Case Report

Isolated Primary Hypothroidism as cause of Growth Failure-Never Too Late !

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Introduction

Thyroid hormones (TH) are critical for cerebral and somatic body growth, bone and pubertal maturation and primary hypothyroidism is a well-known cause of poor linear growth in children. This case of profound hypothyroidism highlights the benefits of identification and starting thyroid hormone replacement to improve final height even later adolescence age.

Case

We report the case of 16 years old Caucasian girl initially evaluated for delayed growth of 139 cm putting her below the second centile on growth chart (Fig.1). she complained of worsening fatigue with usual physical activity. Her weight was 39 kg. She has had delayed growth throughout childhood however other developmental milestones were acquired appropriately. Her school performance was at par with children of her age.

Her non-identical twin brother had height of 180 cm. Mother and father's reported height was 156 cm and 182 cm respectively.

On examination she had normal external genitalia and breast Tanner stage 2. Her Body Mass Index was 20. She did not have goitre.

Investigation showed profound hypothyroidism with serum TSH of over 100miu/L (0.35-4.5) and free T4 of 0.8 pmol/L (9-19). Her Bone age was delayed by 3 years. MRI Pituitary was normal.

She was started on Levothyroxin.

Her linear growth velocity immediately improved to up to 16cm/year, and she rapidly progressed through puberty, achieving menarche 18 months after starting treatment. She was later started on growth hormone following Glucagon test which showed blunted growth hormone response with peak level of 3.79mcg/L. She gained further growth of 4.5 cm giving a final height 155.5 cm at the age of 18years (Fig 2) which is still short of her calculated Mid Parental Height of 162 cm.

Time	Glucose	GH	Cortisol
0 Min	4.8 mmol/L	2.38 mcg/L	290 nmol/L
90	3.6	0.94	270
120	3.1	3.79	190
150	4.5	2.68	349
180	4.4	1.63	576
240	4.3	0.28	296

Tablet: Glucagon Suppression Test

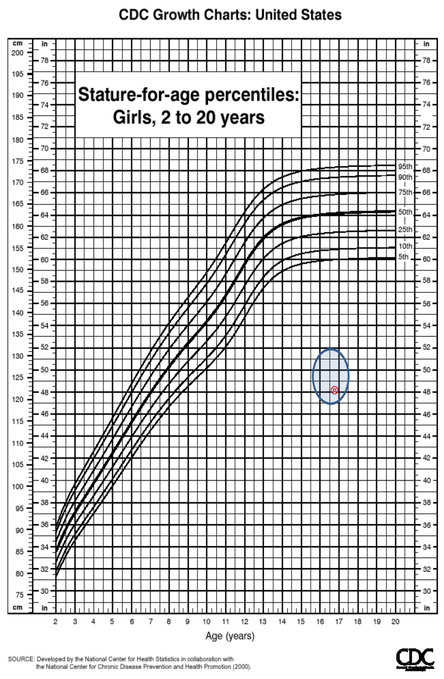

Fig 1-Before Thyroxin treatment

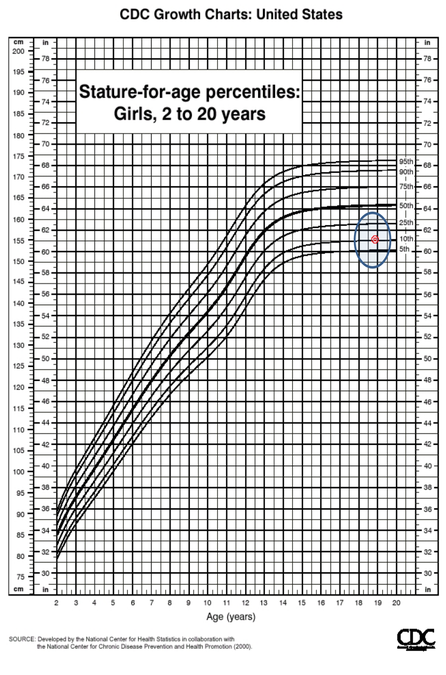

Fig 2- After Thyroxin Treatment

Conclusion

Early treatment is essential to preserve final height in children with severe primary hypothyroidism. Late diagnosis and treatment during puberty invariably results in incomplete catch up growth and depends on the duration of hypothyroid status before treatment[1]. Our patient had an excellent response to treatment with some benefit from growth hormone to catch up growth and achieving normal menstrual function.

Reference

1-Rivkees SA, Bode HH, Crawford JD. Long-term growth in juvenile acquired hypothyroidism: the failure to achieve normal adult stature. N Engl J Med. 1988;318:599–602. doi: 10.1056/NEJM198803103181003.