CASE REPORT

A rare cystic lesion of the neck: parathyroid cyst

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SUMMARY

Parathyroid cysts are rarely observed neck masses. Their physical examination is not specific and preoperative diagnosis is usually difficult. Imaging findings and ultrasound-guided fine-needle aspiration with hormone analysis evaluation are important diagnostic criteria. A 48-year-old female patient admitted to our hospital with a symptom of swelling on the left side of the neck was diagnosed with parathyroid cyst by imaging methods (ultrasonography, MRI, parathyroid scintigraphy) and laboratory findings. Fine-needle aspiration biopsy was performed and because of relapse on the follow-up sclerotherapy was planned. Our aim in this study was to present the radiological findings of this case of parathyroid cyst.

BACKGROUND

Parathyroid cysts are rarely observed neck masses. Their physical examination is not specific and preoperative diagnosis is usually difficult. Imaging methods are valuable in diagnosis, while fine-needle aspiration biopsy (FNA) is used for diagnosis as well as for treatment. Our aim was to present the imaging findings of the patient diagnosed with parathyroid cyst by FNA biopsy and high parathyroid hormone (PTH) levels.

CASE PRESENTATION

A 48-year-old female patient presented with a symptom of slow growing mass on the left anterior side of the neck. Non-tender, mobile, soft mass on the anterior cervical triangle was detected on physical examination. All other system examinations were normal. No history of head and neck radiotherapy and thyroid–parathyroid disease was present. PTH

levels were 57.83 pg/mL (15–65 pg/mL), and Ca, P and thyroid hormone levels were normal. On ultrasonographic examination there was a cystic lesion with 3×1.7×2 cm dimension on the inferior of the left thyroid lobe, with no vascularisation on colour Doppler US (figure 1). On MRI the lesion was hypointense on T1-weighted sequence, hyperintense on T2-weighted sequence with no enhancement after contrast administration (figure 2). No pathological scintigraphical finding was present on parathyroid scintigraphy, planar and single-photo emission CT/CT imaging with 99mTc MIBI (figure 3). FNA was performed in order to diagnose and treat the patient. Approximately 10 cm³ of clear, colourless, watery liquid was aspirated. On the hormone analysis of the aspirated liquid PTH levels were 633.6 pg/mL (15–65 pg/mL) and thyroglobuline 5.1 ng/mL (1.4–78 ng/mL). These findings led to diagnosis of parathyroid cyst. The patient was followed-up every 6 months. Two year follow-up resulted with three relapses and reaspirations (figure 4). Ethanol ablation was performed for recurrent parathyroid cyst. After ethanol sclerotherapy, the patient was in remission no recurrence for 6 months of follow-up.

DIFFERENTIAL DIAGNOSIS

Thyroid nodules, thyroglossal canal cyst, thyroid adenoma and cyst, parathyroid carcinoma and thymic cysts.

OUTCOME AND FOLLOW-UP

The patient was followed-up every 6 months. Two year follow-up resulted with three relapses and reaspirations, thus surgery was planned.

Figure 1 Longitudinal (A) and axial (B) image of thyroid ultrasound; cystic lesion adjacent to the inferior of the left lobe, with non-clear boundaries.

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Figure 2 Neck MRI (A) T1-weighted (T1W), (B) T2-weighted (T2W), (C) fat suppression postcontrast T1W; cystic lesion adjacent to the left posteroinferior part of the thyroid lobe, pushing the thyroid gland to the anterior, adjacent to the trachea on the inferior, hypointense on T1W sequence, hyperintense on T2W sequence, with non-contrast enhancement.

DISCUSSION

Parathyroid cysts are rarely encountered neck masses. They are most commonly observed between the fourth and sixth decades.¹ Parathyroid cysts located on the neck are most commonly observed in women. The female–male ratio is 2.5/1. Functional parathyroid cysts are 1.6 times more commonly seen in men.² Functional and non-functional parathyroid cysts are histologically different. Non-functional cysts are simple cysts lined up with plane-cubical to low-columnar epithelium. Different parathyroid cells are located on the walls of the gland. Some parathyroid cysts do not have a definable wall, and it would be more suitable to name them pseudocysts. They may contain haemorrhagic focus, necrosis and even brown-bloody liquid. It is believed that they develop with the degeneration of adenomas. The other functional

cysts are multiloculated, complex cystic lesions with thin walls, closely related to adenoma and hyperplastic glands.¹

Parathyroid cysts are mainly asymptomatic. Very large cyst may rarely cause stridor, snoring, dysphagia, pain or compressive symptoms such as tracheal or oesophageal obstruction.³ In less than 10% of parathyroid cysts hyperparathyroidism may be observed.² These symptoms are related to cardiovascular, neuromuscular, gastrointestinal or renal system. On physical examination they are usually soft, mobile, non-tender masses generally localised on the posteroinferior side of the thyroid gland.³ More commonly they originate from inferior parathyroid glands and they are localised on the left as in our case.³

Serum PTH levels are used in the differentiation of functional from non-functional parathyroid cysts.⁴ PTH levels in functional

Figure 3 Methoxy-isobutyl-isonitrile (MIBI) (A), MIBI-single-photo emission CT/CT (B), no scintigraphic involvement was detected.

Figure 4 Thyroid ultrasound-longitudinal image; relapsed cyst on the inferior of the left lobe.

parathyroid cysts are high, while in non-functional parathyroid cysts PTH serum levels are normal as it was in our case. Lesions localised in this area have non-specific examination findings and they may have similar symptoms and findings as in thyroid gland lesions. It is difficult to differentiate thyroid nodules with examination. Furthermore, thyroglossal canal cyst, thyroid adenoma and cyst, parathyroid carcinoma and thymic cyst should be considered in the differential diagnosis.³ Therefore, imaging is essential for diagnosis, differentiation and treatment planning.

US, CT and parathyroid scintigraphy are useful in the diagnosis of parathyroid cysts.³ The use of MRI in lesions of this area is undisputed. The localisation of the mass, its dimensions and the content of the mass are shown with the high soft tissue resolution, while the multiplanar imaging feature helps assess the relationship with the surrounding tissues. Also, thallium-201 (Tl201) and technetium-99m (Tc99m) pertechnetate subtraction imaging techniques are very successful in the imaging of parathyroid adenomas. In both imaging techniques parathyroid cysts are observed as cold areas.² In our case there was no involvement in scintigraphy.

Usually thyroid cysts are brown, bloody and thyroid hormone levels of the liquid are high. On the contrary, parathyroid cysts are clear, watery with high PTH levels in the liquid. High PTH and low thyroglobulin levels are of diagnostic value for parathyroid cysts.² Our case was also diagnosed with high PTH and low thyroglobulin levels obtained in the hormonal test of the cystic liquid. Parathyroid cysts are treated with aspiration, injection of sclerosing agent and surgical excision. FNA is technically usable, diagnostic and curative method.³ Early onset complication after the aspiration is haemorrhage, and late onset complication is relapse of the cyst. Aspiration can be repeated in either of the cases. Surgical method of treatment is preferred in functional cysts.²

Learning points

- ▶ Parathyroid cysts are usually asymptomatic, rarely observed benign masses of the neck.
- ▶ Physical examination findings are not specific.
- ▶ Imaging methods are essential in the diagnosis and treatment of this region.
- ▶ Diagnosis can be made by imaging and laboratory findings together.

Competing interests None.

Patient consent Obtained.

Provenance and peer review Not commissioned; externally peer reviewed.

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