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Uncovering the Unexpected: Rare Case of a Typical Presentation of Parathyroid Adenoma

Aggarwal.S[1], Lakshman Sai.V[2], Pereira.P[3], Avarabeel.S[4]

[1]*House Surgeon, JSS Medical College, Mysore, aggarwalshailesh5@gmail.com*
[2]*Postgraduate, Department of General Medicine, JSS Medical College, Mysore, Lakshmansaivanama@gmail.com*
[3]*Head of Department,Department of Geriatics, JSS Medical College,Mysore*
[4]*Associate Professor,Department of Geriatics, JSS Medical College,Mysore*

UNCOVERING THE UNEXPECTED: RARE CASE OF ATYPICAL PRESENTATION OF PARATHYROID ADENOMA

Abstract: The incidence of primary hyperparathyroidism in India is 2.5/1000 individuals. Primary hyperparathyroidism can be caused by a non-cancerous parathyroid adenoma, hyperplasia, or, rarely, parathyroid carcinoma. Most of these patients have few or no symptoms. A correct diagnosis can be reached through clinical settings, biochemical and radiological tests, and final confirmation by histopathology of the specimen. In our case, a 75-year-old male patient with an atypical presentation of hypercalcemia presented to the hospital with complaints of nausea since 1.5 months, loss of appetite and fatigue, loss of weight, decreased sleep, and breathlessness (Grade NYHA-2) since one month, for which further evaluation was done and led to the diagnosis of primary hyperthyroidism secondary to a parathyroid adenoma. This atypical presentation of hypercalcemia and the approach in which the diagnosis was made make this case truly unique in the elderly population.

Keywords: Parathyroid adenoma, atypical presentation, elderly population

Introduction

Primary hyperparathyroidism (PHPT) is an endocrine pathology that affects calcium metabolism. Patients with PHPT have high concentrations of serum calcium or high concentrations of parathyroid hormone, or incorrect parathyroid hormone levels for serum calcium values, and represent the third most frequent endocrinopathy after diabetes mellitus and thyroid disease. PHPT affects the female sex more frequently with a female to male ratio of 4:1 in international statistics and 4.9:1 in Italy. The incidence of PHPH in the general population is 27–30 cases for 100,000 people and often affects women older than 50 years. PHPT is due to the presence of an adenoma/single-gland disease in 80–85% of cases, multiple gland disease or hyperplasia accounts for 10–15% of cases of PHPH[1]. Atypical parathyroid adenoma (APA) and parathyroid carcinoma (PC) are both responsible for about 1.2–1.3% and 1% or less of PHPT, respectively. However, the true incidence of atypical parathyroid adenoma is unknown. Rarely, PHPT is due to ectopic tissue PTH production from a non-parathyroid tumor. Atypical parathyroid adenoma is a lesion with suspicious clinical and histological features of malignancy, but it does not completely respect the World Health Organization (WHO) criteria for the diagnosis of PC.

Case Report

A 71-year-old male, known case of hypertension for 10 years, on regular medication (Tab.Olmesartan 20 mg daily) and a known case of HbsAg positive came to the hospital with chief complaints of nausea for 1.5 month, loss of appetite for 1 month, decreased sleep for 1 month and breathlessness on exertion for 1 month. On examination the patient's blood pressure was - 130/80 mm hg, pulse rate of 102 Bpm and SpO2 of 93% on room air and febrile (100*F). On general examination, pallor was present with no signs of icterus/clubbing/lymphadenopathy. On local examination, frailty was present with decreased generalized activity, normal vision and mild hearing impairment. Geriatric depression scale was 4/10(suggestive of depression) and Barthel's score was <18.The cardiovascular and respiratory system examination was normal.

Relevant investigations were sent and an initial diagnosis of Lower Respiratory Tract Infection was made in view of breathlessness, and Spo2 of 93% at room air; also, in view of loss of weight and appetite, suspicion of malignancy was also made. On further evaluation, lab reports showed Hb-9.7 gm%, TLC- 8280 cells with platelet count of 5.01 lakhs. Renal function test showed Urea -22mg/dl, Creatinine of 1.82 mg/dl - elevated with other electrolytes being normal. Liver function test was normal. Urine showed calcium oxalate crystals, no albumin and serum electrolytes revealed Calcium of 13.5mg/dl = which is grossly elevated. Ultrasonography of abdomen and pelvis revealed: raised cortical echoes of bilateral kidneys with maintained corticomedullary differentiation and prostatomegaly, significant post-void residual urine volume of 125 cc with pre-void volume of 510 cc. Serum electrophoresis was done which was normal. Echocardiography revealed aortic valve sclerosis, mild aortic regurgitation, no regional wall abnormality, and normal ejection fraction of 60%. Upper gastrointestinal scopy was done and proved normal.

In view of hypercalciuria and hypercalcemia serum phosphorous and serum parathormone, were sent and revealed extreme abnormalities in iPTH of 611pg/dl (approx. 10 times normal value),serum calcium of 13.5mg/dl and serum phosphorus of 1.9mg/dl, suggesting primary hyperparathyroidism. Ultrasonography of the neck revealed a well-defined heteroechoic, predominantly hypoechoic, lesion abutting the inferior pole of right lobe of the thyroid with increased vascularity measuring 2.3 x 1,3 x1.2 cm, indicating parathyroid adenoma, A technetium 99m MIBI scan was done (Figure -1) suggestive of right inferior parathyroid adenoma.

The patient underwent parathyroidectomy and on follow up, serum calcium and iPTH levels were normal and patient symptoms completely resolved. The patient had good recovery post-surgery.

Discussion

Parathyroid adenoma is a relatively rare condition. It has been the major cause of hyperparathyroidism, which occurs when the normal feedback control by serum calcium is disturbed or there is an increased production of PTH. Hyperparathyroidism primarily manifests without symptoms. Parathyroid adenomas generally are insidious, and the only way they can be confirmed is by determination of serum iPTH and calcium concentration. Typically, the patient gives a previous history of renal calculus disease, either nephrocalcinosis, or renal or ureteral lithiasis, bone diseases with definite bone involvement, osteoporosis, subperiosteal resorption, osteitis fibrosa, or a combination of renal calculus and bone disease (5-7).

Normal parathyroid glands are too small to be detected on imaging (usually 5×4×1 mm), but parathyroid disease typically results in enlargement of the glands allowing for visualization. Sonography and 99mTc preoperative Sestamibi (MIBI) scan are the primary imaging modalities utilized for the visualization of diseased glands. MIBI scan is approximately 90% sensitive for localizing a parathyroid adenoma (2).

Ultrasonography is the first-line method to be used because it is non-invasive, convenient and an inexpensive investigation. Parathyroid adenomas are nearly always homogeneously hypoechoic to the overlying thyroid gland on gray-scale imaging and are commonly detected using gray-scale imaging alone when they are larger than 1 cm in diameter. Color and power doppler imaging commonly shows

a characteristic extrathyroidal feeding vessel (typically a branch off the inferior thyroidal artery), which enters the parathyroid gland at one of the poles.

99mTc-MIBI t61 can be considered to be the first choice in diagnosing hyperparathyroidism as this examination produces valuable data in locating the site of a tumor before operation. Sestamibi is taken up by both the thyroid and parathyroid glands, but adenomatous and hyperplastic parathyroid tissue shows more avid uptake of the radiotracer and often retains the radiotracer longer than adjacent thyroid tissue. Minimally invasive parathyroidectomy is now most commonly used as the Surgical treatment for primary hyperthyroidism compared to the traditional bilateral neck exploration. Intra operative PTH monitoring is most useful as an adjunct to preoperative Imaging allowing for more focused operations to be performed. The use of intra operative PTH monitoring can provide vital information within minutes to help determine the extent of surgical treatment required to be considered optimum.[3] Success is defined using Miami criteria fall in PTH level of >50% at 10 min post-excision compared to baseline (per operative).

Conclusion

The interesting aspect of this case is the atypical presentation of a Parathyroid Adenoma, usually males are less commonly involved, and the approach towards its diagnosis..

Parathyroidectomy stands as the main stay in management of primary hyperparathyroidism due to parathyroid adenoma. Once the biochemical and radiological investigation confirms the presence of parathyroid adenoma, surgical excision is the primary and only modality of treatment. Post parathyroidectomy, Parathyroid hormone levels returning to normal within 10 mins of surgery is conclusive evidence of successful excision of the parathyroid adenoma.

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