

Preterm Infants – Odontological Aspects

AKADEMISK AVHANDLING

Som för avläggande av odontologie doktorsexamen vid Sahlgrenska akademien vid Göteborgs Universitet kommer att offentligt försvaras i Föreläsningssal 3, Medicinaregatan 12, Göteborg, fredagen den 4 maj 2012 kl. 13.00

av

Marianne Rythén
Leg. Tandläkare

Fakultetsopponent:

Professor Christina Stecksén-Blicks
Avdelningen för Pedodonti, Institutionen för Odontologi
Umeå Universitet
Umeå, Sverige

Avhandlingen är av sammanläggningstyp och är baserad på följande delarbeten:

- I. Rythén M, Niklasson A, Hellström A, Hakeberg M, Robertson A.
Risk indicators for poor oral health in adolescents born extremely preterm.
Accepted for publication in Swedish Dental Journal, 2012.
- II. Rythén M, Thilander B, Robertson A.
Dento-alveolar characteristics in adolescents born extremely preterm (EPT).
Accepted for publication in European Journal of Orthodontics, 2012. By permission of Oxford University Press on behalf of the European Orthodontic Society.
- III. Rythén M, Norén JG, Sabel N, Steiniger F, Niklasson A, Hellström A, Robertson A.
Morphological aspects on dental hard tissues in primary teeth from preterm infants.
International Journal of Paediatric Dentistry (2008) Nov;18(6):397-406.
- IV. Rythén M, Sabel N, Dietz W, Robertson A, Norén JG.
Chemical aspects on dental hard tissues in primary teeth from preterm infants.
European Journal of Science (2010) Aug;118(4):389-95.



UNIVERSITY OF GOTHENBURG

Preterm Infants – Odontological Aspects

Marianne Rythén

Department of Pediatric Dentistry, Institute of Odontology
Sahlgrenska Academy at the University of Gothenburg
Gothenburg, Sweden

ABSTRACT

Preterm birth is associated with medical complications and treatments postnatally and disturbances in growth and development. Primary and permanent teeth develop during this postnatal period. The overall aim of the present thesis was to elucidate the effects of preterm birth and postnatal complications on oral health and the dento-alveolar development during adolescence, and to study the effects of preterm birth on caries during childhood, in a well-defined group of preterm infants. In the same group, explore the development of the primary and permanent teeth and compare the results with a matched control group and control teeth. The subjects consisted of 40(45) of 56 surviving infants, born <29 weeks of gestational age (GA), and matched healthy children born at term. The material consisted of 44 teeth from 14 of the preterm adolescents and 36 control teeth from healthy children. Clinical examinations and dental cast analysis were performed during adolescence and morbidity was noted. Retrospective information from medical and dental records was obtained. Dental enamel was analyzed in a polarized light microscopy, and scanning electron microscopy. Further, chemical analyses of enamel and dentin were performed with X-ray microanalysis. The results showed that during adolescence, more preterms had plaque and gingival inflammation, lower salivary secretion, more *S. mutans* and severe hypomineralization. Retrospectively, less caries was noted at six years of age, but more children had hypomineralization in the primary dentition. Angle Class II malocclusion, large over-bite and deep bite associated with medical diagnoses were frequent. Furthermore, smaller dental arch perimeters in girls, at 16 years of age, and smaller tooth size in the incisors, canines and first molars were found. The morphological findings were confirmed in the XRMA analyses. In postnatal enamel, varying degrees of porosities >5% and incremental lines were seen. Lower values of Ca and Ca/C ratio and higher values of C were found. Ca/P ratio in both enamel and dentine indicates normal hydroxyapatite in both groups. No single medical diagnosis, postnatal treatment or morbidity in adolescents could explain the findings. As a conclusion, there are indications for poor oral outcome in this group of preterm infants during adolescence, and disturbed mineralization in primary teeth.

Keywords: Preterm infants, adolescent, oral hygiene, gingivitis, dental caries, dental enamel, malocclusion, dental arch, tooth size, enamel hypomineralization; dentine, polarized light microscopy, X-ray microanalysis.

Swedish Dental Journal Supplement 224, 2012

ISSN: 0348-6672; ISBN: 978-91-628-8436-9; GUPEA: <http://hdl.handle.net/2077/28265>

Correspondence: e-mail: marianne.rythen@vgregion.se