

Growth Prognosis and Growth After Menarche in Primary Hypothyroidism

Pantsiotou et al examined growth data of 20 girls and 9 boys with primary hypothyroidism from the beginning of thyroxine treatment to final height. Bone age (BA) was determined by the method of Tanner. At diagnosis, girls had a mean age of 8.8 years (range, 3.0 to 13.0 years) and a mean BA of 5.4 years. The mean age of diagnosis in the boys was 9.5 years (range, 3.7 to 14.2 years) with a mean BA of 6.3 years. All patients were treated with thyroxine (100 µg/m²/d). In girls, the mean height standard deviation score (SDS) for BA before treatment was +0.59. At final height (17.5 years) the mean height SDS for BA was -0.55 ($P < 0.01$). In boys, the mean initial height SDS for BA was -1.6, at final height (16.5 years) this was decreased to -0.87 ($P < 0.02$). All patients, except 1 girl, were below the 50th percentile at final height. The onset of puberty in boys was at age 13.3 ± 1.4 years, or 1.7 years later than in the normal population. The onset of puberty in girls was at 12.4 years, or 1.2 years later than in the normal population. The mean age of menarche was 13.8 years compared with 13.5 years in normal girls. Therefore, the time from the onset of puberty to menarche (1.4 years) in girls with primary hypothyroidism was reduced as compared with that of normal girls (2.3 years). Unlike normal girls, whose growth velocity decelerated markedly with the onset of menarche, the girls with treated hypothyroidism had a mean growth velocity of 5.1 cm/yr during the year after menarche and 4.1 cm/yr during the second year following menarche. Thus, there was a permanent height deficit in treated primary hypothyroid children and the growth characteristics were markedly different from normal.

S. Pantsiotou, et al. *Arch Dis Child* 1991;66:838.

Editor's comment: *The results of this study confirm earlier work by Rivkees et al (N Engl J Med 1988;318:599-602) who showed that at maturity girls and boys treated for acquired hypothyroidism were approximately 2 SD below normal adult stature. Both girls and boys in that study were somewhat older at diagnosis than those in the present study, and disease duration was longer. No description of growth characteristics was given in the Rivkees et al report, although both studies report that BA advanced at a greater rate than height age in treated hypothyroid children.*

In an editorial accompanying the study by Rivkees et al (N Engl J Med 1988;318:632-634), Fisher suggests that the average age at diagnosis of the children in the study may have limited the period of catch-up growth available to them to about 3 years. It is significant that the children in Pantsiotou's study were younger than those in the Rivkees et al report, yet they showed a similar pattern of growth deficit at final height. The significance of growth following menarche is unclear, as it did not contribute (significantly) to these patients achieving a normal final adult height. It is important that pediatric endocrinologists use caution when predicting final height in children being treated for primary hypothyroidism.

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