Final adult height in a patient with Turner syndrome {46, X, i(Xq)} treated with growth hormone for 10 years compared to her normal dizygotic twin sister and mid-parental height.

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Introduction

Anthropometric somatotype components show significant resemblance in monozygotic (MZ) and dizygotic twins (DZ) twins within each sex with a greater resemblance within MZ twin pairs than within DZ twin pairs. In many studies a significant positive correlation was found between the parental height and the height of girls with TS.

Case Report

This girl with Turner syndrome {46, X, i(Xq) presented at the age of 7.5 years for evaluation of her short stature. Her clinical evaluation revealed normal phenotype with normal cardiac examination. Echocardiography was normal. Karyotyping proved Turner syndrome (46X, xi(x) (q10).

Her bone age was 7 years. Labs revealed normal thyroid profile, renal and hepatic functions. U/S pelvis showed anteverted uterus (3.9 x 1.5 cm).The right and left ovaries were 0.26 ml and 0.4 ml respectively.

Her mid-parental HtSDS = 0.05. Her IGF-ISDS= -2, and her peak GH response to provocation with clonidine was normal (21 ng/dl).

She was started on HGH therapy 0.05 mg/kg/day and followed up 6 monthly. Her IGF-ISDS increased to 1.5 and her growth is presented in table.

At 12 years of age she was started on low dose ethynyl estradiol and at 15 years she was started on oral EE 30mcg/levonorgestrel 150mcg therapy.

At the age of 17 years her HtSDS = -2.6 on the normal female growth curve and her Ht SDS = 1.3 on the Turner growth curve.

Her normal twin sister started menstruation at the age of 13 years and her final adult height attained at 17 years = 161 (HtSDS = -0.14) (fitting with the mid-parental HtSDS).

Age (y)	Length/Height (cm)	L/HtSDS	Wt (kg)
Birth	49		2.43
7.5	106	-2.8	19.8
GH started			
9	118	-2.56	25
10	123.5	-1.87	28
11	128	-2.2	30
12	133	-2.4	34
GH + E Estradiol			
14	142.5	-2.7	43
15	144.5	-2.7	44.7
16	146	-2.56	51
17	146	-2.6	50
Her Normal twin 17	161	-0.14	53

Discussion

It appears that 10 years of GH therapy and estrogen replacement therapy improved the final height (HtSDS) of this girl to 1.3 above her mid-parental HtSDs and 1.1 SDS above her twin sister HtSDS which corresponds to about 6-7 cm (on Turner growth curve).

Conclusion

In comparison with her normal twin sister, the use of GH and estrogen therapy in this patient with Turner syndrome improved her final adult height by > 1 SDS.

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