LETTERS TO THE EDITOR

Tests for growth hormone secretion

Sr,—The reproducibility of pharmacological and physiological tests for growth hormone deficiency is rightly questioned in the annotation by Brook and Hindmarsh.1 The authors, however, do not consider the reproducibility of the measurement of height. We recently demonstrated the unavoidable imprecision of height measurement,2 and emphasise here its serious implications for the interpretation of short term growth data. We are particularly concerned about the estimation of velocity, where the errors from two height measurements rather than one are involved.

In their ‘plan for action’, Brook and Hindmarsh advise: Measure the child and... measure the child again after four months and calculate the annual velocity'. To base a velocity on measurements four months apart greatly increases the error of measurement already associated with the estimation of velocity over 12 months. It has been shown that the SD for a single height measurement made by experienced observers lies in the region of 0·25 cm.3,4 (Any claim of a lower SD may well imply correlated measurement errors, as will happen, for example, if the calibration trials are not blind.) Given a typical SD of 0·25 cm, the 95% confidence interval for an annual velocity, calculated from the formula 2(SD)/√N, is the observed increment ±0·71 cm/year. Where the measurements are only four months apart, instead of the standard 12, the confidence interval for an annual velocity triples in length. On this basis, the 95% confidence interval for a child between the ages of 5 and 6 years, estimated to be growing, for example, at the 50th centile for velocity, would lie between 4·2 and 8·4 cm/year, and more than span the whole centile range on the chart (A on the figure). A four month velocity cannot give any indication of current growth.

Furthermore, we have shown,6 and the authors have previously stated,7 that there is little correlation between successive height velocities. Velocity cannot therefore in practice be used to predict future growth.

The appeal of errors discussed. The advantage is that all data points are used, including multiple measures on the same day. Growth velocity can then be calculated with an estimate of error.

A disproportionate emphasis is still placed on endocrine tests in establishing the need for growth hormone treatment. Our annotation sought to put this in perspective. As the Southampton group have demonstrated, growth measures are a lot more reliable than any of the current tests available for estimating growth hormone secretory status, placing auxology foremost in the assessment of growth and its disorders in children, even with the inaccuracies to which they have rightly drawn attention.

Gut blood flow velocities in the newborn

Sr,—We read with interest the study by Coombs et al of the effects of parenteral indomethacin on splancnic blood flow.1 However we were surprised that no mention was made as to how the patency of the ductus arteriosus was established. In describing both the study and control groups the terms ‘sympathetic’ and ‘clinical’ lead to the assumption that echo Doppler cardiology was not performed. Surely in order to determine accurately the effect of a patent ductus arteriosus on splancnic blood flow, with or without parenteral indomethacin, it is essential to assess accurately the direction of flow and the pressure gradient across the ductus for both systole and diastole. The statements that: (1) indomethacin has effects on splancnic flow independent of its actions on the ductus and (2) the slow administration of parenteral indomethacin shows no apparent loss of efficacy on ductal closure, cannot be concluded from this study and are potentially misleading due to the lack of accurate haemodynamic documentation.

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Dr Coombs comments:
While echo Doppler cardiology may be the gold standard for diagnosing a patent ductus arteriosus, most UK neonatologists when deciding on the need for treatment rely, as we did, on the clinical findings of a characteristic murmur, at least 20 mmHg increase in diastolic pressure, an increase in oxygen requirements, and evidence of heart failure. These clinical findings were present in all the babies comprising the study group and were not seen in the control group. Supporting, but not reinforcing, the clinician’s decision to treat was the finding in the babies studied of the absence of retrograde diastolic flow in the superior mesenteric artery, an indication of left to right shunt.

Professors Buchroeder and Elster commend the Southampton group for: (A) a child estimated to be on the 50th centile for velocity; (B) a child estimated to be on the 3rd centile for velocity; and (C) a child with upper confidence limit for velocity on the 25th centile. The observed velocity lies below the first centile.