EFFECT OF SEMAGLUTIDE ON BODY WEIGHT IN OBESE CHILDREN WITH CRANIOPHARYNGIOMA : A PRELIMINARY REPORT

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Introduction

Craniopharyngioma is a rare benign brain tumor. Despite a low mortality rate, its morbidity rate is very high, especially with endocrine complications, including severe hypothalamic obesity. The first-line treatment of this craniopharyngioma-associated obesity is based on lifestyle therapy but generally it is very resistant to treatment and responsible for quality of life alteration. Recently, Glucagon-like Peptide 1 (GLP1) analog's efficacity has been shown to help adolescents to lose weight.

Aim

We evaluated the efficacy and safety of Semaglutide, a once-weekly GLP-1 analog, in 6 children with craniopharyngioma and morbid obesity.

Methods

This retrospective study included 6 children, (1 girl, 5 boys) followed at Angers University Hospital, with a history of craniopharyngioma. All suffered from severe obesity (BMI Z-score > 3 or rapid increase in BMI) despite appropriate hormone replacement and lifestyle intervention).

Children received subcutaneous semaglutide once a week, with a starting dose of 0.25mg/week, monthly increased to 0,5 mg/week then 1 mg/week, maintained at 1 mg/week for 6 months, and then increased to the maximally tolerated dose (not exceeding 2 mg).

Patients were seen regularly in medical consultation and cranial MRI were performed every 3 months at the onset of the treatment

The parents and children received oral information and all agreed to the treatment

References:

Kushner RF, Calanna S, Davies M, Dicker D, Garvey WT, Goldman B, Lingvay I, Thomsen M, Wadden TA, Wharton S, Wilding JPH, Rubino D. Semaglutide 2.4 mg for the Treatment of Obesity: Key Elements of the STEP Trials 1 to 5. Obesity (Silver Spring). 2020 Jun;28(6):1050-1061. doi: 10.1002/oby.22794. PMID: 32441473; PMCID: PMC7318657.

Christou GA, Katsiki N, Blundell J, Fruhbeck G, Kiortsis DN. Semaglutide as a promising antiobesity drug. Obes Rev. 2019 Jun;20(6):805-815. doi: 10.1111/obr.12839. Epub 2019 Feb 15. PMID: 30768766.

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Results

About population characteristics

Table 1 Population characteristics	
N	6
Male sex, %	5/6 (83%)
Mean age ± SD	15 ± 3.1 years
Time from craniopharyngioma diagnosis ± SD	7.9 ± 5.4 years
Anti tumoral treatments	
Surgery	6/6
Gammaknife	1/6
Protontherapy	4/6
Intracyst chemotherapy	1/6
Endocrine substitution	
rhGH	5/6
Hydrocortisone	6/6
Levothyroxin	6/6
Sex steroid or recombinant hCG and recombinant FSH	5/6
DDAVP	6/6
Weight gain in the year prior to initiation of Semaglutide	
Average weight gain (kg)	+ 15,7 ± 7,3 kg/year
Average BMI gain (Z score)	+ 0,25 Z score/ year
At Semaglutide instauration	
Mean BMI (Z score)	2.47 ± 0.38 Z score

Table 1 *Population characteristics*

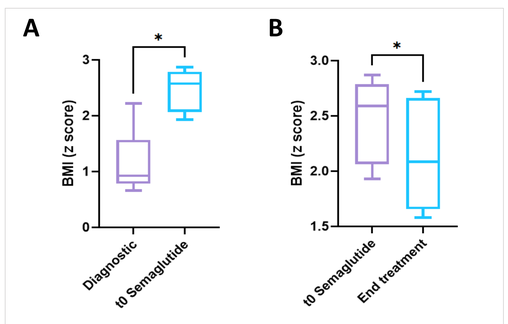

Figure 1 *BMI (Z score) evolution between diagnostic of craniopharyngioma and instauration of Semaglutide with lifestyle treatment* **(A)** *and between instauration Semaglutide treatment and last evaluation* **(B)**

About efficacity :

After a mean duration of semaglutide of 7.3 ± 5.8 months, a mean last dose of 1.1 ± 0.2 mg/week, the mean excess weight loss (EWL) was 28 ± 28 % (0-70%), and BMI decreasing was -0,41 Z score

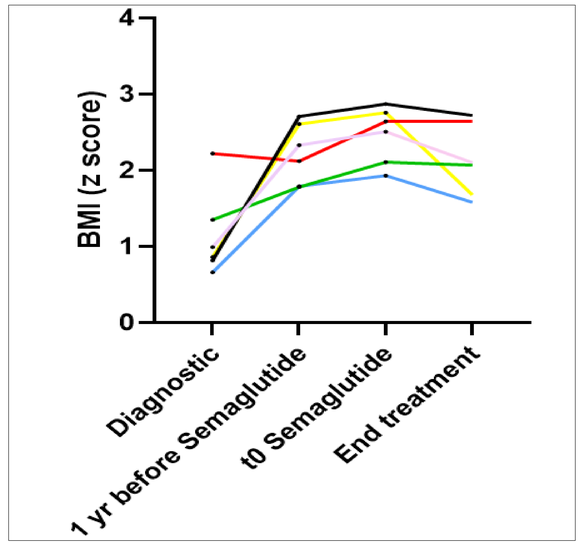

Figure 2 *BMI evolution (Z score) at the diagnostic, 1 year before Semaglutide, t0 Semaglutide, last evaluation*

About safety :

Three children had moderate adverse events such as belching, abdominal pain, and diarrheas and 1 participant had a suicidal attempt.

Conclusion

Semaglutide treatment showed encouraging results regarding the loss of weight in children with craniopharyngioma induced obesity. Further randomized studies are necessary, but preliminary results are usually necessary before performing such large studies.

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Fat, metabolism and obesity

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