



# A CASE OF COMBINED PITUITARY HORMONE DEFICIENCY IN A PATIENT AFFECTED BY OSTEOGENESIS IMPERFECTA

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**Introduction:** Combined pituitary hormone deficiency (CPHD) is a condition that causes deficiency of several hormones produced by the pituitary gland. The first signs of this condition include a failure to grow at the expected rate and short stature that usually becomes apparent in early childhood. Other features of CPHD include hypothyroidism, delayed puberty and deficiency of the hormonal cortisol. Some conditions may exacerbate the growth failure of CPHD. Osteogenesis Imperfecta (OI) is a congenital bone disorder characterized by bone fragility and short stature caused by mutations in the genes that codify for type 1 procollagen (COL1A1 or COL1A2). Severity of OI varies widely, ranging from intrauterine fractures and perinatal lethality to very mild forms without fractures.

## Case report:

We report the case of a 4-year-6-month-old boy, who was brought to our Pediatric Clinic to evaluate severe short stature. His height was between -4 and -5 standard deviations (DS) below the mean. In the first month of life he had a femur fracture. To evaluate short stature we performed two growth hormone (GH) provocative tests that revealed peak stimulated GH levels below 10  $\mu\text{g/L}$  (arginine stimulation test 2.56  $\mu\text{g/L}$  and glucagon stimulation test 2.3  $\mu\text{g/L}$ ). Nuclear Magnetic Resonance (NMR) imaging revealed an ectopic neurohypophysis. Thyroid function test detected also a secondary hypothyroidism (TSH 2.43 mU/l, fT4 5.9 ng/l). The patient started recombinant human GH (rhGH) and L-thyroxine therapy.

The clinical examination of the patient was normal with the exception of light blue sclera suggesting OI. The patient was a heterozygote for a missense mutation in the COL1A1 gene (exon 48 g.14865 G>A), leading to a structural abnormality of collagen 1.

At 16 years old, Gonadotropin Releasing Hormone agonist (GnRHa) stimulation test revealed a hypogonadotropic hypogonadism and we diagnosed CPHD.

## Discussion:

Our case suggests that severe short stature in patient with CPHD could be exacerbated by other conditions such as OI. Blue sclera and a history of fractures in children with short stature may suggest investigation into OI.

