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Case Report

Pituitary Macroadenoma: A Rare Presentation of Hypothyroidism

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Abstract:

Hypothyroidism is a common endocrine disease which occurs when the levels of Thyroid hormones produced by the Thyroid gland are decreased.

Here we present a case of a 19-year-old female, who presented with symptoms of hyperprolactinemia, weight gain, unilateral blurring of eyes and headache. Examination findings of the patient were significant for presence of Acanthosis Nigricans and Hirsutism. Rest of the systemic examination was normal. Laboratory investigations revealed Hyperprolactinemia, Hypothyroid profile and dyslipidemia. MRI brain and pituitary done showed findings consistent with Pituitary macroadenoma. Patient was treated along the lines of hypothyroidism with Thyroxine. Follow-up after 3 months showed improvement of her symptoms and disappearance of lesion of MRI scan.

This case was a rare presentation of Hypothyroidism. Such unusual and uncommon presentations should be reported and studied in detail to prevent misdiagnosis and provide the correct treatment to the patients.

Keywords: hypothyroidism; pituitary macroadenoma; hyperprolactinemia; rare presentation; thyroid replacement therapy; MRI lesion

Abbreviations

MRI- Magnetic resonance imaging

Introduction

Hypothyroidism is a common endocrine disorder in which there is deficiency of Thyroid hormones. Common clinical presentations may vary in different age groups, different sexes, and according to the time period between the disease onset and diagnosis. Commonly occurring symptoms include tiredness, lethargy, intolerance to cold, weight gain, constipation, voice changes, and skin dryness [1].

One third of individuals suffering from primary hypothyroidism have increased levels of prolactin [2]. These individuals may present with symptoms of hyperprolactinemia such as menstrual irregularities, galactorrhea, low bone mass, decreased libido, impotence, infertility, erectile dysfunction [3].

Differentiating between pituitary adenoma and hyperplasia using imaging techniques still is difficult despite of advancements in imagining modalities [4].

Long standing cases of Primary Hypothyroidism may lead to pituitary hyperplasia. Lack of circulating levels of Thyroxine (T4) and Triiodothyronine(T3) leads to loss of negative feedback loop which in turn causes the release of large amounts of Thyrotrophin releasing hormone (TRH) from the Hypothalamus [5].

Hypothyroid patients in which these adenomas have occurred have shown regression after correction of hypothyroidism by Thyroxine supplementation. Therefore, hypothyroidism should always be considered as a differential in patients presenting with pituitary adenomas, and if a clinician is able to identify the cause of the lesion as hypothyroidism then medical treatment should be given rather than opting for surgical treatment options [6].

Here we present a case of a 19-year-old girl who presented with clinical features consistent with pituitary macroadenoma, however, after workup she was diagnosed with hypothyroidism. Her symptoms and lesions resolved after Thyroid replacement therapy.

This a rare presentation of Hypothyroidism and necessitates discussion so physicians may be able to identity such presentations of Hypothyroidism and avoid unnecessary surgical procedures.

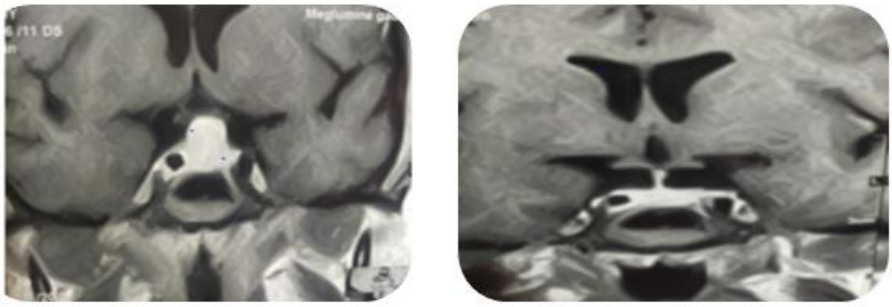
This case report was reviewed and approved by the Ethics Review Committee of The Aga Khan University.

Case Report

19-year-old female, weighing 100 kgs, known case of Poly Cystic Ovary Syndrome (on Oral Contraceptive Pills) presented to the endocrinology clinic with complaints of

- Oligomenorrhea – for the past 1 month
- Galactorrhea – for the past 1 month
- Occasional blurring of eyes (right sided) since the past
- Weight gain
- Headache- past 1 month

On presentation, patient's vitals were Temp 36.2, BP 120/79, Pulse 79/75 bpm. R/R 18/min. Examination findings included Acanthosis Nigricans ++ and Hirsutism +. Rest of the systemic examination was normal. Lab investigations revealed Hyperprolactinemia (Prolactin level of 39) and dyslipidemia (cholesterol 310, LDL, 221, HDL 45, TG 303).



Before starting treatment | After Thyroxine supplementation for 3 months

MRI Brain and Pituitary with contrast

Figure

MRI Brain with pituitary and contrast was done which showed Pituitary Macroadenoma measuring 18 x 16 x 11.7 mm with lateral extension into the cavernous sinus on either side. The mass is abutting bilateral ICA. Superiorly mass is abutting the Optic Chiasm and Inferiorly bulging into the sphenoid sinus. Further workup of the patient was done which showed findings consistent with Hypothyroidism (TSH >150, FT4<0.10). Rest of the workup done is mentioned in the table below, all of the values are within the normal range.

Patient was started on tablet Thyroxine 150mg/day and advised to lose weight and follow-up with the consultant after 3 months on Thyroxine supplementation.

3 months after the initial visit, patient presented with:

- Improvement in Headaches
- Irregular menstrual cycle
- Weight loss of 10 kgs (100 to 90kgs)

On presentation, patient's vitals were Temperature 36.2, BP 120/69, Pulse 105, R/R 20. TSH done was 0.030. MRI brain and pituitary showed disappearance of the abnormal signal intensity pituitary gland which was previously seen.

Discussion

One third of individuals suffering from primary hypothyroidism have increased levels of prolactin [2]. Our patient presented with high prolactin levels of 39.

Increase in size of the pituitary gland may be seen in cases of hypothyroidism. This is a caused by reactive hyperplasia and is related to the level of TSH increase. This kind of a clinical picture is suggestive of long-standing hypothyroidism and severe symptoms; however, this is not always true. Individuals may present with no symptoms or symptoms consistent with other endocrine diseases.

Precocious puberty may be seen in children while adults may present with symptoms of amenorrhea or decreased libido.

Thyroid function tests should always be tested whenever a patient presents with symptoms pointing towards presence of a pituitary tumor [7]. Our patient presented with menstrual irregularities, galactorrhea, weight gain and pressure symptoms of headache and unilateral blurring of vision. These symptoms are consistent with the features of pituitary macroadenoma. Our patient underwent workup for thyroid disease and showed labs consistent with hypothyroidism i.e., TSH >150, FT4<0.10.

Increase in Thyrotrophic cells is a phenomenon seen is protracted case of Hypothyroidism and may present with features consistent with pituitary macroadenoma [8]. The mechanism which causes increase In numbers of Thyrotrophic cells is through the negative feedback loop; decrease in levels of circulating thyroid hormones causes the thyrotrophin releasing hormones (TRH) to overstimulate the thyrotrophs [8].

It is difficult to differentiate between TSH-producing macroadenoma and hyperplasia of pituitary thyrotroph cells on radiological modalities like the CT and MRI. However, in case of pituitary hyperplasia, the lesion would not appear in follow-up repeat MRIs after thyroxine supplementation. This is a way to establish a definitive diagnosis and avoid the need for needless surgical procedures [9]. Initial presentation of our patient showed a lesion on MRI measuring 18 x 16 x 11.7 mm. Patient was started on Thyroid replacement therapy and MRI repeated after 3 months. The lesion disappeared on repeat MRI, suggesting a diagnosis of pituitary hyperplasia.

Study done in National Center for Diabetes, Endocrinology and Genetics in Amman, Jordon showed a decreased in size of the pituitary gland of 85% individuals on follow-up MRI after Thyroxine treatment [10].

Thyrotoph hyperplasia has been described in the background of primary hypothyroidism. Most cases present with elevated levels of TSH which can in cause increase in size of pituitary gland. The treatment for such a case is by giving Thyroxine supplementation, however, it should not be done in cases of any visual field deficit [11]. Our patient had minor visual

deficits, with only occasional blurring of her right eye so surgery was not considered.

Surgery should only be done in cases where a decompression of optic chiasm is required. Additionally, if a pathological diagnosis is needed for a mass which is not responsive to or deteriorates after thyroid replacement therapy [9].

Conclusion

This case was a rare presentation of Hypothyroidism. Such unusual and uncommon presentations should be reported and studied in detail to prevent misdiagnosis and provide the correct treatment to the patients.

Conflict of interest

Financial and other conflicts of interest: None

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