

## Management of Growth Hormone Deficiency in Children Irradiated for Brain Tumours

Stephen M. Shalet

*Christie Hospital NHS Trust, Wilmslow  
Road Manchester, England*

Radiation-induced growth hormone deficiency (GHD) is primarily due to hypothalamic damage. GH secretion by the pituitary may be affected either secondary to some degree of quantitative deprivation of hypothalamic input or, if the radiation dose is high enough, by direct pituitary damage (1). As a consequence, the neurosecretory profile of GH secretion in an irradiated patient remains pulsatile and qualitatively intact. The frequency of pulse generation is unaffected, but the amplitude of the GH pulses is markedly reduced (2).

Over the last 25 years, the final heights achieved by children receiving GH replacement for radiation-induced GHD have improved; these improvements are attributable to refinements in GH dosing schedules, increased use of gonadotropin-releasing hormone analogues for radiation-induced precocious puberty and a reduced time interval between completion of irradiation and initiation of GH therapy (3). When retested at the completion of growth, 80% to 90% of these teenagers are likely to prove severely GH deficient and therefore, will potentially benefit from GH

replacement in adult life (4). Such long-term GH treatment in patients treated previously for a brain tumour means that critical and continuous surveillance must be devoted to the risk of tumour recurrence and the possibility of second neoplasms.

### References

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