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Dental anomalies and treatment approaches in patients with skeletal diseases

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Skeletal diseases are inherited disorders characterized by abnormal bone formation, while dental anomalies are sometimes found in affected patients. Among them, osteogenesis imperfecta, hypophosphatasia, and X-linked hypophosphatemic rickets are three major conditions encountered in daily practice. In this presentation, important features of these diseases are presented, with focus on dental findings and treatment approaches. Osteogenesis imperfecta, characterized by various degrees of bone fragility, is caused by genetic modification of the type I collagen gene. Dentinogenesis imperfecta is a well-known dental manifestation that often causes breakdown of occlusion during the primary tooth period due to occlusal wear or ablation of enamel. Thus, full cover restoration procedures such as with stainless steel crowns are important to establish occlusal height. However, obliteration of pulp makes it difficult to feel pain with development of dental caries or when undergoing required root canal treatment. Hypophosphatasia is a disease characterized by defective bone mineralization and deficiency of tissue-nonspecific alkaline phosphatase (TNALP), and caused by mutations in the gene encoding the TNALP isozyme. As for dental manifestations, premature loss of primary teeth due to disturbed cementum formation is well known. Application of partial dentures for patients with hypophosphatasia and early exfoliation of multiple primary teeth may be a highly effective treatment modality. Individuals with X-linked hypophosphatemic rickets display hypo-mineralization in bone and dentin due to a defect of the phosphate-regulating gene with homology to endopeptidases on the X chromosome (PheX) gene. Dental abscesses without caries or trauma are frequently encountered in affected patients.

Biography

Rena Okawa completed her DDS degree at Osaka University Faculty of Dentistry, followed by receiving a PhD from Osaka University Graduate School of Dentistry. She is an Associate Professor and Chief of the Outpatient Clinic of the Pediatric Dentistry Clinic of Osaka University Dental Hospital, and also a member of the Japanese Society of Pediatric Dentistry and International Association of Dental Research.

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