Pseudohypoparathyroidism (PHP) is a rare group of disorders characterized by end-organ resistance to parathyroid hormone (PTH), and other hormones, such as TSH, and absence of any features of Albright's hereditary osteodystrophy. PHP-1b is the result of defects in the methylation pattern of the complex GNAS locus and it can be inherited in an autosomal-dominant manner or it may occur sporadically.

### Case Description

A 14-year-old boy presented at the hospital because of an episode of fever and signs of hypocalcaemia (positive Trousseau sign).

#### Physical examination:

On physical examination he was a fully pubertal adolescent with normal examination except for positive Trousseau sign. There were no dysmorphic features appreciated.

#### Laboratory findings:

- Low serum calcium
- Elevated PTH and vitamin D deficiency.
- High serum phosphate
- Normal serum TSH
- Normal serum magnesium
- Normal ALP

ECG showed prolonged corrected QT interval

### Patient's history

Patient's history reported that he was hospitalized three years ago, because of knee metaphyseal dysplasia, with no signs of Albright's hereditary osteodystrophy dysplasia. The laboratory results had revealed mild hypocalcaemia and the rest had been quite similar with the present ones. He was treated with alfacalcidol daily, but he discontinued therapy and he was lost to follow-up.

### Family's history

Family history reported that mother has sporadic episodes of hand numbness and her grandmother had carpal spasms and multiple fractures.

### Treatment

The patient was treated with intravenous and oral calcium and alfacalcidol. Moreover, a molecular genetic analysis was performed and confirmed the diagnosis of PHP type 1b.

### Discussion

The genetic defect for PHP_1b was mapped to chromosome 20q13.3.12 PHP1b is predominantly caused by the loss of imprinting at differentially methylated regions (DMR) on the GNAS gene which lead to decreased Gsa transcription in the renal proximal tubules, hence tissue resistance to PTH locally. The genetic analysis on our patient revealed a complete loss of maternal methylation pattern at the GNAS exon consistent with reported loss of imprinting identified in PHP_1b.

Patients suffering from clinical disorders as a result of parathyroid hormone resistance, such as PHP, are quite rarely misdiagnosed. However, when symptoms are mild, diagnosis may be delayed due to the extreme rarity. Genetic counseling is important for the patient and the family, as well as the need for lifelong treatment.