HYPOTHALAMIC OBESITY IN CHILDREN WITH CRANIOPHARYNGIOMA

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INTRODUCTION

Craniopharyngioma (CP) is a rare embryonic brain tumor of the sellar and parasellar region (1). It is histologically benign (World Health Organization grade I), with the adamantinomatous subtype occurring more frequently in younger patients (10 to 14 years of age) and the papillary subtype occurring more frequently in adult and elderly patients (>50 years of age) (2). Despite its benign histologic characteristics and high survival rates (20-year survival of 88%), CP may cause severe morbidity from invasion into adjacent tissues and structures (3).
Hypothalamic obesity (HO) is one of the most severe sequelae in patients with CP, but it may also occur in patients with other tumors

AIM

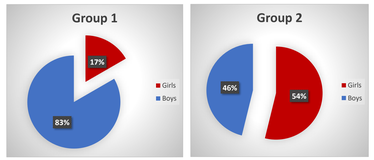
The aim of our study is to describe the modalities of occurrence of obesity in a series of 27 children with craniopharyngioma followed in the endocrinology department of the CPMC.

METHOD

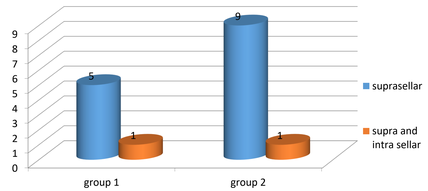
In this retrospective study, we evaluated the longitudinal medical data records of all patients who were operated on for a histologically confirmed craniopharyngioma. The minimum follow-up period required, in order to document longitudinal changes, was 24 months. We carried out a descriptive retrospective study of 27 cases of craniopharyngioma in children followed in the endocrinology department over a period of 16 years.
Patients' demographic, endocrinological, neurological and ophthalmological characteristics preoperatively, postoperatively and at last follow-up were analysed. We tried to divide them into more or less similar groups according to their treatment modalities (surgery, radiotherapy) in order to carry out a comparative study.

RESULTS

27 data were processed, in which we found 6 cases of hypothalamic obesity called group 1 and 13 patients of normal weight called group 2, with 08 patients lost to follow-up.
Group 1 was younger at diagnosis with an average age of 6 years and 7 months, while the average age of group 2 was 8 years and 4 months. A clear male predominance was objectified in group 1. whereas the sex ratio of the second group was 1: 1. The dominant initial picture was ICH syndrome, found 83.3% in group 1 and 43.1% in group 2.
The BMI when the craniopharyngioma was diagnosed was correct in the majority of patients in all groups; varying between -1SD to + 1SD, only one case presented a BMI between +2 and +3 SD in group 1.
Short stature was found in 33.3% of group 1 and 46.2% of group 2, diabetes insipidus was found in 16.6% of group 1 and 33.4% of group 2.
All of our patients underwent hypothalamic-pituitary MRI. This had objectified a suprasellar lesion in 66.7% of patients in group 1; and 16.7% of intrasellar and suprasellar In group 2 the suprasellar and intrasellar lesion had predominated with 69.2% and the suprasellar were only represented at 15.4%.
The size of the lesion was in 50% of cases between 20 and 40 mm in the patients of group 1 while the lesions objectified in the second group in 46.2% their dimensions varied from 40 to 60 mm.

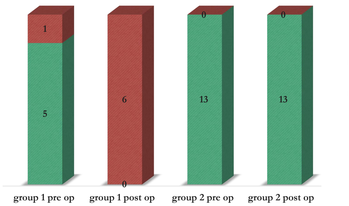


Graph 1 Distribution by sex in the two groups



Graph 2 MRI topography of the craniopharyngioma in the two groups

Giant craniopharyngiomas were found in 16.7% and 15.4% in group 1 and group 2, respectively. most often of mixed composition in the two groups. Radiological hypothalamic involvement was only studied twice in group 1 and 4 times in group 2. 66.7% of the patients in group 1 underwent an ophthalmologic evaluation, 25% had a normal profil and 75% had visual impairment.
In group (2) 53.8% of patients were evaluated by ophthalmologist, and had in 23.1% cases visual impairment.



Graph3 : Evolution of BMI before and after surgery in the 02 groups

Table 1: Evolution of the% of occurrence of anterior pituitary deficiency postoperatively in the two groups.

GROUPS	status	GH deficiency	ACTH deficiency	TSH deficiency	NO deficiency
GROUP 1	Pre operative	60%	40%	60%	20%
	Post operative	100%	100%	100%	0 %
GROUP 2	Pre operative	20%	23.1%	50%	0%
	Post operative	62.5%	36.4%	63.6%	0%

Biologically: In group (1) three somatotropic deficiency attested with low IGF1s and insulin hypoglycemia test were founded, two corticotropic deficiency and three thyrotropic deficiency. 02 patients had a strictly normal biological profile.
In group 2 results of a biological exploration found one somatotropic deficiency, four thyrotropic deficiency and 3 corticotropic deficiency.
Treatment consisted of Gross total resection was accomplished in first-line in all patients in group 1, 4 of them received complementary conformational radiotherapy and only 1 received treatment with yttrium.The average radiation dose was 53.4 Gy.
Only 38.5% of patients in group 2 underwent subtotal resection and in the same proportion of surgical puncture, a peritoneal ventriculo bypass was the only surgical treatment undertaken in 23% of patients in group 2.
second-line radiotherapy was performed in 46.2% of patients in group 2, with a predominance of treatment with Yttrium in 66.6% cases and only 33.3% of conformational radiotherapy.
All our patients in group 1 presented following their treatment with a combination of somatotropic, corticotropic and thyrotropic deficiency with diabetes insipidus.

Although the patients of group 2, only 62.5% show a somatotropic deficiency, 36.4% thyrotropic deficiency and 63.6% corticotrophic deficiency, attesting to a preservation of the anterior pituitary functions compared to group 1 or pan hypopituitarism was the rule.
In group 1 The BMI at the last check-up improved for only one case, the other patients had a BMIbetween +2 and +3 DS, while the BMI of group 2 was correct.

CONCLUSIONS

The prevalence of hypothalamic obesity in our series is in line with the literature. The patients in group 1 were younger at diagnosis compared to group 2. They also presented with suprasellar developing craniopharyngiomas in 66.5% against only 15.3% in group 2.surgical management was less conservative in group 1 or first-line resection, considered to be complete, was performed in all patients. fact known as a risk factor for hypothalamic injury. In group 2 only 38.4% benefited from a surgical excision which was considered partial.

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