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(CASE REPORT)

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Pituitary macroadenoma revealing Hashimoto's thyroiditis: When peripheral biology rectifies central imaging!

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Abstract

Background: Pituitary macroadenoma is often confused with pituitary hyperplasia, a benign proliferation of thyrotropic cells due to prolonged peripheral hypothyroidism.

Case Presentation: We report the case of a 17-year-old female initially diagnosed with a pituitary macroadenoma, in whom we concluded that pituitary hyperplasia was secondary to Hashimoto's thyroiditis.

Conclusion: Differential diagnosis is essential to avoid unnecessary surgery, as hormone replacement therapy can lead to complete regression of the mass.

Keywords: Pituitary Hyperplasia; Hashimoto's Thyroiditis; Hypothyroidism; MRI; Endocrinology

1. Introduction

Pituitary macroadenomas and pituitary hyperplasia secondary to hypothyroidism can share clinical and radiological similarities. Pituitary hyperplasia often arises in response to prolonged primary hypothyroidism, particularly of autoimmune origin such as Hashimoto's thyroiditis, resulting in compensatory hypertrophy of thyrotropic cells. Several studies report that pituitary hyperplasia can regress under L-thyroxine replacement therapy, thus avoiding unnecessary surgery [1]. We report the case of a patient whose initial diagnosis suggested a macroadenoma, before considering another diagnostic possibility: pituitary hyperplasia secondary to autoimmune hypothyroidism. This case highlights the importance of a thorough endocrine work-up and rigorous follow-up before considering any surgical intervention.

2. Case presentation

A 17-year-old female with no significant past medical history presented with morning headaches, oligomenorrhea, and a 12-kg weight gain over eight months. Clinical and radiological assessments (MRI) revealed a pituitary mass initially suggestive of a macroadenoma. Hormonal evaluation showed profound primary hypothyroidism with TSH > 100 mIU/mL and moderate hyperprolactinemia. A reassessment of the MRI, in light of the biochemical findings, suggested pituitary hyperplasia rather than a true adenoma. Following progressive levothyroxine replacement therapy, marked clinical and radiological improvement was observed.

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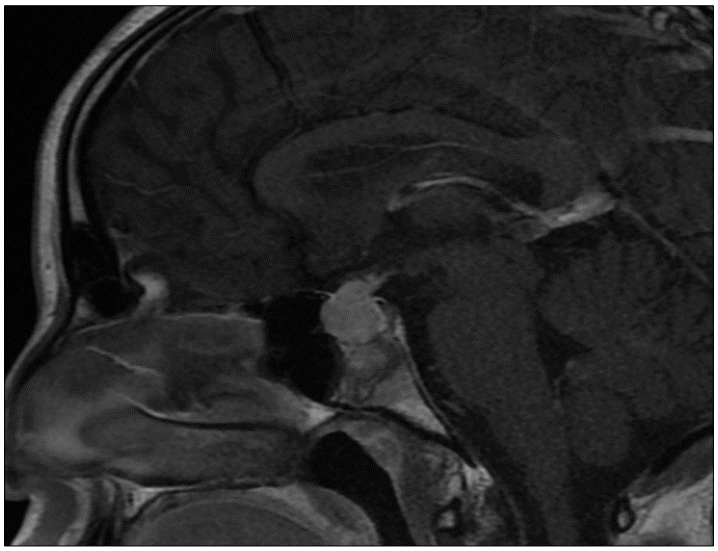

Figure 1 Sagittal T1-weighted MRI showing pituitary hyperplasia

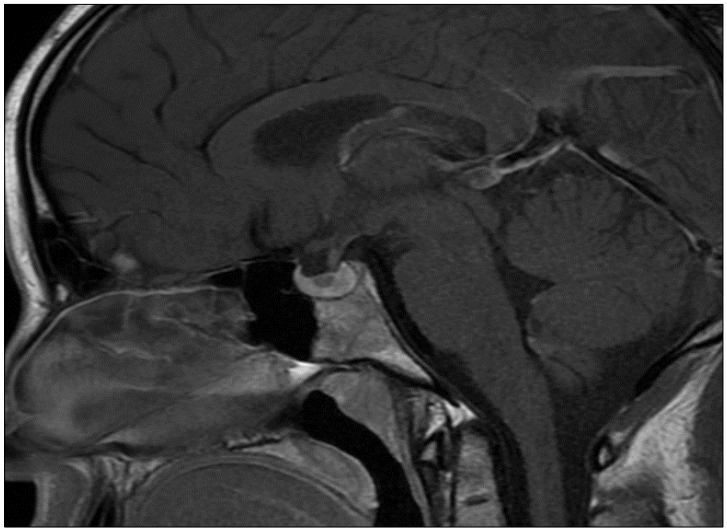

Figure 2 Sagittal T1-weighted MRI after three months of levothyroxine therapy showing complete resolution of pituitary hyperplasia

3. Discussion

The differential diagnosis between pituitary adenoma and secondary pituitary hyperplasia is challenging due to overlapping clinical and radiological features. Pituitary hyperplasia results from increased thyrotropin-releasing hormone (TRH) secretion in response to prolonged primary hypothyroidism, particularly of autoimmune origin such as Hashimoto's thyroiditis. On MRI, it typically presents with homogeneous gadolinium enhancement but may occasionally mimic a pituitary adenoma [2]. Several studies emphasize the importance of a comprehensive endocrine assessment before any surgical intervention [1]. The response of pituitary hyperplasia to L-thyroxine therapy is well documented, with multiple case series reporting a reduction in gland size within the first three months of treatment. In some instances, complete regression is observed between three and six months [3]. Regression may occur more slowly in autoimmune hypothyroidism, requiring extended imaging follow-up to confirm full resolution. This slower process is attributed to the persistent stimulation of the hypothalamic–pituitary axis caused by the chronic nature of Hashimoto's thyroiditis [4]. Pituitary hyperplasia may also be associated with moderate hyperprolactinemia, resulting from TRH-induced stimulation of lactotroph cells, loss of dopaminergic inhibition due to pituitary stalk compression,

and reduced prolactin clearance [5]. Long-term follow-up is essential, as an empty sella may develop after regression of the hyperplasia, warranting regular MRI monitoring [6].

4. Conclusion

Secondary pituitary hyperplasia due to primary hypothyroidism should be considered in the differential diagnosis of pituitary masses to avoid unnecessary surgical procedures. L-thyroxine therapy remains the first-line treatment, leading to regression of the mass in most cases.

Compliance with ethical standards

Disclosure of conflict of interest

The authors declare that they have no conflict of interest related to the publication of this case report.

Statement of informed consent

Informed consent was obtained from the patient for inclusion in the study and for publication of relevant data and images.

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