INTRATHYROIDAL PARATHYROID CYST PRESENTING WITH RECURRENT KIDNEY STONES: A CASE REPORT

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Parathyroid cysts are rare and can be the cause of persistent hypercalcemia leading to kidney stones. The aim of this article is to present a case presenting to the hospital with recurrent kidney stones and incidentally found hypercalcemia. From there, we discovered a cystic lesion in the thyroid gland. Combining ultrasound and cyst fluid aspiration to measure the concentration of parathyroid hormone in the fluid helped us confirm that the cystic lesion belonged to the parathyroid gland. The patient underwent surgery to remove the cyst and the blood calcium and parathyroid hormone levels returned to normal after surgery.

Keywords: Parathyroid cyst, parathyroid hormone, surgery.

I. INTRODUCTION

Parathyroid cysts are rare lesions, which represent less than 0.5% of parathyroid glands pathologies and account for only 1 - 5% of neck masses.[1-3] They are classified as functioning and nonfunctioning cysts.[4,5] Cysts are common in women and are usually asymptomatic. Parathyroid cysts are usually detected by ultrasound imaging, but they are easily confused with thyroid cysts. Cyst fluid aspiration and detection of parathyroid hormone in the cyst fluid help diagnose parathyroid cysts.[4] Parathyroid cyst removal surgery is the optimal method. We report a case of a patient with recurrent kidney stones due to persistent hypercalcemia. We found a cyst located in the lower third of the left thyroid lobe, which was difficult to differentiate from a thyroid or parathyroid lesion. Cyst fluid aspiration revealed a very high concentration of parathyroid hormone in the cyst fluid, confirming a parathyroid cystic lesion. This is also different from the commonly reported diagnostic approach of a solid parathyroid tumor.

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II. CASE REPORTS

A 65-year-old woman came to the hospital because of dull back pain for 2 months. She had a history of 3 times kidney stone surgery. About 2 months, the patient had dull back pain without fever, painful urination, or urinary frequency. Her vital signs were normal. Abdominal examination showed mild tenderness in the flanks bilaterally,with no abdominal wall reaction. Examination of the cardiovascular, pulmonary, neurological, and peripheral systems was normal.

The patient was admitted in the hospital and examination revealed that the right kidney stones and ureteral stones on both sides caused dilation of the ureteral calyces. Biochemical examination at the clinic showed elevated serum calcium (3.1 mmol/l). Parathyroid hormone also increased to 79.73 pmol/l.

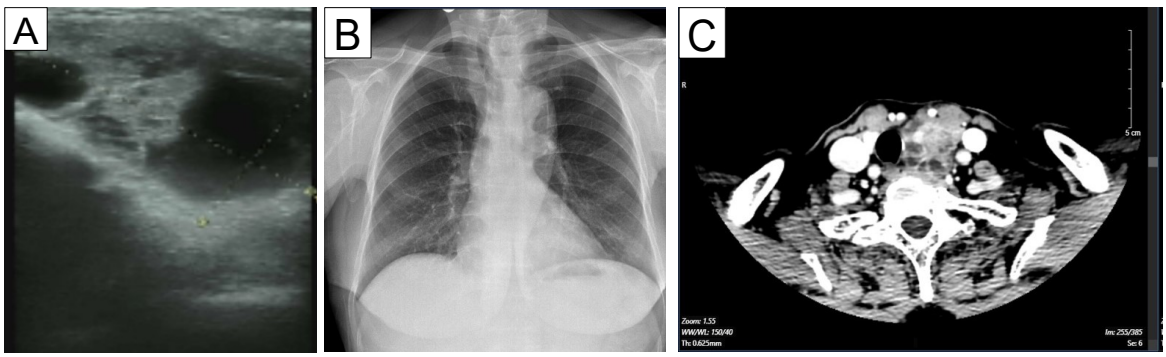
A neck ultrasound did not detect parathyroid adenomas in four common locations. The left lobe thyroid gland in the lower third had a partially cystic nodule, consisting of a solid and a fluid, 4.5x3.0cm in size, developing mainly in

the lower and mediastinum. The patient's chest radiograph was normal.

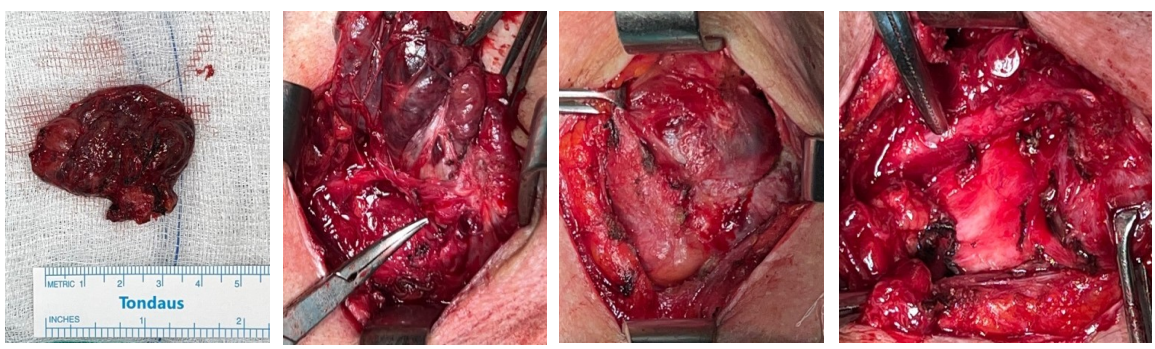
A neck computed tomography (CT) scan showed that the position behind the left lobe of the thyroid gland had a heterogeneous density; after injection, the enhancement was uneven measuring 4.8x3.9x4.0cm. The border of the left lobe of the thyroid gland and the left wall of the esophagus was not clear. The tumor was well confined to the larynx, the left carotid space, and the great vessels in the superior mediastinum. It displaced the larynx and trachea and the head of the esophagus to the right. The mass had partially extended into the superior mediastinum and left vocal cord paralysis was detected.

We suspect that this mass, located in the lower third of the left lobe of the thyroid gland, may be a parathyroid tumor. The fluid mass occupied > 50% of the tumor volume, so we performed fine-needle aspiration to collect the fluid and measured the PTH. An elevated PTH result (> 530 pmol/l) confirmed that it was a parathyroid cyst. The results of parathyroid Tc99m scintigraphy were commensurate with the increased radioactivity localized in the left lobe of the thyroid gland.

The tumor was surgically removed. WE observed that the tumor had many fibrous tissues attached around and to the left recurrent laryngeal nerve. The immediate histopathology also confirmed that the tumor was a parathyroid tumor. Preoperative parathyroid hormone was 89.39 pmol/l; PTH measured at 20 minutes after tumor removal decreased to 18.39 pmol/l. PTH at 5 days after surgery returned to normal at 4.1 pmol/l. Serum calcium returned to normal.The final pathology was a parathyroid adenoma. The patient was present on the 5th postoperative day.



Figue 1. (A) Ultrasound image of the neck region. (B) Chest radiograph. (C) CT scan of the neck: an 4.8x3.9x4.0cm mass was found in the left lobe of the thyroid gland



Figue 2. Open surgery to remove the tumor, the tumor has fibrous tissue attached to the surrounding area, while removing the tumor while preserving the left recurrent laryngeal nerve

III. DISCUSSION

Parathyroid cysts are rare lesions. They were first described by Sandstrom in 1880.[6] DeQuervain published the first case of a mediastinal PC in 1925, whereas the first functioning parathyroid cysts was described by Greene in 1952.[7,8] They are subdivided into two kinds: non-functioning and functioning.

Most of tumors have no symptom and are discovered incidentally. Most patients have clinical signs when the tumor enlarges, causing compression. The larger cysts can cause compressive symptoms and mediastinal ones can cause recurrent laryngeal nerve palsy. Compressive symptoms include: dysphagia, odynophagia, dyspnea, hoarseness, choking sensation, caused by displacement of the adjacent structures. Parathyroid cysts may present with hyperparathyroidism, hypercalcemia and hypophosphatemia, nephrolithiasis, constipation, bone changes, osteomalacia, or there are only incidental laboratory findings.[9-11]

The study of Papavramidis TS showed that parathyroid cysts can be found from the angle of the mandible until the mediastinum.[12] The most common site is the left thyroid lobe (31.6%), the second most common site is the superior mediastinum (19.3%). Therefore, it is necessary to differentiate parathyroid cysts from thyroid cysts, thymic cysts and parathyroid cancer.

Diagnostic methods for parathyroid cysts are neck ultrasound, plain radiograph, CT scan, Tc-scintigraphy. Neck ultrasound is important in assessing the cystic nature of the mass and its size, assisting in aspiration of cyst fluid. Radiograph are often used when the tumor is located in the mediastinum or the lower neck. CT scan of the neck readily detects cystic structures, especially when the cyst extends into the mediastinum, and can help differentiate it from solid and vascular lesions. The sensitivity of 99mTc sestamibi scans for functioning parathyroid cysts is lower (29%) than for non-cystic parathyroid adenomas (68% - 95%).[5,13] Compared with solid lesions, aspirate fluid from parathyroid cysts is usually colorless, clear, and has few or no cells. Fluid aspiration from parathyroid cysts and detection of parathyroid hormone are important tool to confirm the diagnosis.[4]

Our patient presented for recurrent kidney stones and was found to have hypercalcemia. Primary hyperparathyroidism is the most common cause of hypercalcemia.[14] To investigate the cause of hyperparathyroidism, we performed an ultrasound of the neck but did not detect parathyroid tumors in the four common locations but we found a cystic lesion in the lower third of the left lobe. The patient had cyst fluid aspirated and parathyroid hormone was found in the cyst fluid, indicating that the cyst was a parathyroid lesion[

Surgery to excise Active parathyroid cysts is recommended. However, postoperative complications may include: hypocalcemia, hypercalcemia, hemorrhage, and laryngeal nerve paralysis. It should be noted that surgery must avoid rupture of the cyst because of the risk of recurrence. Because these cysts have very thin walls, it is difficult to excise them as a whole and without rupture. In general, parathyroid cyst has a good prognosis, with low recurrence and metastasis.[4]

IV. CONCLUSION

Parathyroid cysts are rare, asymptomatic, and may lead to primary hyperparathyroidism. The location of parathyroid cysts can be mistaken for thyroid lesions. Neck ultrasound and cyst aspiration to measure parathyroid hormone levels are useful tools in the diagnosis

of parathyroid cysts. Functional parathyroid cysts are surgically resectable, but surgical rupture of the cyst should be avoided to reduce the risk of recurrence.

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