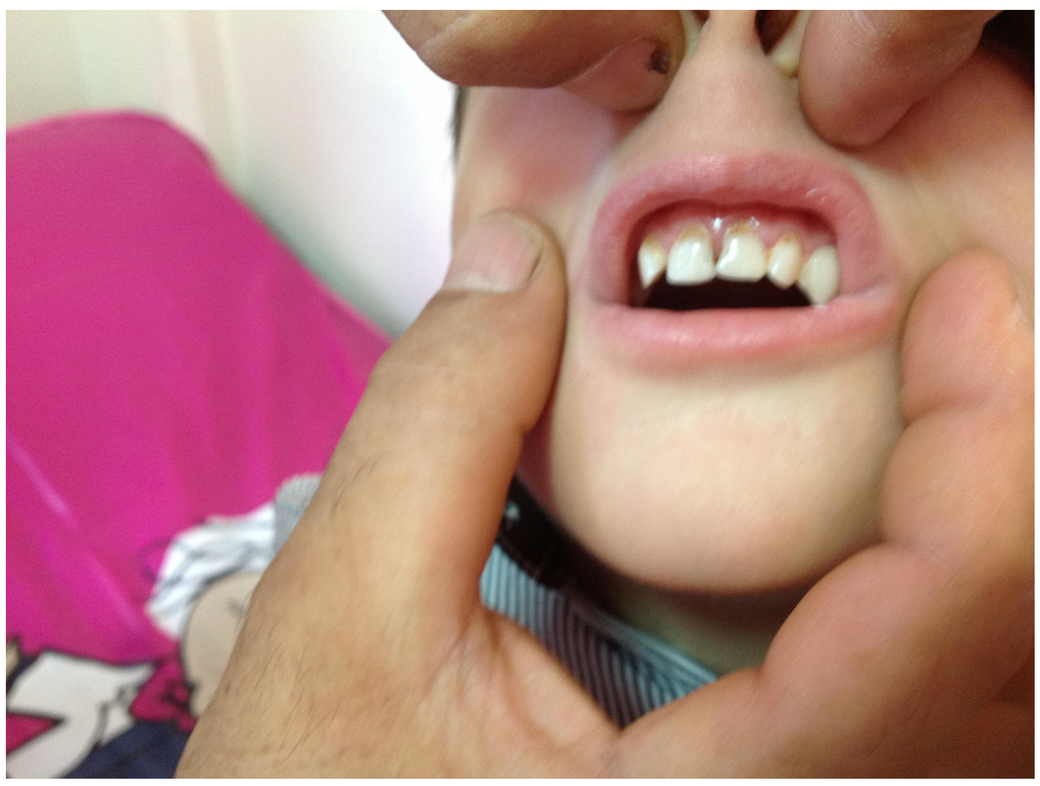
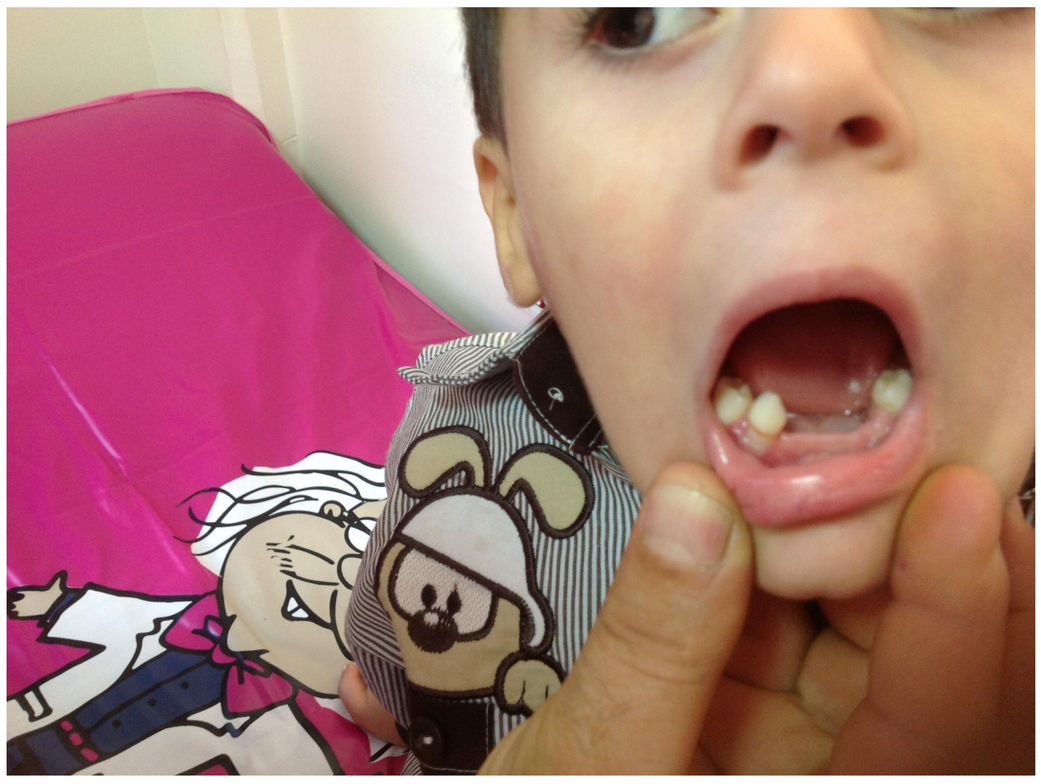
A CASE WITH ODONTOHYPOPHOSPHATASIA AND FAMILY INVESTIGATION

Esra Deniz P. Cakır*, Mehmet Ture**, Halil Saglam***, S. Ahmet Ucaktürk****, Sahin Erdöl***, Erdal Eren***,Omer Tarım***, Tahsin Yakut**
*Sevket Yılmaz Education and Research Hospital, Department of Pediatric Endocrinology, Bursa, Turkey
**Uludag University Medical Faculty, Department of Medical Genetics, Bursa, Turkey
***Uludag University Medical Faculty Department of Pediatric Endocrinology, Bursa, Turkey
****Mersin Maternity and Children Hospital, Department of Pediatric Endocrinology, Mersin, Turkey

Introduction:. Early tooth loss could be the consequence of the local or systemic diseases. We presented an odontohypophosphatasia case and family investigation with otosomal dominant mutation in ALPL (TNSALP).

Material and Methods: A three-year-old boy admitted to our pediatric endocrinology clinic with premature exfoliation of anterior incisors and canines without any other dental or gingival disease. His loss of teeth had begun thirteen months ago. Parents were first degree cousins. There were no any health problems in his 7-year-old brother and 14-month-old sister. Also his parents had no clinical symptoms. In his physical examination; his height was 97.8cm (10 p.), his weight was 14.5 kg (10 p.). There were no pathological sign in his physical examination without toothloss. In his biochemical analysis; Ca:9,7 mg/dl, P:5,9 mg/dl, ALP:70 U/L, PTH: 32,2 pg/ml 25hydroxy Vitamin D: 18,9 ng/ml. We considered that the patient have odontohypophosphatasia. We performed ALPL gene analysis. PCR techniques were used to amplify the all translated exons of the ALPL gene. Sanger sequencing technique was used for mutation analysis and ALPL gene analyzed with ABI 3130 Sequencer device. Heterozygous otosomal dominant c.346G>A (p.A116T) mutation was detected in fifth exon of ALPL. ALPL gene analysis was performed to all members of the family. While his father has no mutation, his mother, brother and sister have the same heterozygous mutation in the same locus.





	CA (mg/dL)	P (mg/dL)	ALP (U/L)	25OHVIT D (ng/mL)	PTH (pg/Ml)	CLINICAL SIGNS	MUTATION
PATIENT	9.7	5.9	70	18.9	32.2	LOSS OF TEETH	c.346G>A (heterozygous)
MOTHER	8.8	3.4	84	12.6	132.9	ABSENT	c.346G>A (heterozygous)
FATHER	9.5	4.1	122	30	24	ABSENT	Homozygous normal
BROTHER	9.7	5.0	238	14.6	42.2	ABSENT	c.346G>A (heterozygous)
SISTER	10.3	5.2	181	25.5	25.5	ABSENT	c.346G>A (heterozygous)

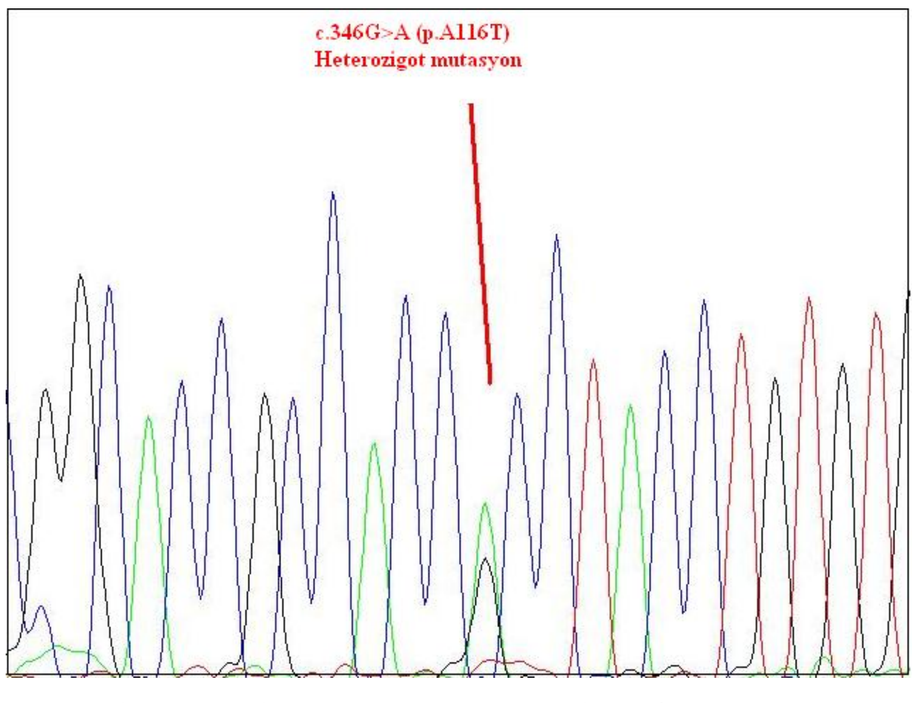


Figure-1:ALPL gene sequencing shows heterozygous c.346G>A (p.A116T) mutation

Discussion and Conclusion: Hypohosphatasia manifests itself principially by faulty mineralization of the bones and teeth, and is caused by defects in the tissue non-spesific alkaline phosphatase (TNSALP) gene on chromosome 1 (1). The predominant mode of inheritance is autosomal recessive, although about 10% show a dominant patern. The symptoms are highly variable in their clinical expression, which ranges from stillbirth without mineralized bone to early loss of teeth without bone symptoms. People with dominant hypohosphatasia usually experience moderate symptoms, such as the premature exfoliation of fully rooted primary teeth (2).

Odontohypophosphatasia should be included as a differential diagnosis in children with early loss of primary teeth. It can be presented without extremely low alkaline phosphatase levels.

References:
1-Smith M., Weiss MJ., Griffin CA., Murray JC., Buetow KH., Emanuel BS., Henthorn PS., Harris H. Regional assignment of the gene for human liver/bone/kidney alkaline phosphatase to chromosome 1p36.1-p34. Genomics 1988;2:l 39-143.
2- Mornet E. Hypophosphatasia. Orphanet J Rare Dis. 2007 Oct 4;2:40.