Oral Manifestations and Treatment of Hypophosphatasia

You Can Help Make the Diagnosis

A diagnosis of HPP is the critical first step to ensure patients who require therapy have access to treatment. Dental professionals can assist diagnosis in possible HPP cases, especially when there is premature primary or unexplained permanent tooth loss. Suspected HPP cases should be referred to primary care physician or medical genetics for blood ALP assay.

Oral Clinical Manifestations

- Primary teeth can be lost in very young children (*prior the the age of 5*)
- Exfoliated teeth typically lack significant root resorption, so their root is intact
- Soft tissue around prematurely exfoliating teeth shows minimal inflammation
- Dental radiographs show localized bone loss around exfoliating teeth
- Enlarged dental pulp chambers and abnormal crown shape can be present
- Adults with HPP have increased risk of tooth loss

Physical Manifestations & Laboratory Tests

- Rickets, muscle weakness, waddling gait, hyperphosphatemia, and decreased bone density
- Severe cases can have bone fractures and craniosynostosis
- Lower levels of serum alkaline phosphatase traditionally correlate with more clinically severe phenotypes
- Mutational analysis of ALPL (*TNSALP*) gene over 300 mutations known to date

Dental Care

- Exfoliated teeth can be evaluated histologically by oral pathologist for presence/absence of cementum
- Provide preventive care to assist in prevention of trauma, caries, periodontal disease
- Orthodontic treatment? One case report of expansion in primary dentition
- Dental implants? Limited evidence. Two case reports of positive results

Enzyme Replacement Therapy

A fusion protein that targets mineralized tissues to replace the non-functioning Tissue Non-specific Alkaline Phosphatase (*asfotase alfa*) became commercially available in the United States in 2015. Clinical studies indicate therapy is successful in humans to manage significant bone disease. Animal studies show replacement therapy is likely helpful in developing normal cementum and tooth attachment.

If you are interested in receiving patient referrals or would like more information on HPP, please contact Soft Bones at info@SoftBones.org

Prematurely Exfoliated Primary Teeth From an HPP Child

Hypophosphatasia (*HPP*) is an inborn error of metabolism and metabolic skeletal disease caused by mutations in the Tissue Non-Specific Alkaline Phosphatase gene (*TNSALP*). Diminished alkaline phosphatase function results in defective mineralization of teeth and bones with the severity being highly variable. Seven clinical forms of HPP are recognized based on time of diagnosis and severity. Severe forms are transmitted as an autosomal recessive trait with milder forms transmitted as autosomal recessive or dominant traits.

Presenting clinical features can include decreased bone density with deformity of the legs and bone fractures. It is common for affected children to have premature tooth loss due to deficient cementum formation and attachment of the root to the periodontal ligament and alveolar bone. Early tooth loss is often the first sign of HPP.

Soft Bones
Finding the Key to HPP
The US Hypophosphatasia Foundation

For more information, please contact the Soft Bones Foundation
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