

Microcomputed Tomography-Based Primary Teeth Morphostructural Characteristics Comparative Analysis in Hypophosphatemic Rickets Patient

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Abstract

The purpose of present study was to identify structural defects and evaluate the dentine mineral density and dentine porosity of extracted XLHR primary teeth compare to a healthy peer. The data were obtained using a microtomograph SkyScan 1172 (Bruker, Belgium), with following scanner settings: voltage 100 kV; resolution 15,8 and 2 μm . Quantitative assessment of morphometric parameters was carried out using specialized software. The scan revealed significant dentine hypomineralization in XLHR patient compare to the healthy peer ($p < 0,05$) and significant differences in the internal structure of the samples. The average porosity of mantle dentin in XLHR patient and healthy peer was 10,1 and 3 %, respectively. The average porosity of circumpulpal dentine in XLHR patient and healthy peer was 36,3 and 6,8 % respectively. The results of the study demonstrate an obvious visual and quantitative morphostructural differences of dentine in XLHR patient which indicate serious disturbances of mineralization process. The obtained data are important for the rational clinical approach to conservative dental treatment in XLHR patient, as well, as the prognosis of endodontic treatment.

Key words: X-ray Microcomputed Tomography, X-linked Hypophosphatemic Rickets (XLHR), Dentine Mineralization, Interglobular Dentine.

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