LETTER TO THE EDITOR

Predicting adult height in Turner syndrome

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Like Wasniewska *et al.* (1) we also have an interest in the effect of growth hormone (GH) on growth and final adult height in Turner syndrome. Predicting final adult height in any individual is far from an exact science, but we believe that Wasniewska's calculations are flawed; first due to the inappropriate use of height standard deviation scores (SDS), and secondly due to the fact that the girls in their study, after their initial measurement, were being treated with GH.

Wasniewska *et al.* calculated height SDS in their patients using the data of Sempe *et al.* 1979 (2). These data, as stated by Wasniewska and colleagues, are from 'normal girls'. This SDS is then used in the equation published by Lyon *et al.* (3) to derive a predicted adult SDS, which is then converted back into a height via reference to the data of Sempe *et al.* (2). The important point to note is that the Lyon equation is based on SDS calculated using data derived from children with Turner syndrome.

We believe this approach will induce error. The relationship between initial height SDS and final height SDS calculated relative to Turner growth data will not be the same as the relationship between initial and final SDS calculated using 'normal' data. This can be appreciated by looking at Figure 1 in the Lyon paper (3). There is considerable divergence of the growth curves representing girls with Turner syndrome and those without the syndrome. For example, if we take a 4 year old girl with a height of 90 cm that will produce an initial height SDS using Sempe data of -2.54 . This will lead to a predicted final height SDS using the Lyon equation of -2.66 . At age 19 this equates to a final predicted height of 147.2 cm using

Sempe data to convert the SDS to a height. If, however, the initial SDS is calculated relative to the data of Lyon *et al.* we obtain a value of -0.26 . This then translates to a predicted final SDS of -0.08 which in turn translates into a final predicted height of 142.6 cm using Lyon and colleagues' data. We believe that in order to best predict adult height in Turner syndrome, only SDS calculated relative to Turner data should be used. Furthermore, as mentioned above, predicted adult height is calculated in yearly intervals after initiation with GH. As such, it is likely that the girls in this study treated with GH will be growing very differently to the untreated girls from which the Lyon equation is derived. We believe that these two key points may have influenced the accuracy of the prediction of adult height by Wasniewska *et al.* (1).

References

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- 2 Sempe M, Pedron G, Roy-Pernot MP. *Auxologie methode et Sequences*, pp 34–35. Paris: Theraplix, 1979.
- 3 Lyon AJ, Preece MA & Grant DB. Growth curve for girls with Turner Syndrome. *Archives of Disease in Childhood* 1985 **60** 932–935.

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