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Case Report

A Case of Primary Hyperparathyroidism due to a Intrathyroid Parathyroid Adenoma with Chronic Kidney Disease and Wegner's Granulomatosis

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Abstract:

Primary hyperparathyroidism due to intrathyroid parathyroid adenoma is extremely rare. This case is important as this patient was known case of CKD so it was difficult to differentiate this case from secondary and tertiary hyperparathyroidism. It was also challenging for surgeon to take appropriate peroperative decision to perform hemithyroidectomy as there was no radiological evidence of intrathyroid parathyroid adenoma and also challenging when all probable sites and ectopic sites were meticulously searched and no parathyroid adenoma was formed.

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Introduction:

Hyperparathyroidism is common endocrine disorder characterized by excessive parathyroid hormone (PTH) secretion. High PTH increases serum calcium level and decreases serum phosphate level and play a vital role in bone metabolism. Hyperparathyroidism is usually 3 types: primary, secondary and tertiary. Primary hyperparathyroidism (PHPT) is most common and characterized by high PTH with high serum calcium level, low serum phosphate

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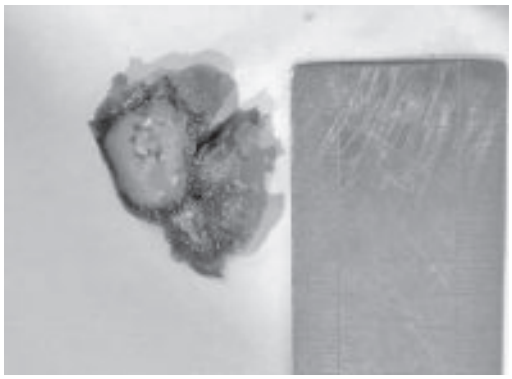
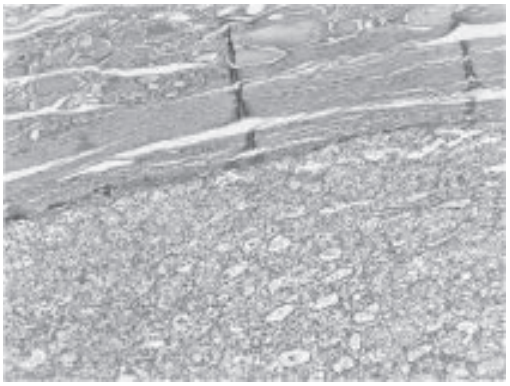
level. Though more than 70% cases it is asymptomatic and diagnosed accidentally to find out the cause of raised serum calcium level. Patient may present with bone pain, abdominal cramp, psychic moans and renal stones. Here usually single parathyroid gland is enlarged and produces excess PTH. In secondary hyperparathyroidism serum PTH raised in response to constantly low serum calcium level with kidney, liver and bowel disease. In this case all 4 parathyroid glands are usually enlarged with hyperplastic changes. In tertiary hyperparathyroidism serum PTH is increased due to autonomous secretion of PTH with advanced CKD or kidney transplant patient. In this case also multiple parathyroid glands become hyperplastic changed. Usually there are 4 paratrhyroid glands located in neck behind the thyroid gland. Location of superior parathyroid gland is fairly constant at the middle of posterior border of lateral lobe of thyroid gland at the level of cricoid cartilage. Location of inferior parathyroid gland is variable, in the lower pole of thyroid gland, below the loop of inferior thyroid artery within the false capsule or above the loop of inferior thyroid artery outside the false capsule and in rare case inferior parathyroid gland lies beneath the true capsule and though it is very rare sometimes it may lie within the substance of thyroid gland[1]. In our case detailed history taking, biochemical tests, radiological imaging like USG, Scintiography of parathyroid gland, per operative frozen section all these techniques were required for appropriate diagnosis and treatment[2,10].

Case Description:

A 66 years old female known case of DM, HTN, IHD, CKD and Wegener's Granulomatosis admitted in BIRDEM General hospital with the typical features of primary hyperparathyroidism such as localized dull aching multiple joint pain exaggerated on movement, intermittent colicky abdominal pain associated with nausea and vomiting, generalized body ache and depression. Patient had history of osteoporosis and patient had been treated for that. Patient's serum calcium level was 11.2 mg/dl, serum PTH 263 pg/dl, serum albumin 35.0gm/dl , vit D 36.3 ng/ml, serum alkaline phosphate 215 U/l, serum creatinine 5.6 mg/dl, blood urea 103 mg/dl. Patient had small palpable mass in her Right neck. On USG of neck revealed Mixed echogenic solid area is seen at the lower pole of right lobe of thyroid suggestive of nodular goiter, left thyroid region is unremarkable. Then Technetium-99m or scintigraphy demonstrated focal accumulation of increased radiotracer uptake in the inferior pole of right thyroid lobe. As scintigraphy is the gold standard diagnostic tool for diagnosis of parathyroid adenoma, so after confirmation of diagnosis as primary hyperparathyroidism due to parathyroid adenoma (right lower), surgery was planned. During surgery first a probable small, globular, reddish-brown soft tag of tissue suspected as parathyroid adenoma near the lower pole of thyroid and then the tag of tissue was dissected out and sent for frozen section. And peroperative blood sample for serum parathyroid hormone was sent 10 minutes after removal of suspected parathyroid gland. Frozen section report revealed that was not parathyroid tissue and serum PTH didn't reduce significantly. Then all probable ectopic sites were meticulously searched and no parathyroid adenoma was found. So then it was suspected that parathyroid gland may be present in the Rt thyroid lobe as the right thyroid lobe was mildly enlarged than normal. That means it might be a case of intrathyroidal parathyroidal adenoma. So at last according to the protocol Rt hemithyroidectomy was done and sent for histopathology. Just after 10 minutes a second blood sample for serum PTH also sent and here the PTH level reduced significantly. Histopathology report revealed, Parathyroid adenoma (intrathyroid) with colloid goitre. After surgery, the elevated calcium and PTH were normalized gradually.





Discussion:

Location of superior parathyroid gland is mostly constant as it developes from 4th pharyngeal pouch and it has less embryological migration whether the location of inferior parathyroid gland varies as it developes from 3rd pharyngeal pouch and it has more embryological migration[3]. Ectopic parathyroid adenoma means development of adenoma or hyperplasia of parthyroid gland that have been displaced in different sites other than normal location , such as in the thyroid or in the thymus or in the mediastinum or in else were[4]. In case of primary hyperparathyroidism, intrathyroidal parathyroid adenoma is extreamly rare around 0.01 – 0.02 % cases[5,6,7]. Intrathyroidal parathyroid adenoma is more frequent in right lobe and divided into complete or partial types in encircled form[6,8]. USG of neck, Contrast enhanced CT scan of neck, scintigraphy are useful for the localization of parathyroid tumors[9,10,11]. The rate of appropriate diagnosis by above mentioned procedures is very high when the parathyroid adenoma or hyperplasia lies in normal position. But in case of ectopic sites of parathyroid adenoma such as in intrathyroidal parathyroid adenoma, the interpretation of imaging findings is difficult for correct localisation of the gland[2,12]. So in this case peroperative decision making capacity of surgeon is very important and helpful.

Conclusion:

Despite modern techniques to diagnose a disease appropriately and provide treatment accordingly, it is the clinical skill and experience of physicians and surgeons which is more essential. In this case modern imaging techniques couldn't identify the exact location of parathyroid gland but the surgeon's clinical skill and experience saved the patient.

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