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PARATHYROID ADENOMA: A RARE TUMOUR CASE REPORT

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ABSTRACT

Parathyroid adenoma is a rare tumour and are generally small size (< 2 cm) and <1gm weight. Giant adenomas are infrequent, are mostly elucidated as > 3.5 gm weight, along with few reports weights up to 110 gm. Parathyroid adenoma are usually found with primary hyperparathyroidism syndrome which is common, seen as third most common endocrine disorder. In this study a case of 52-year-old lady was refereed with complain of neck swelling, lethargy and generalized drowsiness. The results obtained from laboratory revealed increased serum calcium and increased parathyroid hormone. There is no significant history of renal stone, renal dysfunction or any family history of endocrinal tumours. Ultrasonography revealed a composite nodule with cystic and solid elements. Focused surgical neck exploration was performed with removal of 4 gm adenoma . Microscopic examination showed, encapsulated lesion formed of chief cells of parathyroid organized within network of capillaries. The most exact mechanism for localizing a Parathyroid Adenoma is altogether MIBI scan along with neck ultrasonography. Surgical excision with monitoring of parathyroid hormone screening during operation is the recommended conductance. Need for the intraoperative Parathyroid hormone monitoring is debatable in Parathyroid adenoma due to accuracy of preoperative imaging.

KEYWORDS: Parathyroid adenoma, Hyperparathyroidism, Hypercalcemia.

INTRODUCTION

The parathyroid gland generally weighs 50-70mg and parathyroid adenoma are seen to be small <2 cm and 21gm in weight and it is found with syndrome of primary hyper parathyroid which is 3rd most common endocrine disorder (1). Although Primary hyper parathyroid are caused due to parathyroid hyperplasic changes or carcinomatous changes, and approx. 85% of incidence of Primary hyper parathyroid because of Parathyroid adenomas, and the most of them are due to solitary Parathyroid adenomas. Primary hyperparathyroidism is involved with higher serum calcium due to elevated secretion of parathormone. For visualization of hyperfunctioning glands, ultrasonography and 99^{m}Tc-sestamibi scintigraphy are the best radioimaging modalities. Contrast increase Computed tomography and Magnetic resonance imaging are slightly common utilized for preoperative localization, could be beneficial in incidence of failed parathyroidectomy for ectopic glands localization. Standard technique of treatment for parathyroid adenomas resulting hyperparathyroidism is parathyroidectomy (2) Earlier studies have revealed that parathyroidectomy association with primary hyperparathyroidism is therapeutic in more than 95% of incidence when done by an experienced surgeon (3). Some authors utilized minimal invasive parathyroid surgery utilizing local anaesthesia instead of general anaesthesia.

CASE REPORT

A 52-year-old female came to Era's Lucknow Medical College & Hospital. The lady complained of neck sweeling, lethargy and drowsiness., Investigations showed increased serum calcium and increased Parathyroid hormone. Unremarkable family history For familial endocrine tumours . There was no significant history of renal calculus. Therefore, her abdominal and pelvis computed tomography scan revealed single 2mm calculus of non-obstructing type along with right kidney normal looking Calyx with no hydroureteronephrosis changes. Past clinical history was also unremarkable. On the physical examination swelling in right side of neck is noticed at the time of inspection. On doing palpation a non-tender nodule was appreciated about 2.5 cm in size.

The remaining physical examination had no clinical findings. The neurological parameters were seen to be within normal levels. At the time of admission vitals of the lady were in the normal range.

Serological test revealed corrected calcium which was 12mg/dl and, an intact Parathyroid hormone of 502 ng/L, vitamin D of 19.90 nmol/L, and normal level of thyroid-stimulating hormone (TSH). The kidney functions test findings was in the normal range, serum creatinine was 0.9 mg/dl and also liver test findings and complete blood count of the lady were of normal limits. Beside this Microbiology test were not found to be necessary.

Investigations imaging involves neck ultrasound and revealed a complicated nodule comprising of cystic and solid constituents along with visualization of vascular areas of mid to lower pole of right side of thyroid gland . Afterwards lady underwent to Ultrasound-guided fine-needle aspiration cytology (FNAC) which yielded nodule.

She underwent slightly minimal invasive parathyroidectomy (MIP) with engrossed exploration and removal of Parathyroid adenoma of right side under general anaesthesia. Intraoperative Parathyroid hormone observation confirmed the removal of adenoma as Parathyroid hormone decreased from initial pre-excision level 546 ng/L to 239 ng/L 10 minutes after the removal followed by 161 ng/L 20 minutes after removal leads decrease up to 70%.

Surgery was completed and patient of our hospital get recovered without any difficulty and was discharged.

Gross: we received a specimen a nodule measuring (4 × 2.5 × 1.5 cm), encapsulated, globular Gray-white solid mass and weight 8gm. Cut surface showed smooth, reddish brown areas with solid areas, histologic attributes of Parathyroid adenoma.

Microscopy: Section of the tissue showed encapsulated hypercellular areas with solid growth pattern interspersed with fibrous septa forming lobules. These lobules consisted of chief cells which were multinucleated cells having small uniform, dark nuclei with amphophilic to eosinophilic cytoplasm lined by a well-defined nuclear membrane with minimal surrounding stromal fat. No mitotic activity was noted. Few areas of haemorrhages were also seen.

DISCUSSION

Parathyroid adenoma is commonly seen in the of parathyroid proliferative disorder which consist parathyroid adenoma, parathyroid hyperplasia, carcinoma (4). Ultrasonography and ^{99m}Tc-sestambi scintigraphy are the best imaging modalities for the observation of involved glands. The gross examination of gland showed it is expanded and generally solid. The cut section is commonly soft, smooth and reddish to brown in colour, differentiated from yellowish brown colour of normal surrounding tissue. Microscopic examination reveals a discreate mass segregated through a border of non-involved parathyroid parenchyma by delicate thin fibrous capsule. Sometimes adenoma is multinodular and irregular.

Microscopically, proliferation of a individual type of cell which generally is the important cell but sometimes the prominent cell type are the oxyphilic cells. Sometimes both types of cells can be observed and beside this clinical and radiographic correlation are found to be pleasant in forming this ascertainment. There is difference in growth pattern which differ and can range from pseudo-glandular to solid, acinar and follicular; sometimes also observed is cystic degenration. Few nuclear pleomorphism is observed though, it has great importance and visualize in bunch. Mitotic activity are unobstructive (1/10 hpf) and atypical mitotic figures were not seen in typical parathyroid adenomas. Delicate fibrovascular bands could be found but no dense fibrous bands are found and if visualized could arise a red flag for probability of carcinoma. Haemorrhage, fibrosis, inflammatory cells, and hemosiderin could be observed as part of the changes of degeneration, if prominently tumours are huge.

Immunohistochemical study are, not much required for the diagnosis of parathyroid adenoma. Normaly, hyperplastic and neoplastic parathyroid tissue are mostly reactive with antibodies like parathyroid hormone and chromogranin. One significance where immunohistochemical staining can be useful in transform atypical parathyroid adenoma from carcinoma.

There are features which individual should monitor before making diagnosis of parathyroid carcinoma , in inclusion of adherence to thyroid tissue are, capsular and vascular penetration, extent into structures of soft tissue , pattern of growth arranged in trabecular form, thick fibrous tumour capsule along with dense fibrotic bands, tumour necrosis, cell spindling, important macro nucleoli, elevated mitotic activity and atypical mitotic figure.

Ultimately, MEN syndrome patients, most prominently MEN 1, often associated with parathyroid proliferative disorder as the part of syndromes. Almost 90-92% of patients with MEN 1 syndromes usually consist parathyroid hyperplasia also parathyroid adenoma and carcinoma could also be the part of syndrome. Beside this many patients with para- thyroid proliferative disorder found having sporadic disease; and probability of an MEN syndrome can be here whenever these patients have to be analysed.

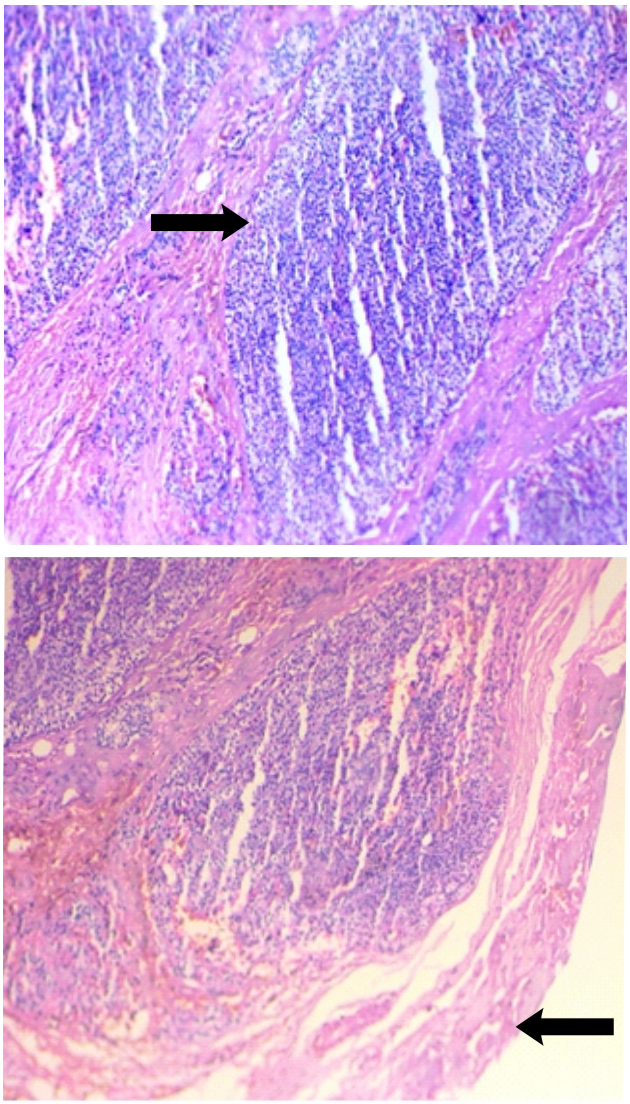

Fig. 1: Haematoxylin & Eosin-stained section on low power(10x) shows Encapsulated Hypercellular Parathyroid Adenoma with formation of Lobules.

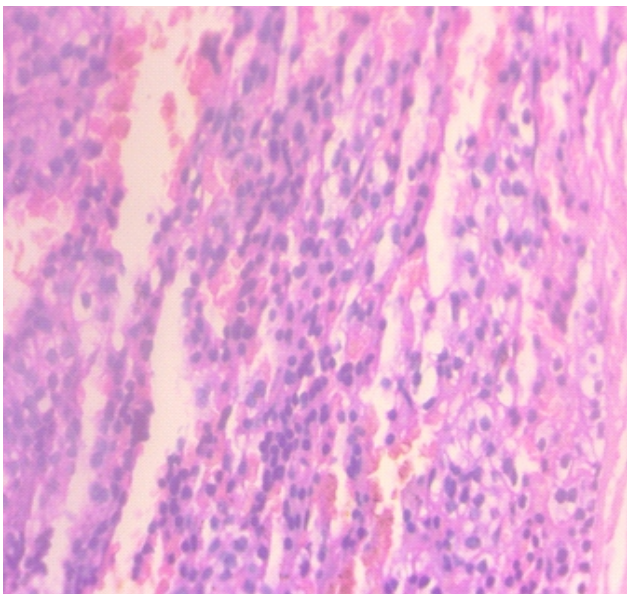

Fig. 2: Haematoxylin & Eosin-stained section in high power examination(40x) shows Solid growth pattern Separated with Fibrous Septa forming Lobules. These Lobules Comprise of Chief Cells Population with Minimal Stromal Fat.

CONCLUSION

Normal parathyroid glands are too minute for detecting on imaging but disease of parathyroid generally leads to expansion of glands for better visualization. On surgical resection the parathyroid adenoma, surgeon easily identifies the single enlarged gland. Previously other gland sampling were required for ruling out the parathyroid hyperplasia but nowadays due to radiographical imaging accuracy and para- thyroid hormone monitoring during the operation, the surgeon do not ask specimen from the remaining glands

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