

Conte FA, Grumbach MM, Kaplan SL, Reiter EO. Correlation of luteinizing hormone-releasing factor-induced luteinizing hormone and follicle-stimulating hormone release from infancy to 19 years with the changing pattern of gonadotropin secretion in agonal patients; relation to the restraint of puberty. J Clin Endocrinol Metab 1980;50:163-8.


Correspondence to Dr D C L Savage, Royal Hospital for Sick Children, St Michael's Hill, Bristol BS2 8RJ

Received 12 May 1983

Commentary

S M SHALET

Department of Endocrinology, Christie Hospital, Manchester

Brown et al. draw attention to a group of children with medulloblastoma in whom treatment has impaired subsequent growth and damaged a number of endocrine glands. Growth hormone (GH) is the first anterior pituitary hormone to be affected by radiation damage to the hypothalamic pituitary axis. A number of groups have described subnormal GH responses to pharmacological stimuli in children irradiated for medulloblastoma. Unfortunately there are no long term studies of the effects of GH treatment in a large number of children with radiation induced GH deficiency. These data are badly needed as GH deficiency is only 1 of a number of factors that may impair growth. Spinal irradiation modifies spinal growth, while the effects of occult recurrent tumour, chemotherapy, and subtle degrees of thyroid dysfunction on growth are unknown.

Thyroid dysfunction in children treated for medulloblastoma is due to radiation damage to the thyroid. Frank hypothyroidism (thyroid stimulating hormone (TSH) thyroxine (T4)) is rare but should, if present, be treated with T4. More frequently a raised serum TSH concentration with a normal serum T4 value may be found in a child who is clinically euthyroid and here treatment with T4 has also been suggested. It is argued that a raised TSH value is carcinogenic in a child who has previously received irradiation to the thyroid and that a raised TSH value per se indicates that mild hypothyroidism is present. There is, however, only anecdotal evidence that thyroid carcinoma complicates the treatment of medulloblastoma and unless treatment with thyroxine is monitored carefully additional problems may be created rather than resolved.

Rappaport et al. described delayed onset or impaired progress through puberty in children treated for medulloblastoma. In these children gonadotrophin deficiency, occasionally associated with hyperprolactinaemia, was caused by radiation damage to the hypothalamic pituitary axis. Many of the children studied by Brown et al. also showed evidence of gonadal dysfunction but in these children the gonads were damaged directly by scattered radiation from the spinal field. Finally, Ahmed et al. described gonadal dysfunction in another group of children treated for medulloblastoma. None of their children had gonadotrophin deficiency or radiation induced gonadal damage. In these children the aetiological factor was adjuvant chemotherapy with nitrosoureas (BCNU and CCNU) that had directly damaged the gonads.

Apart from the practical problem of management of some of these endocrine problems, other questions are raised by these studies. In all groups of children with medulloblastoma do the benefits of adjuvant chemotherapy outweigh the risks and is the current dose of spinal irradiation the minimum required to destroy medulloblastoma cells that have seeded to the spinal meninges? It is possible that if the dose of spinal irradiation could be reduced less impairment of spinal growth would occur. Furthermore, a more uniform approach to spinal irradiation should reduce the incidence of radiation induced gonadal damage.

References

1 Shalet SM. Disorders of the endocrine system due to radiation and cytotoxic chemotherapy. Clin Endocrinol (Oxf) 1983 (in press).
