

Symposium on Controversies in the Diagnosis of Growth Hormone Deficiency

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ABBREVIATION. GH, growth hormone.

There is unease among pediatric endocrinologists about the ability to correctly categorize short, poorly growing children. Are they growth hormone (GH)-deficient, partially deficient, or normal but short? To a great extent, this unease is illustrated by Dr Jennifer Bell's discussion of the inability of GH provocative test results to predict the response to GH treatment. Short children respond to GH treatment regardless of their results on GH provocative testing. Furthermore, it is recognized that GH provocative testing, the standard for diagnosing GH deficiency, is inexact. The results of GH provocative testing can vary in the same patient over time, and retesting of GH-deficient children as adults often does not sustain the original diagnosis.¹⁻⁴

Before the presentations by Drs Barry Bercu and Raymond Hintz, in which they described alternative means of determining which children should be treated with GH, Drs Selna Kaplan and Nancy Hopwood discussed the limitations of the current GH provocative testing. Dr Kaplan pointed out that the current standard definition of GH deficiency, a GH response $<10 \mu\text{g/L}$, is an arbitrary one. She also indicated that we are probably classifying too many children as having GH deficiency in terms of the standards that were used before biosynthetic GH became available. To a great extent, the problems with an arbitrary cutoff of $10 \mu\text{g/L}$ for a GH response to a pharmacologic stimulus relate to the different normal values obtained with the different assays that are used for quantifying GH. This cutoff too often is accepted regardless of the assay used. Children with organic causes of GH deficiency most often have responses $<3 \mu\text{g/L}$. Dr Kaplan suggested that in children with intermediate responses to pharmacologic stimuli, pretreatment with estrogen priming may

be of value in enhancing the GH response and in helping clarify the diagnosis,⁵ particularly in children with delayed onset of puberty.

Dr Hopwood believes that estrogen priming before GH provocation testing is not as valuable as advertised. She pointed out that both GH provocative testing and estrogen priming are unphysiologic methods for assessing GH activity in a patient. This view is supported by the recent report by Tillmann et al, who found that the mean GH response to provocative testing did not differ between children who had and who had not undergone estrogen priming.⁶

In their presentations, Drs Bercu and Hintz described alternative means of establishing the diagnosis of GH deficiency. The most current proposal is Dr Hintz's, growth factor measurements. It will require verification by additional investigation, but Tillmann and associates⁶ suggest caution, because of the apparent lesser sensitivity of growth factor analyses (insulin-like growth factor I and insulin-like growth factor binding protein 3) than of GH provocative testing in spite of high specificity.

Dr Margaret MacGillivray concluded the symposium with an analysis of whether the current dosing of GH therapy is physiologic.

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