

Growth Hormone Treatment in Childhood Intracranial Tumors - Hacettepe Experience

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Introduction

Incidence of brain and other nervous system tumors is 4.8/100 000 in children. Tumor or treatment per se may lead to hypopituitarism and growth hormone (GH) deficiency. Replacement of pituitary deficiencies is shown to decrease all causes of mortality in survivors, however, consideration for recurrence may preclude GH treatment.

Abstract

Objective: To analyze the results of GH treatment in childhood intracranial tumors.

Methods: Clinical characteristics and tumor recurrence under GH treatment was analyzed for 47 children with hypopituitarism treated for intracranial tumors (24 craniopharyngioma).

Results: All patients had sellar-suprasellar tumors, except for 4 cases (2 with medulloblastoma and 2 with infratentorial ependymoma). Age at diagnosis was 7.7 (\pm 5.0) years. 39 percent of the cohort had findings suggestive of hypopituitarism including short stature prior to treatment.

Treatment involved gross-total resection in 45% of the cohort. None of the children with craniopharyngioma received radiotherapy (RT), whereas 67% of children with other tumors received RT (48% with chemotherapy). Diabetes insipidus (66% vs. 30%), adrenal insufficiency (83% vs. 22%) and hypogonadism (100% vs. 50%) were more common in the craniopharyngioma group following tumor therapy. GH was started earlier (2.7 vs. 5.2 years) following tumor diagnosis of craniopharyngioma in comparison to other tumors. Height SDS (HSDS) decreased significantly in the first year of treatment in both groups from -3.2 (1.3) to -2.3 (1.3) ($p < 0.001$). This effect was conserved during GH treatment with no further decrease in HSDS. Tumor recurrence occurred in 11 patients with craniopharyngioma, 4 of which were clinically insignificant, requiring no further treatment. Five children with other tumors and subtotal resection recurred prior to treatment. They did not recur during GH treatment.

Conclusion: Overall, GH treatment improves final height significantly. Tumor recurrence may be a cause for concern during GH treatment. However, it may be part of the natural history of the tumor rather than an adverse effect due to GH treatment, especially in cases with subtotal resection; thus GH treatment should not be precluded for concerns regarding recurrence.