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Hyperprolactinemia as an Initial Presentation of Acromegaly

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Abstract

Acromegaly is caused by hypersecretion of growth hormone. Approximately 95% of cases of acromegaly are caused by pituitary adenoma, whereas less than 5% of cases are attributed to GH releasing hormone (GHRH) -secreting tumor or neuroendocrine tumor. Hyperprolactinemia is found in about 30-40% of acromegalic patients.

Keywords: Pituitary disorder • Prolactinemia • Acromegaly

Introduction

Hyperprolactinemia in acromegaly may result either from co-secretion of growth hormone and prolactin (PRL) by the tumor or from pituitary stalk compression. Whereas the mainstay treatment of hyperprolactinemia due to prolactinoma is medical with a dopamine agonist, the treatment for Acromegaly is surgical. Thus, it is important to recognize and diagnose patients with hyperprolactinemia who may have Acromegaly [1-5].

Case Presentation

Our patient is a 31-year-old Egyptian female with a past medical history of vitamin D-deficiency and pre-diabetes who was referred by her primary care physician with an elevated prolactin level of 82 ng/ml (Normal 4.8- 23.3 ng/ml). The patient was being evaluated by her primary care doctor for menstrual irregularity. The patient on further questioning admitted to frequent headaches, enlargement of her hands, widening of her teeth, and deepening of her voice. Physical examination revealed enlargement of the frontal boss, enlargement of feet, hands, and a deep voice. Laboratory workup including DHEA-S, repeat prolactin levels, macroprolactin levels, FSH, LH, TSH, ACTH, and insulin-like growth factor-1 (IGF-1) were obtained. The prolactin returned at a level of 113 and 88.2 ng/ml (Normal 4.8- 23.3 ng/ml) on repeat. A growth hormone suppression test showed elevated growth hormone levels of 20.9, 46, and 30.2 ng/ml respectively (Normal 0.0-10.0 ng/ml). The IGF-1 level returned at 970 ng/ml which when repeated was 987 ng/ml (Normal 84-281 ng/ml). The patient also went for a pituitary MRI which revealed a 1.8x1.2x1.4 cm sellar/suprasellar mass with extension into left cavernous sinus. The results confirmed suspicions that the elevated prolactin and subsequent acromegaly was likely a secondary stalk effect due to a growth-hormone producing tumor. Patient was referred to neurosurgery for further management. Unfortunately, the patient moved to Egypt and did not make her follow up appointments however when discussed with the neurosurgical team the plan was for removal followed by medical therapy if needed due to the invasion into the cavernous sinus.

Result and Discussion

Acromegaly is caused by hypersecretion of growth hormone very often caused by pituitary adenoma, with some cases attributed to GHRH-secreting tumor or neuroendocrine tumor. In children before epiphyseal fusion, excess growth hormone leads to gigantism. However, after the fusion of epiphyseal plates as well as in adults the symptoms are more subtle; for example, coarse facial features, acral changes, hyperhidrosis, headaches, and visceromegaly [4]. Initial screening test for Acromegaly is elevated levels of IGF-1 [5]. In patients with elevated or equivocal serum IGF-1 level, diagnosis is confirmed by lack of suppression of GH to < 1 μg/L following documented hyperglycemia during an oral glucose load [5]. Positive results are followed up with Pituitary MRI to ascertain tumor size, location, and invasiveness [5].

In many patients with acromegaly, a pituitary tumor can be found. These tumors can be plurihormonal which implies that the hypersecretory cells must originate from a common stem cell [4]. In studies, it was also found that somatotropic tissue around the tumor is not hyperplastic. This signifies a primary pituitary disorder. The high cure rate after selective adenomectomy and low recurrent rate support a primary pituitary disorder. Pituitary tumors may be pure GH cell adenomas, or they may be composed of two different cell types. Co-secretion of growth hormone and prolactin from a single pituitary adenoma is common [3]. Another possible pathomechanism of elevated PRL level is pituitary stalk compression by a tumor, leading to a decrease of PRL inhibition by dopamine. Hyperprolactinemia can lead to deficiencies of estrogen and testosterone leading to menstrual irregularities in women, decreased libido, apathy, and decreased bone mineral density in both sexes [6].

Conclusion

Some agromegalics have dual staining pituitary adenomas which stain for GH and Prolactin. The prevalence of acromegaly among patients with a newly diagnosed prolactinoma is unknown. Given the possibility of mixed GH and PRL co-secretion, the current recommendation is to obtain an IGF-1 in patients with prolactinoma at the initial diagnosis Acromegaly caused by pituitary adenomas is treated first by resection, followed by radiation and/or medical therapy if needed.

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