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滋賀医科大学雑誌

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A Case of Non-functioning Parathyroid Cyst with Tracheal Constriction

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Abstract: Parathyroid cysts are rare lesions of the neck and superior mediastinum. A 32-year-old woman visited a physician complaining of slight dyspnea, which was attributed to a lump on her neck. Ultrasonography and computed tomography showed a cyst extending from the left lobe of the thyroid gland to the superior mediastinum; and X-ray images revealed right deviation of the trachea. The cyst disappeared after fine-needle aspiration. However, the cyst fluid reaccumulated subsequently and she was admitted to our department. No abnormalities were recognized by blood chemical examinations or thyroid and parathyroid function tests. The cyst was removed surgically and was diagnosed as a non-functioning parathyroid cyst, on the basis of high intact parathyroid hormone (PTH) level in the cyst fluid. The patient has made a full recovery, and shows no evidence of recurrence after 30 months.

Parathyroid cysts can be differentiated from thyroid cysts by criteria such as the color of the cyst fluid, intact PTH levels in the cyst fluid, and the concentration of calcium, phosphate and PTH in the serum. Parathyroid cysts are typically located in the neck, and are solitary and unilocular; 10 percent occur in the mediastinum and 10 to 25 percent are complicated with hyperparathyroidism. Parathyroid cysts are classified into functioning and non-functioning depending on the presence of hypercalcemia. Not only functioning parathyroid cysts but also non-functioning one should be removed surgically in cases of cyst fluid reaccumulation or tracheal and esophageal constriction.

Key Words: Parathyroid cyst, Parathyroid hormone

Introduction

Clinically evident parathyroid cysts are rare, although microcystic degeneration is occasionally seen in hyperplastic parathyroid glands or in parathyroid adenoma. Parathyroid cysts are typically located in the neck region with approximately 10 percent located in the mediastinum. Clinically, parathyroid cysts are classified into non-functioning cysts and functioning cysts associated with hypercalcemia. This report presents a case of a non-functioning parathyroid cyst removed surgically because of tracheal constriction.
Case report

A 32-year-old woman noticed a lump on the left side of the neck in January 1995. She visited a physician complaining of mild dyspnea. She had no relevant medical or family history. The lump had increased in size to 6 cm in diameter. A neck X-ray demonstrated right deviation of the trachea (Fig.1). Ultrasonography and computed tomography of the neck revealed a cyst, $65 \times 45$ mm, extending from the left lobe of the thyroid gland into the superior mediastinum (Fig.2). Fine-needle aspiration of the cyst yielded 50 ml of clear watery fluid, in which cellular components were absent by cytological examination. After the aspiration, the cyst disappeared.

In March 1995, the cyst fluid had reaccumulated, and the patient was admitted to our department. An elastic soft smooth lump, $30 \times 20$ mm in size, was palpated at the left base of the thyroid gland. No other significant findings were observed. The results of thyroid function tests and serum levels of intact parathyroid hormone (PTH), calcium and phosphate were all within normal limits. We suspected that the cyst was a follicular adenoma of the thyroid or a parathyroid cyst. A thin-walled translucent cyst, $55 \times 25 \times 16$ mm in size, was removed at surgery (Fig.3). It was adherent to the left lobe of the thyroid. Peroperative needle aspiration revealed a brownish serous fluid. The intact PTH level in the cyst fluid was revealed to 335.6 pg/ml. The pathohistological observations showed a cyst lined with a single layer of cuboidal epithelium. Its wall consisted of fibrous tissue which included clusters of parathyroid cells (Fig.4). The patient had an uneventful postoperative course and has shown no evidence of recurrence during the 30 months.
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Fig. 4. Photomicrograph of the specimen showing the cyst lumen was lined with cuboidal epithelium, and clusters of parathyroid cells (arrows) were scattered in the fibrous tissue of the cyst wall (Hematoxylin and Eosin stain, ×200).

Discussion

The first case of the parathyroid cyst was described by Sandstrom in 188014, and the first report of surgical resection of such a cyst was presented by Goris in 19055. Mostly parathyroid cysts are located in the neck region and present as asymptomatic lumps adjacent to the inferior pole of the thyroid gland, with about 10 percent located in the mediastinum6. They are usually solitary and unilocular. Approximately 10 to 25 percent of parathyroid cysts are associated with hyperparathyroidism8,9. Cysts accompanied by hypercalcemia should be classified into functioning cysts, and the remainder should be classified into non-functioning cysts. The incidence of parathyroid cysts in general is 2.5 times higher in women, while functioning cysts are 1.6 times more common in men11. Most of the patients are between 30 and 50 years of age, and cases in children have not been reported12.

Two different hypotheses have been settled concerning the genesis of parathyroid cysts: cystic degeneration, and development from microcysts either embryological remnants or acquired microcysts. The first theory has been used particularly in relation to functioning cysts, representing cystic degeneration of a true parathyroid adenoma12. The second theory that parathyroid cysts may be formed by the coalescence of preexisting microcysts, is supported by the high incidence of parathyroid microcysts in autopsy series13 and in experimental study15. The most probable cause of parathyroid cysts is the cystic dilatation of vestigial remnants of the third and fourth branchial clefts which have secondarily incorporated adjacent parathyroid tissue2,4. In the fetus, Kursteiner canals (vesicular, canalicular, or glandlike rudiments) have been described, and it is suggested that they may coalesce or develop into large cysts. Closer research has shown that more cysts occur in the inferior parathyroids where Kursteiner canals are more abundant. Our case supports the latter theory, as the cyst existed on the left base of the thyroid gland.

Ultrasonography and computed tomography are very useful for revealing the cystic nature of the mass, but morphological differentiation of parathyroid cysts from thyroid cysts is difficult. The clear color of the aspirated fluid (in contrast to the serous, serosanguinous or chocolate-like fluid of thyroid cysts), and the high concentration of PTH in the fluid essentially establish the diagnosis of a parathyroid cyst. The concentration of serum calcium, phosphate and PTH should be also examined. We did not attempt to examine PTH levels in the cystic fluid, and therefore could not diagnose the parathyroid cyst preoperatively.

Functioning parathyroid cysts should always be removed surgically, not only to eradicate the usually single degenerated adenoma, but also to confirm the absence of parathyroid hyperplasia which rarely form cysts. In contrast to functioning cysts, non-functioning lesions should be treated intermittently by needle aspiration2,7 or sclerotherapy10,16,17. Surgical excision is war-
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ranted in the cases that the cyst fluid reac-
cumulates or the trachea and the esophagus are
constricted by the parathyroid cyst. In our case,
surgery was indicated due to both fluid reac-
cumulation and tracheal constriction.

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非機能性上皮小体嚢胞の1例

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上皮小体嚢胞は比較的稀な疾患である。症例は32歳女性で、左前頭部腫瘤と軽度の呼吸困難にて近医を受診した。超音波検査、CTで左前頭部に上縦隔にまでおよぶ嚢胞を認め、X線で気管の右方への圧排を認めた。嚢胞穿刺後、症状は消失した。その後再び内容液が貯留し、精査目的に当科を紹介された。血液生化学検査、甲状腺、上皮小体機能検査は正常であった。嚢胞摘出術を施行し、嚢胞液中の上皮小体ホルモンが高値で、非機能性上皮小体嚢胞と診断された。術後3ヶ月再発を認めない。

上皮小体嚢胞と甲状腺嚢胞の鑑別は内容液の色調、上皮小体ホルモン値および血清中のカルシウム、リン、上皮小体ホルモン値が参考になる。ほとんどの上皮小体嚢胞は頭部にみられ、単発性、単胞性である。10%は縦隔に発生し、10〜25%に上皮小体機能亢進症を伴う、高カルシウム血症を認めるものを機能性、その他を非機能性と分類している。機能性上皮小体嚢胞は手術適応であるが、非機能性でも内容液が再貯留する場合、気管あるいは食道の圧排を認める場合は手術適応である。

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