

GROWTH HORMONE DEFICIENCY AFTER RADIATION THERAPY FOR BRAIN TUMOR HOW TO MANAGE ?

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OBJECTIVES

Radiation induced growth hormone deficiency (GHD) is one of several important factors in the aetiology of short stature complicating the treatment of brain tumours in childhood. If such a child is clinically well, shows a poor growth rate and biochemical evidence of GH deficiency, then a 1 year trial of GH is justified (1-2).

The aim of this study is to evaluate growth and assessed Pituitary function (GH deficiency) in children who received cranial irradiation for brain tumours.

METHODS

Thirteen children were studied : 10 boys and 03 girls with sex ratio of 3 boy for 1 girl with age rang from 08 years to 17 years.

Patient	Age at diagnosis (years)	Tumors	Therapy of neoplasm	DELAY STATURE	BONE AGE (years)	TCP	biochemical GH deficiency	Age of GH therapy (years)	Fellow (years)	other deficit	FINAL HEIGHT	RECCURENCE	other
1	6	Craniopharyngiomas	SURGERY+YTRIUM	-2	4	175	GHD COMPLET	8	7	Thyreotrope/corticotrope/ diabete insipidus	14 y 155cm	NO	
2	9	Medulloblastoma	surgery+radiotherapy	-1	9	Unknoun	Not done	NONE	3	NO	11y 132cm	NO	
3	7	Retinoblastomas	surgery+chemotherapy+radiotherapy	NO (+1 DS)	8	Unknoun	Not done	NONE	5	NO	11y 145 cm	No	
4	14	Germinomas	surgery+chemotherapy+radiotherapy	-2	12	162	GHD COMPLET	13	8	NO	LOST	NO	
5	15	Germinomas	Chemotherapy+radiotherapy	-2	13	174	GHD COMPLET	16	3	cortico/thyreot/gonado/diabete insipidus	172	YES	DEATH
6	13	Pinealoblastome	Chemotherapy+radiotherapy	-1	9	172	Not done	NONE	4	Thyreotrope	165	NO	
7	13	Ependymoblastoma	surgery+chemotherapy+radiotherapy	NO (+1 DS)	11	175	Not done	NONE	7	No	165	NO	
8	13	Astrocytoma	surgery+radiotherapy	-2,5	9	168	GHD COMPLET	14	9	Thyreotrope/corticotrope/ diabete insipidus	172	NO	
9	16	Medulloblastoma	surgery+chemotherapy+radiotherapy	-4	16	154	IGF1 LOW	NONE	3	No	138	NO	
10	11	Medulloblastoma	Chemotherapy+radiotherapy	-2,5	11	167	PARTIEL GHD	NONE	10	No	148	NO	
11	16	Cavum neoplasme	Chemotherapy+radiotherapy	-2	13	169	GHD COMPLET	17	10	thyreotrope/corticotrope/ gonadotrope	156	NO	
12	18	Astrocytoma	Chemotherapy	-2,5	14	Unknoun	IGF1 LOW/ GHD COMPLET	NONE	6	NO	159	NO	
13	8	Ependymoblastoma	surgery+chemotherapy+radiotherapy	-1	6	152	IGF1 LOW	NONE	6	NO	LOST	NO	

RESULTS

The Neoplasms listed are: 03 medulloblastomas, 02 Germinomas, 02 astrocytomas, two ependymomas ,01 craniopharyngioma, 01 pineoblastoma, 01 retinoblastoma, and (01) tumor of the cavum. The stature is found delayed <-2DS for 08 children, the 05 others children showed no delay in their stature. A hormonal exploration, IGF1 levels were low in 08 cases and normal in 05 cases, stimulation tests of GH performed in 07 cases (one patient was lost to) returned for a complete deficiency in GH in 06 cases and partial for one patient. Except for the 02 patients with persistence of the neoplastic process, the rest of the patients had a sequellar neoplastic status, which allowed treatment with GH in 05 cases with no incident during GH treatment, all children so treated showed an increase in height. .However, after 02 years following the end of the GH a recurrence is noted in one case.

CONCLUSIONS

We conclude that GH deficiency are common after cranial irradiation for brain tumors. Linear growth appears to reflect GH status accurately in children with brain tumors. Our findings reflect the need for prospective growth monitoring of children with brain tumors treated with cranial irradiation. The need of GH therapy should be discussed on a case-by-case basis.

References

- 1- Mostoufi-Moab and Grimberg, **Pediatric Brain Tumor Treatment: Growth Consequences and their Management**, *Pediatr Endocrinol Rev.* 2010 September ; 8(1): 6–17.
- 2- L. Shen and C. M. Sun, Growth hormone therapy and risk of recurrence/progression in intracranial tumors: a meta-analysis, *Neurol Sci* (2015) 36:1859–1867

