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LIPOADENOMA OF PARATHYROID – A RARE VARIANT

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ABSTRACT
Parathyroid lipoadenoma also known as parathyroid lipohyperplasia or parathyroid hamartoma, is a rare variant of parathyroid adenoma which shows a mixture of chief cells with abundant mature fat cells comprising 20-90% of the tumor. We report a case of a 40 year old female who presented with clinical manifestations of primary hyperparathyroidism since 2 months. Parathyroid lipoadenoma is an unusual cause of primary hyperparathyroidism. Patient had elevated serum calcium and parathyroid hormone levels. Computerized tomography findings revealed a right inferior parathyroid hyperenhancing lesion. Patient underwent surgical excision, the specimen was sent for histopathological examination and it was diagnosed as a parathyroid lipoadenoma which was confirmed subsequently on immunohistochemistry.

KEY WORDS: Lipoadenoma, parathyroid, hyperparathyroidism, histopathology.

INTRODUCTION
Lipoadenoma of parathyroid gland also known as parathyroid lipohyperplasia is an unusual histologic variant of parathyroid adenoma in which the glandular part is accompanied with abundant mature adipose tissue. Most cases are functioning, which are associated with hyperparathyroidism.[1] Lipoadenoma of parathyroid gland is difficult to diagnose as a cause of hyperparathyroidism because of its rarity and resemblance with the normal parathyroid tissue on microscopic examination.[2]

Parathyroid lipoadenomas and lipohyperplasia are extremely rare, consisting of less than 1% of all cases of primary hyperparathyroidism.[3] These lesions have also been called "parathyroid adenolipoma"[4] or "parathyroid hamartoma."[5,6,7] The term parathyroid lipoadenoma was introduced by Abul Hay in 1962 and has replaced the other mentioned older terms.[8]

Parathyroid lipoadenoma is defined as a benign tumor characterized by the proliferation of parenchymal and stromal elements. They usually present as an enlarged, mostly encapsulated mass with soft, yellow- tan cut section and increased weight.[1] The stroma of lipoadenomas is characterized by the abundance of adipose tissue (atleast 30%) often associated with areas of myxoid change and fibrosis.[2] The parenchymal elements include chief cells and small numbers of oncocytic cells arranged in thin, cord like branching pattern.[3] Less than 60 cases of lipoadenomas have been reported in the literature until now.

In contrast to ordinary parathyroid adenomas, which are more often seen in females, parathyroid lipoadenomas are found equally in both males and females. They have been found in patients aged 41 to 92 years old.[9] The tumors show no affinity towards a particular side or for superior or inferior glands and it may also occur at ectopic sites as in the mediastinum.[1]

The etiology of these rare lesions is unknown. Some of these lesions may appear as a hamartoma with adjacent thymic elements. In the series of Seethala et al, most of the patients with parathyroid lipoadenomas or hyperplasia were overweight in the obese category.[10]

CASE PRESENTATION
A 40 year old female presented with complaints of fatigue, bone and joint pain since 2 months. She had elevated serum calcium and serum parathyroid hormone levels 12.5 mg/dl and 173pg/ml respectively. Contrast enhanced computed tomography revealed a right inferior parathyroid hyperenhancing lesion. The patient underwent surgical excision and the specimen was sent for histopathological examination.

On gross examination, the tissue mass measured 2x1x0.5cm and weighed 70gms. It was tan to yellowish brown in color, nodular, soft to firm in consistency. Cut surface showed brownish areas.

Two formalin fixed sections were stained with hematoxylin and eosin using standard technique whereas three air dried sections were stained with oil red o stain for intracytoplasmic lipid assessment which showed depletion of intracytoplasmic lipid. Sections from the lesion showed tumor consisting of an epithelial component combined with a stromal component. There was a diffuse proliferation of chief cells showing round central nucleus and pale eosinophilic granular cytoplasm. At places glands were identified associated with mature fat cells distributed throughout the section. No mitotic figures were identified. No necrosis was seen. There was no evidence of capsular or vascular invasion.

FIGURES

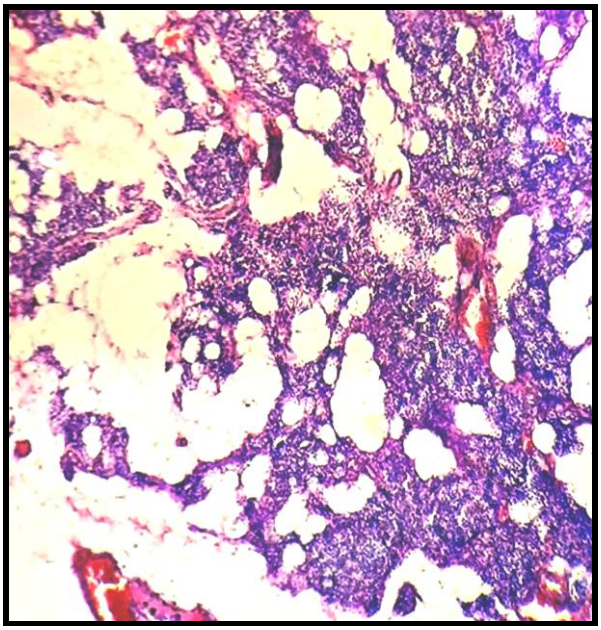

Figure 1: Microphotograph showing admixture of chief cells and mature adipocytes, histologic findings resemble normal parathyroid tissue. (H & E stain, 10x).

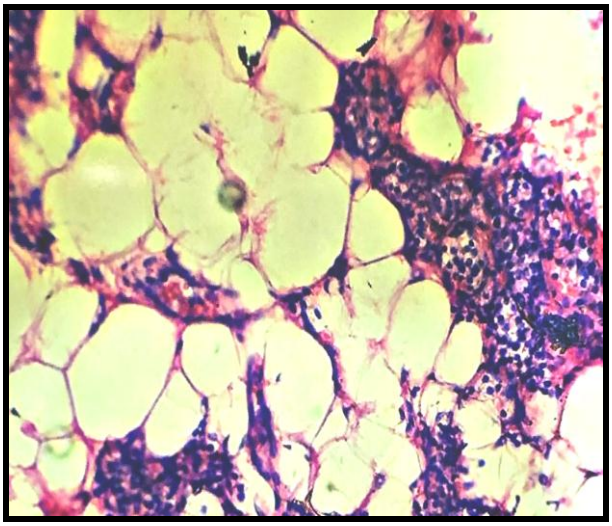

Figure 2: Microphotograph shows high power view of the polygonal cells with abundant cytoplasm. (H & E stain, 40x).

DISCUSSION

Parathyroid lipoadenoma constitutes <1% of all causes of hyperparathyroidism.[10]

In a series of 253 cases of primary hyperparathyroidism 1.6% (4) of cases were reported as parathyroid lipoadenoma.[11]

The main finding in this case was an increased parathyroid cell mass which was associated with abundant stromal fat in a patient with primary hyperparathyroidism. No other relevant cause for hyperparathyroidism was found on further examinations and the patient got cured after excision of the lesion.

In general, radiation therapy of head and neck region in childhood is associated with a higher risk of primary hyperparathyroidism with a latency of 30 years.[9]

The tumor shows no gender predilection with a male: female ratio of 1:1 with a wide age range of 41-92 years.[12]

These are not associated with multiple endocrine neoplasia or familial hyperparathyroidism.[13]

On histopathological examination, grossly the tumor appears as a yellow to tan colored mass with lobulated cut surface. Microscopically, a proliferation of both parenchymal cells mainly chief cells and stromal component is seen with large areas of adipose tissue.

Parathyroid lipoadenoma consists of chief cells admixed with oxyphil cells with abundant adipose tissue that comprises of 20-90% of tumor.[14,15]

Origin of adipose tissue component remains unknown but it is suggested that enlargement of chief cells is responsible for it. Fat content in a normal parathyroid gland is approximately about 25%. In a study done by Seethala et al, they reported median fat content of 50% (30-70% range).[10] In our case it was 60%.

These tumors may easily be missed preoperatively on parathyroid scan due to the presence of large amount of fat. It was proposed that intraoperative touch smear preparation is more useful as compared to frozen sections as they impose difficulty in processing because of high fat content.[16]

The mainstay of management for symptomatic cases is parathyroidectomy. Bilateral neck exploration with identification of all enlarged and normal parathyroid glands is performed.[17]

CONCLUSION

Parathyroid Lipoadenoma is a rare variant of parathyroid adenoma. It may easily be missed by various preoperative scans. This entity needs to be identified as a cause of hyperparathyroidism and poses diagnostic

difficulty due to its resemblance with normal parathyroid gland therefore histopathological examination is essential for a confirmatory diagnosis.

Conflicts of Interests
None.

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