Validation of prediction models for near adult height in children with idiopathic growth hormone deficiency treated with growth hormone - a Belgian Registry study

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1. Background / Aim

To validate the KIGS prediction models¹ for near final adult height (nFAH) after 1 year of growth hormone treatment in children with idiopathic growth hormone deficiency

2. Subjects and methods

Height data of 127 (82 male) idiopathic growth hormone (GH) deficient children, treated with GH until nFAH, were retrieved from the BESPEED database. nFAH was predicted after first-year GH treatment applying the prediction models by Ranke et al. Bland Altman plots and Clarke error grid analyses were performed to assess clinical significance of the differences between observed and predicted nFAH.

3. Results

In males, predicted nFAH was higher than observed nFAH (difference: 0.2 SD ± 0.7; p<0.01). In females, there was no significant difference between predicted and observed nFAH.

Bland Altman plots:
The means of the differences between observed and predicted nFAH were close, but not equal to zero with overprediction for smaller heights and underprediction for taller heights.

Clarke error grid analyses:
Males: 59-61% of predicted nFAH were within 0.5 SDS (3.5 cm) and 88% within 1.0 SDS (6.9 cm) from observed nFAH.
Females: 40-44% of predicted nFAH were within 0.5 SDS (3 cm) and 76-78% within 1.0 SDS (5.9 cm) from observed nFAH.

4. Conclusion

Ranke’s models accurately predicted nFAH in females and overpredicted nFAH in males by about 1.5 cm.
In most individuals, predicted nFAH was within 1 SDS of observed nFAH.

These models can be of help in giving realistic expectations of the effect of GH treatment on adult height.

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