Functioning Oxyphil Parathyroid Adenoma: A Case Report

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ABSTRACT

Introduction: Oxyphil parathyroid adenomas are uncommon symptoms and signs of patients with this problem are not well defined, some times this will mimic the parathyroid carcinoma.

Case report: We are presenting a case of recurrent renal caliculi of primary hype rparathyroidism with marked elevation of parathyroid hormone (PTH) and calcium levels USG neck and MIBI scan reveled left superior parathyroid gland adenoma. Patient undewent Endoscopic Assisted Minimally Invasive Parathyroidectomy. Histology revealed an oxyphil adenoma. Post – operatively, there was a reasonable decline in both PTH, serum calcium and serum alkaline phosphatase levels.

Conclusion: Benign oxyphil adenomas may look like parathyroid carcinomas, both in terms of signs symptoms and tumour size. They should be included in the differential diagnosis of patients with primary hyperparathyroidism.

Keywords: Recuuernt renal stones, Oxyphilic adenoma, Hyperparathyroidism, Parathyroidectomy

INTRODUCTION

Parathyroid glands are mostly composed of chief cells which are the secretory, granule-rich cells responsible for Parathyroid Hormone (PTH) release. This hormone is responsible for regulating serum calcium levels and bone metabolism.[1] Others presnt in the parathyroid glands are oncocytic (or oxyphilic) and transitional oncocytic cells. These cell types are larger in size than chief cells, will have an acidophilic cytoplasm, and no secretory granules. The fat composition of parathyroid glands increases with age, reaching a maximum of 30% of the gland.[2] Symptoms produced by hyperplasia of the parathyroids have commonly been classified into three categories: (a) those due to skeletal changes; (b) to urinary changes; and (c) due to hypercalcemia itself.' Those due to the mechanical effect of the tumor such as dysphagia or a feeling of fullness in the neck are considered rare since the tumors are usually small in size. While symptoms due to pressure per se are undoubtedly rare, it is possible for the tumor to be so located that constant irritation to the recurrent laryngeal nerve may set up local cutaneous trigger areas which will, on stimulation, produce severe episodes of coughing and sneezing followed by weakness and, at times, syncope. As far as could be determined, symptoms based on this factor secondary to parathyroid adenomas have not been previously described in the literature

Parathyroid Adenomas: Parathyroid adenomas are benign neoplasms mainly derived from chief cells but some times may derive from oncocytic or transitional oncocytic cells. Parathyroid adenomas have now been largely proven to be monoclonal or oligoclonal proliferations[3] rather than polyclonal ones. On pathological examination, parathyroid adenomas usually appear as well-circumscribed lesions with hypercellularity and decreased lipid in both the stroma and cytoplasm. Minimal nuclear pleomorphism and mitotic activity are present. A rim of normal compressed parathyroid tissue at the periphery of the lesion is one of the main histological hallmarks of this entity. Parathyroid adenomas mostly occurs in the inferior parathyroid glands which are more variable in location when compared to the superior parathyroid glands.[3]

CASE REPORT

A 32-year-old male who had symptoms of easy fatigability, difficulty and pain during passing urine.Usg of urinary system reveled as 3 to 4 non obstructive renal calculi measuring around 2.6 mm to 4 mm,VUJ caliculus measuring around 5.8 mm X 5.8 mm causing mild hydronephrosis and non pbstructive left renal calculi noted at lower calyx measuring 10 mm x 7.8 MM. under went surgery twice and diagnosed as recuurent renal calculi. Blood investigations reveled as PTH 218.8 pg/ml (normal 14 to 72) calcium 13.5 (normal 8.5 to 10.5) and phosphorous2.9 (normal2.5 to 4.8 mg/dl) and diagnosed as recuurent renal calculi secondary to primary hyper parathyroidism, patien was refeered to head and neck surgeon to rule our parathyroid pathology

Patient was undergone usg neck which showed as in the posterior aspect of upper part of left lobe of thyroid ther is a well defined hypoechoic nodule measuring 2.3 X 1 cm with hilum like structure and increasedvascularity (Figure-1) apperas to be sepate tissue from thyroid gland represents a parathyroid adenoma., referred to Head and Neck Servicessurgein for further evaluation

She did not complain of breathing difficulty, stridor or difficulty or pain during swallowing. Her menstrual cycle were normal. There was no significant family history. On examination, her blood pressure was found to be 134/86 mm Hg. Neck examination showed that trachea was not deviated, with no swellings and cervical lymphadenopathy. Cardiovascular, pulmonary and abdominal examinations were within normal limits. RFT, LFT and TFT tests were within normal imits.The24-hour urine calcium(352.8mg/24hrs) elevated but phosphorous was with in normal limitis, and patient underwent Tc^{99} MIBI parathyroid scan and MIBI pertechnate subtraction study.MIBI images (Figure-1) reveal focal incresed radiotrace uptake at thre level of upper pole of left thyroid gland with persistent uptake to delayed image, scan findingd suggestive of a diagnosis of left superior parathyroid gland adenoma.

then patient was subjected to endoscopic assisted mimimally inavasive left parathyroidectomy under general anaesthesia.

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During surgery, a neck mass (Figure-2) measuring 3.0 x 2.8 x 1.7 cm and weighing 20 grams was resected.

Histopathology, tumor was composed of uniformly polygonal cells displaying round nuclei and eosinophilic granular cytoplasm, Portions of the compressed parathyroid gland were identified in the connective tissue capsule surrounding the adenoma,which was suggestive of an oxyphil parathyroid adenoma (Figure-3).

DISCUSSION

Parathyroid adenomas are composed mainly of chief cells and they are common cause of primary hyper functing of gland. Parathyroid adenomas of the oxyphil cell type, an uncommon histologic subtype, are very rare. Warren and Morgan, in 1935, were the first to report a functioning oxyphil adenoma of the parathyroid.[5] because of improper biochemical studies before to 1978, oxyphil adenomas of parathyroid were normally considered as non-functioning. The diagnostic criteria given by Wolpert and Vickery in 1989 for functioning oxyphil adenomas includes: (1) Minimum 90% of the adenoma should be composed of oxyphil cells, (2) a biopsy or excision of a second histologically normal parathyroid gland, excluding the diagnostic possibility of hyperplasia and (3) a post-operative alleviation of hypercalcaemia.[5] The literature has revealed around 142 cases of oxyphil parathyroid adenomas till now, among them only 124 were found to be functional.

The parathyroid gland normally weighs about 25-35 mg, while an average chief-cell parathyroid adenoma weighs 0.5 gram. The oxyphil adenoma are known to be heavier, with an average weight of 1.2 gram.[7] In 2004, Fleisher et al described two cases of abnormally large oxyphil parathyroid adenomas which weighed 7 and 25 grams.[4] In our case, the oxyphil adenoma weighed 20 gram, which raised a clinical suspicion of a parathyroid carcinoma.[6] On microscopic examination, oxyphil cells are larger than chief-cells and they are filled with eosinophilic cytoplasm, which will explain their large sizes.[4] Serum PTH levels in parathyroid carcinomas are normally 3-10 times the heigher limit of normal, whereas in benign lesions, values are less than twice normal. In our study, the serum PTH levels were .20 times the lower limit of normal, which suggested that the tumour was a parathyroid carcinoma (which mimicked its features). Benign oxyphil parathyroid adenomas may resmble parathyroid carcinomas, both in terms of signs and symptoms, blood parameters and tumour sizes.

Ectopic parathyroid adenomas are a cause for failures of primary surgeries and there fore, a preoperative proper localization of the lesion by doing investigations, such as seastimibi scan, positron emission tomography scan and CT scan, will helps surgeons [7]. Though Tc-99m-sestamibi scan uptake scan was performed in our study, it has been found to be useful in detecting metabolically active oxyphil adenomas and especially, when pre-operative calcium level is greater than 9.5mg/dl. This helps in mitigating the risk of a bilateral neck exploration and the need of a second surgery, to locate for ectopic parathyroid glands.[6]

Differential Diagnosis

Parathyroid adenomas are normally encountered during the course of evaluating the etiology of diagnosed or suspected primary hyperparathyroidism. Primary hyper parathyroidism is

Figure-1: Tc 99 MIBI Scan – parathyroid adenoma

Figure-2: Adenoma specimen

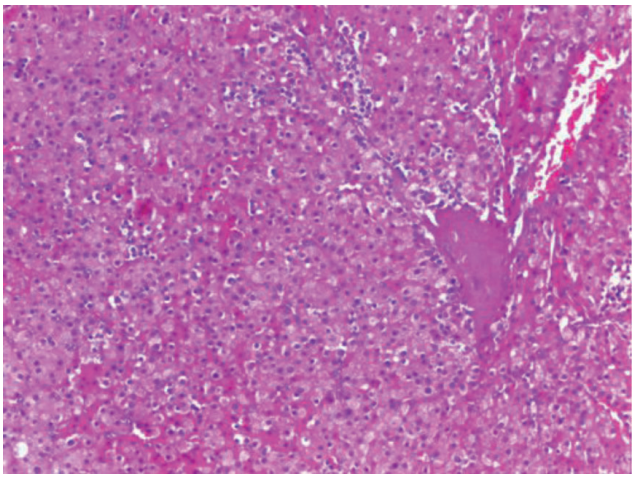

Figure-3: Histopath of oxyphil adenoma

	PTH pg/ml	Serum calcium mg/dl	Serum phosphate mg/dl
Normal range	11.1–9.5	8.5–10.1	2.5–4.8
Pre op	218.8	13.5	2.9
Post op	14.51	10.1	2.5

Table-1: Blood values

defined by irregularly elevated PTH production, by abnormal parathyroid tissue, causing hypercalcemia. The primary cause of primary hyperparathyroidism mainly includes parathyroid adenoma, parathyroid gland hyperplasia, double gland adenomas, and parathyroid carcinoma. Most common is single gland parathyroid adenoma, contributing for about 85% of all cases of primary hyperparathyroidism. A rare condition which mimics primary hyperparathyroidism is benign familial hypocalciuric hypercalcemia (BFHH). This familial condition results from genetic pathology in the calcium receptors in the

renal systems and cannot be corrected by removal of parathyroid gland.[7]

CONCLUSION

Oxyphil adenomas some time in presentation will resemble Parathyroid carcinomas, both in symptoms,signs and tumour size. A team approach in an tertiary care setting, will help in preventing a prolonged and stormy post-operative course in such type of patients. Functioning oxyphil parathyroid adenomas should be in mind in the differential diagnosis of patients with primary hyperparathyroidism, who present with atypical blood calcium, PTH and alkaline phosphatase values and clinical manifestations.

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