Intrathyroidal Parathyroid Cyst: An Unusual Neck Mass

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ABSTRACT: Parathyroid cyst (PC) is a very rare condition. A case of intrathyroidal PC is being reported here in a 53-year-old woman who presented to the endocrine clinic with slowly progressive painless left anterior neck swelling for 1 year with no symptoms of thyroid or parathyroid dysfunction and no compressive symptoms. Ultrasound of the thyroid showed a well-defined cystic lesion measuring 4.7 × 3.6 cm in maximum diameter with internal echoes within the cyst located in the left lobe of the thyroid gland. Fine needle aspiration revealed colorless clear fluid with a high concentration of parathyroid hormone. The patient underwent left hemithyroidectomy at her request. Histopathology revealed parathyroid tissue with unilocular cyst and thyroid tissue with goitrous changes. She was in remission, and there was no evidence of thyroid or parathyroid dysfunction after surgery.

KEYWORDS: Parathyroid cyst, neck mass, fine needle aspiration, clear fluid, surgical excision

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Introduction

Parathyroid cysts (PCs) are rare clinical and pathological entities representing 0.5% to 1.0% of parathyroid lesions and less than 1% of all cystic neck masses.[1] So far, approximately 300 cases have been reported in the literature.[2,3] Parathyroid cysts are categorized as functioning and nonfunctioning depending on their ability to secrete parathyroid hormone (PTH).[4]

Parathyroid cysts are mostly nonfunctional with nonspecific physical and radiological characteristics. Along with these features, their rarity leads them to be overlooked in the differential diagnosis of neck masses, and preoperative diagnosis is usually difficult. They usually occur during the fourth to fifth decade of life and are seen more frequently in women.[2]

A case of intrathyroidal PC, which clinically presented as thyroid nodule, is being described here. It is very rare because of its location as only 6 cases have been reported so far, and this case is the first from Arabian Peninsula. During workup, a high PTH level in needle aspirate from cyst suggestive of PC was confirmed after surgery by histopathology. Our case emphasizes considering PCs in the differential diagnosis of cystic thyroid lesions with the utilization of fine needle aspiration and needle aspirate PTH in diagnosis.

Case Report

A 53-year-old woman known to have hypertension for 5 years presented to the endocrine clinic with slowly progressive painless left anterior neck swelling for 1 year with no symptoms of thyroid or parathyroid dysfunction and no compressive symptoms. Family history was insignificant for any similar illness or other endocrine dysfunction. Past surgical history was negative. She was on bisoprolol 5 mg and aspirin 81 mg daily. On physical examination, vitals were within normal limits with blood pressure of 136/85 mm Hg and pulse rate of 80 beats per minute. She was overweight with a body mass index of 29 kg/m^2 and had smooth, nontender left anterior neck swelling of 4 × 4 cm with no palpable lymph nodes. No clinical signs of thyroid disease were observed. Other examinations were unremarkable. Her laboratory workup revealed hemoglobin of 13.4 g/dL, corrected serum calcium of 2.46 mmol/L (range, 2.09-2.54 mmol/L), serum phosphate of 1.35 mmol/L (0.87-1.45 mmol/L), thyroid-stimulating hormone of 2.34 mIU/L (0.27-4.2 mIU/L), free T4 of 15.79 pmol/L (12-22 pmol/L), free T3 of 5.06 pmol/L (3.1-6.8 pmol/L), and serum PTH of 3.27 pmol/L (1.6-6.9 pmol/L). Ultrasound of the thyroid showed normal-sized right lobe measuring 4.3 × 1.5 cm with normal homogeneous echo texture without any solid or cystic mass lesion. The left lobe of thyroid was enlarged and showed a well-defined cystic lesion measuring 4.7 × 3.6 cm in maximum diameter with internal echoes within the cyst (Figure 1). Having performed fine needle aspiration, 6 mL of colorless clear fluid was aspirated and parathyroid level from aspirate was found to be 11.7 pmol/L with inconclusive histopathology. The patient underwent left hemithyroidectomy at her request. Macroscopically, a large cyst 4 × 3 cm with smooth surface containing a clear fluid inside was noticed at the lower pole of the left thyroid lobe. Histopathology revealed parathyroid tissue with unilocular cyst and thyroid tissue with goitrous changes (Figure 2). In follow-up clinic visit 6 weeks later, she was doing well with no clinical evidence of relapse and normal biochemical profile with TSH of 2.24 mIU/L, free T4 of 13.71 pmol/L, corrected serum calcium of 2.38 mmol/L, serum phosphate of 1.35 mmol/L, and serum PTH of 2.57 pmol/L.

Discussion

Ectopic PCs are well recognized with more than 300 cases reported in the literature. They form around 0.08% to 3.41% of all parathyroid masses. Although an intrathyroidal location of a PC is very rare, it is nonetheless well described; pathologic conditions affecting such ectopically sited glands are also rare.[5,6]

These cysts commonly occur during the fourth to fifth decade of life, with a female to male ratio of 2.5:1.[1,2] However, several pediatric cases have also been reported.[6]

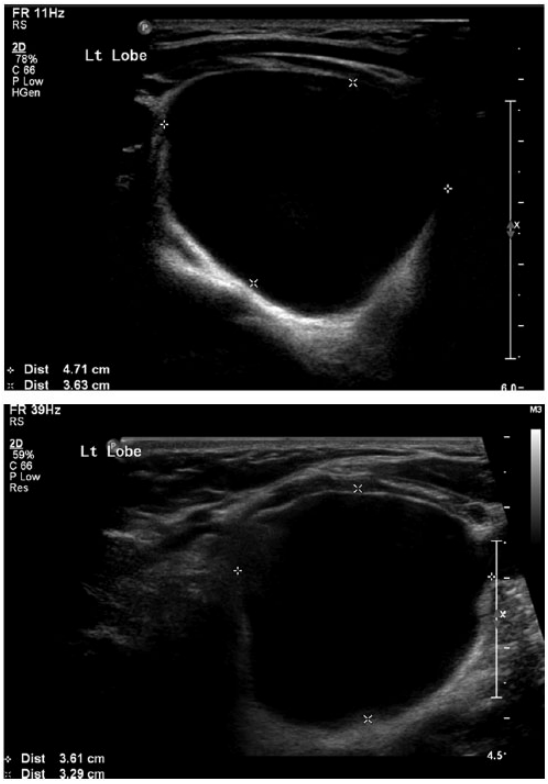

Figure 1. Thyroid ultrasound showing a well-defined cystic lesion measuring 4.7 × 3.6 cm in maximum diameter; there are internal echoes within the cyst.

Parathyroid cysts are divided into 2 categories: functioning PCs, which show male preponderance and cause hyperparathyroidism which makes their detection and diagnosis easier; nonfunctioning PCs, which are true cysts, are usually asymptomatic. They may present with nonspecific features or are detected incidentally on radiological examinations; however, larger ones can cause symptoms, such as neck bulging, dysphagia, pain, tracheal compression, and recurrent laryngeal nerve palsy.[7,8]

The cause of PCs is uncertain, but 4 major theories suggest that they are embryologic remnants of the third or fourth branchial pouch, coalescence of microcysts, simple retention of parathyroid secretions, or cystic degeneration in preexisting adenomas.[8,9]

Thorough head and neck examination followed by ultrasonography and fine needle aspiration of cysts is needed for complete assessment of PCs.[10]

Fine needle aspiration is the main diagnostic test for the identification of PCs. Differentiation from cystic thyroid lesions can be generally accomplished by gross examination. Aspiration of a dark brownish fluid has been related to thyroid lesions, whereas a water-clear fluid suggests a parathyroid origin.[11] Other than the gross examination of aspirated fluid, a high PTH level in needle aspirate also confirms its parathyroid origin[12,13] and differentiates clearly from thyroid cysts.[13] This is an important step in the evaluation of ectopically located intrathyroidal PCs, like this case.[8,13]

A PC in and around the thyroid gland will appear as a cold, nonfunctioning defect by radionuclide thyroid scanning, often simulating a nonfunctional thyroid nodule. Ultrasonography will demonstrate a smooth-walled anechoic lesion with good through-transmission of sound, indicating a cystic lesion.[14]

Currently, there is no consensus on the management of ectopic intrathyroidal PCs as these are very rare cases often incidentally discovered following surgical intervention.[15]

However, from our case and cases that were reported in the literature, percutaneous cyst aspiration would be a reasonable approach for uncomplicated nonfunctioning PCs.[8] Surgical

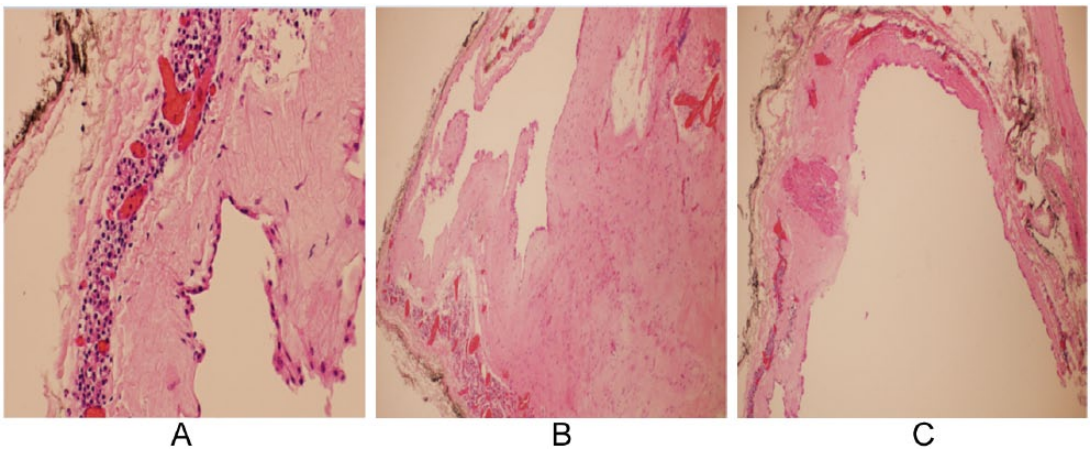

Figure 2. (A and B) Normal thyroid parenchyma with goitrous changes. (C) Unilocular parathyroid cyst surrounded by thyroid parenchyma.

excision remains the treatment of choice in functioning PCs or nonfunctioning cysts presenting with compressive symptoms or carcinomas.[8]

The role of sclerotherapy was effective in some cases of PC for recurrent lesions; it was associated with the risk of subsequent fibrosis and recurrent laryngeal nerve palsy.[8] However, the use of such alternative therapy in cases of intrathyroidal location of PCs is still unclear.

Author Contributions

Provided clinical care : MAM, MA and NA. Wrote first draft of manuscript : MA. Contributed to writing of manuscript : MAM. Agree with Manuscript result and conclusion : MHA and NA. Jointly developed the structure & argument of paper : MAM and MHA. Made critical revision and approved final version : MHA and NA. All authors reviewed and approved of the final manuscript.

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