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 %)
- Craniopharingeoma: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

Treatment;
- Medulloblastoma–pinealoma: Surgery+chemotherapy and craniospinal radiotherapy
- Craniopharingeoma: Surgery (Only one case underwent cranial radiotherapy because of recurrence

- Mean time to initiation of Growth Hormone Treatment (GHT): 38.6 ± 15.5 months
- Duration of GHT: 33,5±17 (10-58) months

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

Pubertal status;

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

Initiation of GHT: 6 were pubertal (2 girls, 4 boys)

During treatment:
1 case was prepubertal (boy)
5 showed normal pubertal development (1 girl, 4 boys)
3 completed puberty (1 girl, 2 boys)
6 needed replacement treatment (4 girls, 2 boys)

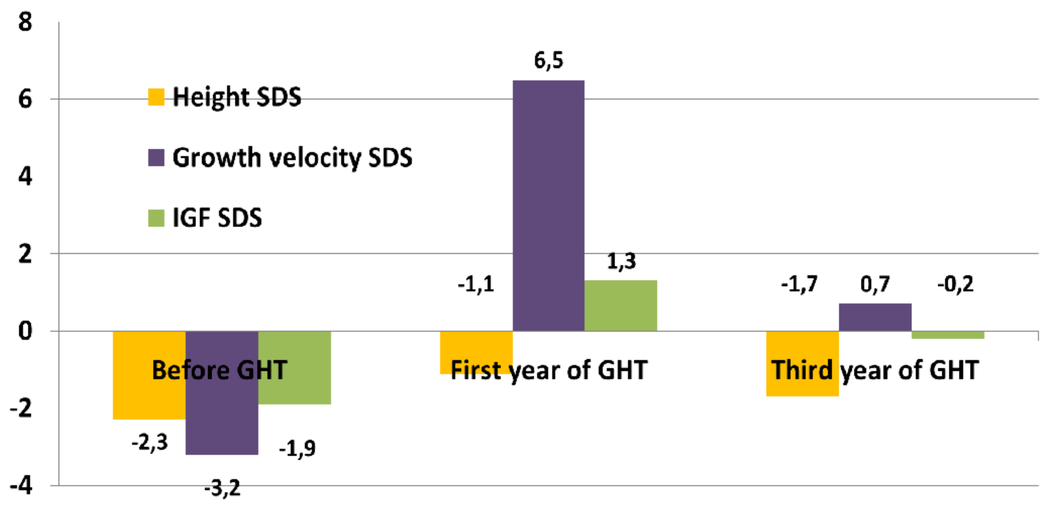

Figure-1: Values of height SDS, GV SDS, IGF SDS during GHT

Table-1: Patients with another endocrinopathies

Type of brain tumor	Hypogonadism	TSH deficiency	ACTH deficiency	ADH deficiency
Medulloblastoma (n:8)	3	2	-	-
_Craniopharingeoma (n:4)	3	4	4	4
Pinealoma (n:1)	-	1	1	1
Total	6	7	5	5

Conclusions:

- Children with brain tumor after remission should be monitored for growth hormone and other pituitary hormone deficiencies to increase final height.

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Growth

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