Growth hormone deficiency (GHD) with high circulating insulin-like growth factor-1 (IGF-1) in an adolescent with celiac disease: Is it IGF-1 insensitivity?

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Introduction

Impaired growth in children with Celiac Disease (CD) results mainly from nutritional deficits. Withdrawal of gluten from the diet is frequently associated with a marked improvement of linear growth. Some CD patients still have impaired growth despite good gluten elimination. GH secretion should be evaluated in CD patients showing no catch-up growth.

We describe a case with CD and severe linear growth retardation due to possible IGF-1 resistance.

Case presentation

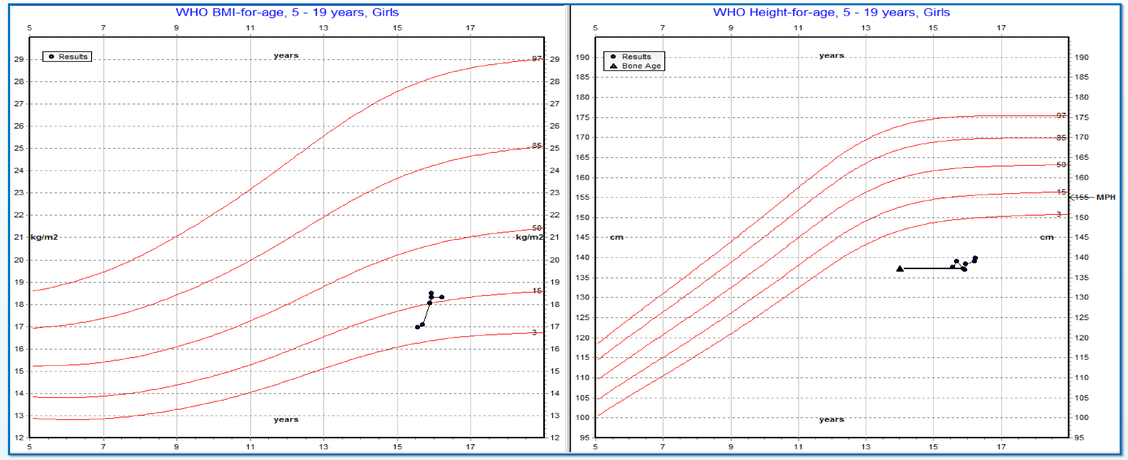
A 16 years old girl, a known case of celiac disease, diagnosed at age of 10 years. She has been compliant with a gluten-free diet. She was born at term with a weight of 2.5kg, followed by insignificant neonatal history. She was growing well until the age of 7 years. There was no family history of short stature or growth abnormalities. She did not reach menarche yet and her mother and sister had menarche at age of 14-15years. By examination: she had no apparent dysmorphic features, no goitre or webbed neck, and normal hands. She was at Tanner stage 4 breast developments. Her growth parameters were Height SDS: -3.76, BMI SDS: -0.85, Mid-Parental Height SDS: -1.2, and weight gain was normal.

- Investigation revealed normal hemogram, renal, liver, and thyroid profile.
- Karyotype 46,XX
- Negative celiac antibodies (TGA).
- IGF-1 level was 436 ug/L(+1.2 SDS).
- The bone age was 14 years.
- Two growth hormone provocation tests done and showed a low peak as (1.15 and 4.6 mcg/L, respectively).
- Her gonadal hormonal profile was (LH:16.9 IU/L, FSH=6.3IU/L, Estradiol, 238pmol/L, Progesterone:1310 nmol/L) and prolactin level: 418 mIU/L.
- Pituitary MRI showed normal pituitary size with no focal lesion.

A trial of growth hormone therapy (0.05mg/kg/day) was given. However, after 2 months she complained of significant headache, not associated with vomiting or visual changes. Repeat IGF-1 level was 713 ug/L(+3 SDS), which necessitated stopping GH therapy.

Figures

Figure: WHO Growth chart of the girl with celiac disease and short stature



Conclusion

The finding in this adolescent girl with CD, severe linear growth retardation, and high IGF-1highly suggested IGF-1 insensitivity of the growth plate and pituitary level causing her defect in linear growth. To our best of knowledge, this was not described before.

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