Growth Hormone Treatment in Survivors of Pediatric Brain Tumors
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Conflict of interest: None

Introduction:
• Survivals from brain tumors is increasing in children recently. These patients will likely have severely growth hormone deficiency.
• Growth Hormone Treatment (GHT) has been used in childhood cancer survivors since 1975.
• On the other hand, GH has mitogenic and anti-apoptotic effects, so there is a concern if survivors are at risk of disease recurrence or developing second neoplasms

Aim: To evaluate the effect of growth hormone treatment (GHT) in children treated for brain tumor successfully.

Materials and Methods:
• Thirteen patients who received GHT after brain tumor treatment were evaluated retrospectively.
• Height SDS, growth velocity SDS, serum IGF-1 levels were collected at baseline and at the time of evaluation.

Results
• 13 patients (5 girls, 8 boys)
• Mean age of patients: 15.4 ± 4 (7.7-22) years

At the time of diagnosis:
• Mean age: 7.2 ± 3.3 (3.1-12.8) years
• Mean height SDS: -1.5 ± 1.7

Type of brain tumor;
• Medulloblastoma: 8 (61.5 %)
• Craniopharangeoma: 4 (30 %)
• Pinealoma: 1 (7.7 %)

During GHT;
• Delta height SDS was +1,1 SD
• IGF-1 SDS was between -0.2 to +0.4 SDS
• Four patients reached final height were -1.2±1.5 SD
• GHT was discontinued in 6 patients; recurrence: 2, final height access: 2, poor treatment adherence: 1, non-responsive: 1
• Recurrence in two patients; pinealoma (exitus) and medulloblastoma

Time of the diagnosis; 3 were pubertal (1 girl, 2 boys)

Pubertal status;

Initiation of GHT:
• GH doses: 0.035-0.045 mg/kg/day
• The mean age: 11.9±3.3 years

Before GHT
• Mean height SDS: -2.3 ±1,6
• Mean growth velocity SDS: -3.2 ±2.4
• Mean IGF SDS: -1.8 ±0.6

Before GHT

Figure-1: Values of height SDS, GV SDS, IGF SDS during GHT

Table-1: Patients with another endocrinopathies

<table>
<thead>
<tr>
<th>Type of brain tumor</th>
<th>Hypogonadism</th>
<th>TSH deficiency</th>
<th>ACTH deficiency</th>
<th>ADH deficiency</th>
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</thead>
<tbody>
<tr>
<td>Medulloblastoma (n:8)</td>
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<td>2</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Craniopharangeoma (n:4)</td>
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<td>4</td>
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<td>Pinealoma (n:1)</td>
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<tr>
<td>Total</td>
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<td>7</td>
<td>5</td>
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Conclusions:
• Children with brain tumor after remission should be monitored for growth hormone and other pituitary hormone deficiencies to increase final height.