td>
</tr>
<tr>
<td>Virtanen Jorma</td>
<td>48, 58, 59, 67, 68, 81, 89, 98</td>
</tr>
<tr>
<td>Vuoristo Jussi</td>
<td>36, 60</td>
</tr>
<tr>
<td>Volkiparta M</td>
<td>47</td>
</tr>
<tr>
<td>Väänänen A</td>
<td>49</td>
</tr>
<tr>
<td>Wahlgren Jaana</td>
<td>55, 78</td>
</tr>
<tr>
<td>Waltimo, T.</td>
<td>35</td>
</tr>
<tr>
<td>Waltimo-Sirén J</td>
<td>26</td>
</tr>
<tr>
<td>Wesselink P</td>
<td>81</td>
</tr>
<tr>
<td>Winning T.</td>
<td>81</td>
</tr>
<tr>
<td>Wolff M. S.</td>
<td>38</td>
</tr>
<tr>
<td>Wolff Mark</td>
<td>82</td>
</tr>
<tr>
<td>Xu Ling</td>
<td>82</td>
</tr>
<tr>
<td>Yanai C.</td>
<td>83</td>
</tr>
<tr>
<td>Yazdani Reza</td>
<td>83, 84</td>
</tr>
<tr>
<td>Yli-Kauhaluoma Jari</td>
<td>54</td>
</tr>
<tr>
<td>Ylipalosaari Merja</td>
<td>49, 81</td>
</tr>
<tr>
<td>Yu Zhao</td>
<td>82</td>
</tr>
<tr>
<td>Zafarmand A Hamid</td>
<td>29</td>
</tr>
</tbody>
</table>

108