

## **Constitutional Delay of Growth and Adolescence: Results of Short-Term and Long-Term Treatment With GH**

Bierich et al report final adult heights of children with constitutional delay of growth and adolescence (CDGA) who received exogenous growth hormone (GH) therapy and compared this data to the predicted heights prior to treatment. Thirteen boys and 2 girls were studied. Prior to treatment, nocturnal GH secretion was measured and shown to be approximately half that of a control group. In addition, the mean peak growth hormone levels following IV arginine also were half that of normal controls. All of the children were below the 3rd percentile for height, and their bone ages, according to Greulich and Pyle, were retarded by more than 2 years. Height predictions, by the method of Bayley and Pinneau, were performed at the initiation and termination of GH treatment and target height was determined according to the method of Tanner. Duration of GH therapy ranged from 2.5 to 6 years (mean, 3 years); 7 of the children were in early puberty at the start of treatment.

The mean final height of these 13 children was not different from the mean predicted height prior to GH treatment, but was significantly less than the target height. Although the authors did not include a control group for comparison, a meta-analysis of 5 studies of untreated CDGA children was performed. The mean final height of these children was 168.7 cm, while their predicted height was 170.4 cm and their target height was 172.8 cm. No statistics were provided, but it would appear that these differences were not significant. The authors concluded that children with CDGA become relatively short adults, when compared with their parents, regardless of whether they receive GH therapy. They further suggested that studies are needed in which GH therapy is continued until the epiphyses are closed. Bierich et al remind us that similar increases in height may be produced with oral oxandrolone or testosterone, if sexual development is a particular problem.

Bierich JR, Nolte K, Drews K, et al. *Acta Endocrinol* 1992;127:392-396.

**Editor's comment:** *This paper confirms previous findings that children given GH will respond with an increase in growth velocity, but suggests that, at least in the group with CDGA, final height is*

*not affected. These findings are not unexpected, but are important in that some physicians may interpret the prepubertal growth deceleration in children with CDGA as an indication for GH therapy. This paper would suggest that this is not so. It is unclear why GH therapy was discontinued for the patients in this study, but restoration of height deficit (increased height standard deviation scores), may have been the indicator for discontinuance. It would have been interesting to have continued treatment in these individuals until epiphyseal fusion. It is unclear whether such studies are presently underway. The cost of GH therapy is not comparable to that of oxandrolone or testosterone. If similar results can be attained with these drugs, there is little justification for GH treatment of children with CDGA.*

*William L. Clarke, MD*

**2nd Editor's comment:** *Although GH treatment in delayed adolescence was once considered as useful based on good short-term results, this study could be interpreted to suggest that GH has minimal effect on final height. This paper, by a group that previously advocated GH in such situations, is to be considered both an interesting contribution to the management of growth delay as well as an example of fair self-evaluation and honesty in this field.*

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