Case

- A 21 year old female had undergone resection of craniopharyngioma at age 8, and immediately developed panhypopituitarism and HO, gaining an average of 1 pound per week post-operatively.
- Appropriately treated for panhypopituitarism with levothyroxine, hydrocortisone, growth hormone, desmopressin and estrogen–progestrone replacement.
- Thus far, there are small case reports of treatment modalities for HO (2–4), but no large, robust studies.
- Liraglutide, a glucagon-like peptide-1 (GLP-1) analog, has recently been approved for long-term treatment of obesity.
- We present an interesting case of successful treatment of HO with liraglutide.

Introduction

- Hypothalamic obesity (HO) is intractable form of obesity that occurs in patients with hypothalamic damage.
- It is characterized by significant polyphagia, lack of satiety, and rapid weight gain not usually responsive to caloric restriction or lifestyle modification.
- HO has been reported in 67% of patients after craniopharyngioma, resulting in increased morbidity & mortality from cardiovascular disease, diabetes mellitus, liver disease, reduction in functional capacity, and decreased in quality of life (1).
- Thus far, there are small case reports of treatment modalities for HO (2–4), but no large, robust studies.
- Liraglutide, a glucagon-like peptide-1 (GLP-1) analog, has recently been approved for long-term treatment of obesity.
- We present an interesting case of successful treatment of HO with liraglutide.

Initial Trials of Pharmacologic Tx

- At the time of college enrollment, patient complained of significant social distress associated with her obesity.
- Trial of liraglutide (3 mg daily) was initiated in August 2015, after its FDA approval for use in treatment of obesity.
- Patient noted a prompt and marked decline in polyphagia, weight, and noted satiety after meals for the first time since early childhood.
- BMI improved to 31 kg/m² after seven months of therapy.
- Patient felt remarkably well both physically and emotionally.
- Liraglutide has been tolerated without major adverse effects.

Discussion

- The pathophysiology of HO is thought to be secondary to injury to ventromedial hypothalamus, which is responsible for satiety sensation.
- Peripheral afferent hormones such as leptin, insulin and gut hormones are unable to transduce their signals, resulting in perceived sense of CNS starvation.
- GLP-1 analogs help in weight reduction by various mechanisms, including direct and indirect effect on CNS to suppress appetite, increase energy expenditure, and delay gastric emptying.
- The neuroanatomical distribution of GLP-1 receptor in CNS allows for multicenter, widespread impact of GLP-1 on food reward behavior located in mesolimbic centers of brain (Ventral tegmental area, Nucleus accumbens) that are intact in patients with HO (5).
- Our patient showed significant reduction in weight with liraglutide, without adverse effects. We postulate the use of GLP-1 analogs as an effective option for the treatment of HO.

References


Weight and Height Graph

Liraglutide Trial

- Triiodothyronine (T3), and later dextroamphetamine, in addition to style modification with low caloric diet and exercise, slowed but did not reverse the weight gain.
- Octreotide had been considered, but was not approved for coverage by insurance company.
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References