Correspondence

Effect of treatment of malignant disease on growth in children

Sir,

We were pleased to find that the broad conclusions drawn by Griffin and Wadsworth¹ reinforced our findings,² as well as those of other authors.³ Few children previously treated for acute lymphoblastic leukaemia (ALL) are clinically growth hormone-(GH-) deficient, and the loss in potential height caused by the treatment is moderate.³ Griffin and Wadsworth suggest that the poor growth velocity shown by such children during the first year of treatment is due to radiation-induced transient GH deficiency, and they support this view by quoting the work of Dacou-Voutetakis *et al.*⁴ and by showing that the children they studied¹ did not show a significantly reduced growth rate before radiotherapy. We disagree for the following reasons:

(1) Dacou-Voutetakis *et al.*⁴ alone have found evidence of radiation-induced transient GH deficiency. Several years ago one of us (S M S) compared the GH responses with an insulin tolerance test and an arginine stimulation test before and after 20 ALL children received prophylactic cranial irradiation (DXT). There were no differences and no child had a subnormal GH response to these tests at the end of the radiation course.

(2) In a prospective study,⁵ with the measurements performed by a trained observer, we found that all the ALL children grew very slowly during the first year of treatment. The somatomedin activity was measured⁵ in these children at the time of diagnosis, at the time that they went into clinical remission, when they received their cranial DXT, and at the end of the first year of treatment. The mean somatomedin activity level was very low at presentation but when they were in clinical remission their somatomedin activity level was not greatly different from a group of normal age-matched controls. During the remainder of the first year of treatment there was no further significant change in somatomedin activity level, thus we found no evidence to support a diagnosis of transient GH deficiency.

(3) Finally, we think that Griffin and Wadsworth have misinterpreted some of their own data. They suggest that as the mean standard deviation (SD) score for height in their children at the time they received cranial DXT was not greatly different from the value at diagnosis, or from 0, their patients grew normally during the interval between diagnosis and cranial DXT; this is not true. The time interval between diagnosis and cranial DXT is so short—that is a few months—that a significant difference in the mean SD score between these two times would not be found even if the children grew at an exceptionally slow rate.

We still believe that the combination of cytotoxic drugs and steroids is the major cause of poor growth during the first year of treatment.

References

- Griffin N K, Wadsworth J. Effect of treatment of malignant disease on growth in children. *Arch Dis Child* 1980; **55**: 600-3.
- Shalet S M, Price D A, Beardwell C G, Morris Jones P H, Pearson D. Normal growth despite abnormalities of growth hormone secretion in children treated for acute leukemia. *J Pediatr* 1979; **94**: 719-22.
- Swift P G F, Kearney P J, Dalton R G, Bullimore J A, Mott M G, Savage D C L. Growth and hormonal status of children treated for acute lymphoblastic leukaemia. *Arch Dis Child* 1978; **53**: 890-4.
- Dacou-Voutetakis C, Haidas St, Zannos-Mariolea L. Letter: Radiation and pituitary function in children. *Lancet* 1975; **ii**: 1206-7.
- Price D A, Shalet S M, Beardwell C G, Hann I M, Morris Jones P H. Serum somatomedin activity (SM-act) in children with acute lymphoblastic leukemia (ALL) (abstract). *Pediatr Res* 1978; **12**: 159.

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Dr Griffin and Miss Wadsworth comment:

We read with interest the observations by Shalet and Price. Our principal conclusion that children treated for ALL have only slight loss in potential height agrees with their findings⁶ although they prefer to attribute this to the effects of cytotoxic drugs and steroids rather than to transient GH deficiency. We believe that their hypothesis is not proved by their data, nor does it tally with our findings for the following reasons:

(1) Dacou-Voutetakis *et al.*¹ measured spontaneous nocturnal GH secretion in leukaemic children and found it was impaired. This is not necessarily incompatible with an ability to produce a rise in serum GH above an arbitrary level in response to hypoglycaemia. Shalet mentioned his own unpublished observations of GH response to hypoglycaemic and arginine stimulation in leukaemic children, but he did not say how long after cranial irradiation his observations were made. However, Shalet *et al.*²⁻³ performed similar tests on patients who had received cranial irradiation for brain tumours and found a progressive impairment in response with time