

Case report

Parathyroid cyst: differential diagnosis

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Accepted 14 September 2020

SUMMARY

Parathyroid cysts are rare lesions of the cervical region and less frequently of the mediastinum. They occur mostly in women and are usually asymptomatic. They generally occur in the fourth and fifth decades of life and mainly are non-functioning. They commonly present as a neck mass that is found incidentally during surgery or in imaging test. Its importance lies in the difficulty in diagnosis, often confusing itself with thyroid pathology. The diagnosis is usually made intraoperatively, confirmed by histopathological examination. The aim of this paper is to report a case of parathyroid cyst that mimics a thyroid nodule.

BACKGROUND

The incidence of parathyroid cysts varies between 0.08% and 3.4% of cases of thyroid or parathyroid resection. They can be classified as functioning and non-functioning depending on the association with hyperparathyroidism. About 90% of the cysts are non-functioning.

CASE PRESENTATION

A 35-year-old male patient referred to the consultation on thoracic surgery for a diverting thyroid cyst, an incidental finding of CT scan performed by peritonsillar abscess. After the diagnosis, the patient reported episode of chest pain and dyspnoea during exercise. He underwent thoracic CT that showed a cystic lesion of the upper mediastinum with approximately 85×38 mm, making contact with the inferior pole of the right hemithyroid. This lesion displaces the trachea to the left, conditioning slight tracheal narrowing. The patient was monitored by a thoracic surgeon and the examination was repeated after 6 months, showing a decrease of the size to 30×46×60 mm. After the second tomography, the patient was recommended for general surgery. The patient had no symptoms of hyperparathyroidism. A fine-needle aspiration cytology was insufficient for diagnosis and parathyroid hormone was not measured.

Analytically, the Thyroid-stimulating hormone (TSH), free T4, Parathyroid hormone (PTH) and calcium levels are within range and unchanged.

TREATMENT

The patient underwent surgery and it was found that the cyst was adherent to the right parathyroid, suspected to be a parathyroid cyst. The cyst fluid was then sent for cytochemical examination, which proved diagnosis. A parathyroidectomy was carried out.

The parathyroid hormone measure of the cyst liquid was 1357 pg/mL and the serum dose was 51.40 pg/mL (reference value 14.76–83.10 pg/mL). TSH and T4 of the cyst fluid were not measured, and in serum, the levels are within the range and unchanged. Anatomopathological examination demonstrated simple parathyroid cyst aspects.

OUTCOME AND FOLLOW-UP

Postoperative occurred without complications, the patient was discharged the day after surgery. Followed for 12 months, no occurrences were recorded.

DISCUSSION

Parathyroid cysts are considered rare, with about 300 cases described in the literature.^{1–6} They occur in both sexes, being more frequent in women, in a proportion of 2.5:1 in relation to men, usually between the fourth and fifth decades of life. The vast majority is located in the lower parathyroid glands and may occur in ectopic sites, especially in the thymus and mediastinum. About 10% of the cases are visualised in the mediastinum, more often mediastinum anterior.¹

They can be classified as functioning and non-functioning. Functioning generally results from the degeneration of a true adenoma, however, simple cysts associated with hyperparathyroidism are described. Functioning cysts tend to occur in men, being 1.6 times more frequent than women, and at more advanced ages.^{1–3} In both types, its content presents with high level of parathormone.^{1,3,6} Most are asymptomatic, and the majority of symptoms is caused by the compressive effect when they reach large dimensions and include dysphagia, hoarseness, pain, neck mass or dyspnoea due to tracheal deviation.⁵ Hoarseness is caused by vocal cord paresis that can be explained by oedema and fibrosis of the recurrent laryngeal nerve combined with pressure. There are also symptoms resulting from hyperparathyroidism, with elevated serum calcium and repercussions at the level of the central nervous system, neuromuscular, gastrointestinal tract, kidneys and cardiovascular system.⁵ They may also be found occasionally during a surgical exploration or radiological examination.³ Physical examination finds a solitary mass of cystic consistency, painless and mobile at swallowing.⁵ Making a differential diagnosis with thyroid gland cyst, bronchial bowel cyst, thyroid adenoma and parathyroid carcinoma.^{6,7} The preoperative suspicion is of paramount importance, most of the time, the diagnosis is made during surgery or in anatomopathological examination of the surgical specimen.



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To cite: Silva R, Cavadas D, Vicente C, et al. *BMJ Case Rep* 2020;**13**:e232017. doi:10.1136/bcr-2019-232017

Rare disease

A fine-needle aspiration can be used to perform the analysis of the cyst fluid. A difficulty in distinguishing parathyroid and follicular thyroid pathologies has been demonstrated, and there may be concomitance of these pathologies.⁵ The presence of bright, aqueous fluid is more highly suggestive of parathyroid cyst, where the measurement of parathormone in the fluid is indicated for the diagnose.⁵ In both functioning and non-functioning cysts, an intracystic, parathormone level is greater than serum. Imaging tests are indicative of cystic neck lesion but are inconclusive.⁵ Ultrasound examination shows a cystic, anechoic structure with thin walls and posterior hyperechoic enhancement.³ CT and magnetic nuclear resonance demonstrate only a neck mass with cystic content and their anatomical relationships. Scintigraphy may reveal a non-functioning cold nodule, not being effective in distinguishing thyroid or parathyroid lesions.^{1,3} The histological features are generally thin internal wall composed of connective tissue and islands of parathyroid cells, a solitary layer of cuboidal and columnar cells with glycogen positive staining.^{5,8,9} The presence of parathyroid tissue in the cyst wall is diagnostic. The cyst may be attached to the thyroid tissue, but is easily separated.^{1,5} The treatment for uncomplicated non-functioning cysts can be aspiration, guided by ultrasonography, since there are no reports of malignancy. Sclerotherapeutic substances may be used, although not universally accepted due to complications such as neurotoxicity or paralysis of the recurrent laryngeal nerve. In cases of recurrence or cyst complicated by symptoms of dysphagia, dyspnoea or paralysis of the recurrent laryngeal, the primary treatment should be surgical.¹⁰⁻¹³ Treatment of the

functioning cyst is always surgical. In macroscopic observation, is a solitary, unilocular cyst adherent to the thyroid tissue, but with a defined cleavage plane with thin walls, shiny and clear, aqueous content in the inferior position of the neck. The mediastinal cysts are usually treated with surgery. This case report exemplifies the diagnostic difficulties of the parathyroid cyst in the preoperative period, which is in agreement with the literature. In this case, if the diagnosis was made before surgery, the patient can be treated initially with aspiration guided by ultrasonography instead of surgery, once the cyst was not functional.

Contributors RS wrote the manuscript in consultation with DC, CV and JC.

Funding The authors have not declared a specific grant for this research from any funding agency in the public, commercial or not-for-profit sectors.

Competing interests None declared.

Patient consent for publication Obtained.

Provenance and peer review Not commissioned; externally peer reviewed.

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Learning points

- ▶ Parathyroid cysts are rare lesions and the preoperative diagnosis is difficult.
- ▶ The definitive diagnosis is made by monitoring serum calcium levels and sending cyst fluid for parathormone measurement.
- ▶ If the parathyroid cyst is an uncomplicated non-functioning cyst and the diagnosis made before surgery, can avoid surgery with fine-needle aspiration guided by ultrasound.
- ▶ Parathyroid cysts must be included and be considered within the differential diagnosis of all neck swelling.

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