滋賀医大誌 13, 57-62, 1998

A Case of Non-functioning Parathyroid Cyst with Tracheal Constriction

Hajime ABE[1], Tohru TANI[1], Hirotaka SAKO[2], Tohru SHIRAISHI[1]
Masutsugu FUJITA[3], Masashi KODAMA[1]

1) First Department of Surgery, Shiga University of Medical Science
2) Department of Surgery, Ohmihachiman City Hospital
3) Department of Surgery, Kounan Hospital

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[3]. Parathyroid cysts are typically located in the neck region with approximately 10 percent located in the mediastinum[6]. 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 bacause of tracheal constric-

Received September 24, 1997: Accepted after revision December 3, 1997
Correspondence: Hajime Abe, First Department of Surgery, Shiga University of Medical Science, Seta-Tsukinowa, Otsu, Shiga 520-2192, Japan

tion.

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, 65×45mm, 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, 30×20 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, 55×25×16mm in size, was removed at surgery (Fig.3). It was adherent to the left lobe of the thyroid. Perioperative needle aspiration revealed a brownish serous fluid. The intact PTH level in the cyst fluid was revealed to 335.6pg/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

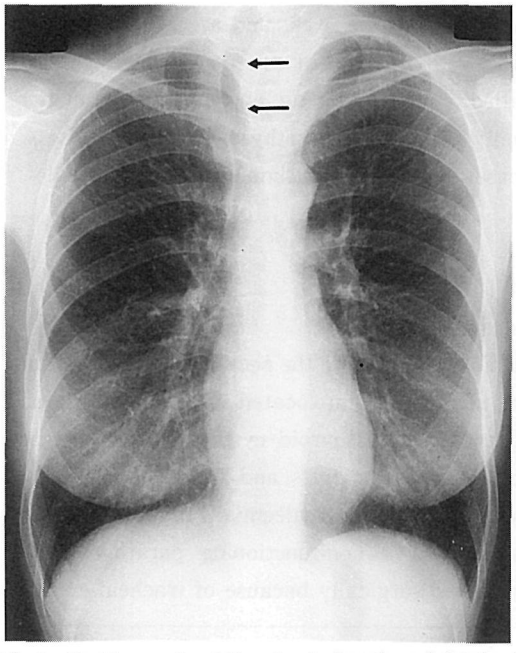

Fig.1. Radiograph of the chest showing right deviation of the trachea(arrows).

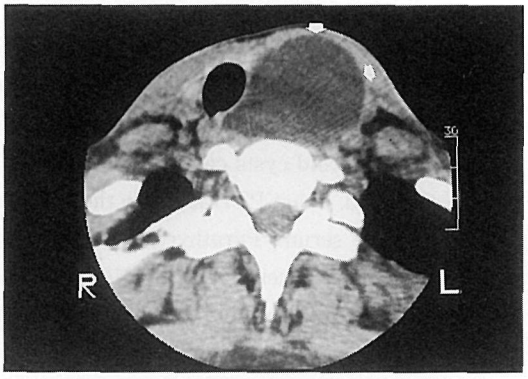

Fig.2. Computed tomographic scan at the level of the neck demonstrating a cystic mass (arrows) adjacent to the left thyroid gland.

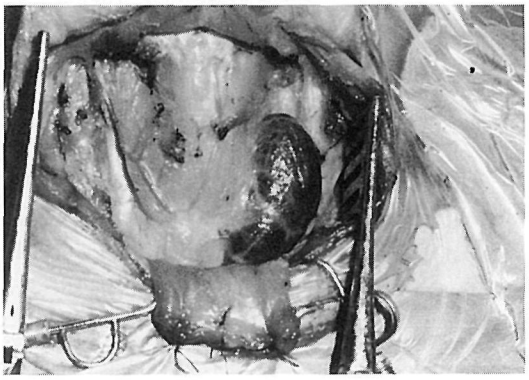

Fig.3. A cystic lump in the operative field.

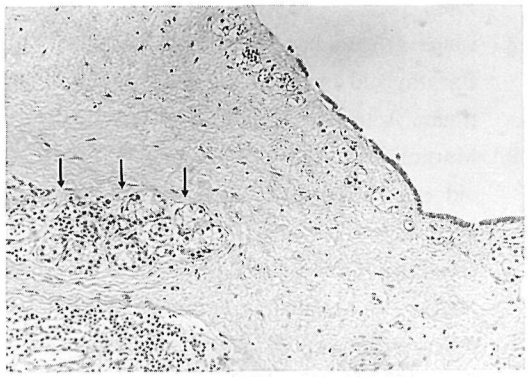

Fig.4. Photomicrograph of the specimen showing the cyst lumen was lined with cuboidal epithelium, and clusters of parathyroid cells (arrows) were scattered in the fibrous tissue of the cyst wall (Hematoxylin and Eosin stain, ×200).

after her operation.

Discussion

The first case of the parathyroid cyst was described by Sandstrom in 1880[14], and the first report of surgical resection of such a cyst was presented by Goris in 1905[5]. 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 mediastinum[6]. They are usually solitary and unilocular. Approximately 10 to 25 percent of parathyroid cysts are associated with hyperparathyroidism[8,9]. 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 men[11]. Most of the patients are between 30 and 50 years of age, and cases in children have not been reported[13].

Two different hypotheses have been settled concernig 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 adenoma[12]. 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 series[1] and in experimental study[15]. 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 tissue[2,4]. 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 aspiration[2,7] or sclerotherapy[10,16,17]. Surgical excision is war-

ranted in the cases that the cyst fluid reaccumulates or the trachea and the esophagus are constricted by the parathyroid cyst. In our case, surgery was indicated due to both fluid reaccumulation and tracheal constriction.

References

1) Black BM, Watts CF: Cyst of parathyroid origin: Report of two cases and study of incidence and pathogenesis of cysts in parathyroid glands. Surgery 25:941-949, 1949.
2) Clark OH: Parathyroid cysts. Am J Surg 135: 395-402, 1978.
3) Fallon MD, Haines JW, Teitelbaum SL: Cystic parathyroid gland hyperplasia. Hyperparathyroidism presenting as a neck mass. Am J Clin Pathol 77:104, 1982.
4) Gilmow JR: The embryology of the parathyroid glands, the thymus and certain associated rudiments. J Pathol Bacteriol 45:507-522, 1937.
5) Goris D: Extirpation de trois lobules parathyroidens kystiques. Ann Soc Belg Chir 150: 394-398, 1905.
6) Guvendik L, Oo LKM, Roy S, Donaldson LA, Kennedy DD: Management of a mediastinal cyst causing hyperparathyroidism and tracheal obstruction. Ann Thorac Surg 55:167-168, 1993.
7) Kodama T, Obara T, Fujimoto Y, Ito Y, Yashiro T, Hirayama A: Eleven cases of nonfunctioning parathyroid cyst - Significance of needle aspiration in diagnosis and management. Endocrinol Jpn 34:769-777, 1987.
8) Linos DA, Schoretsanitis G, Carvounis E: Parathyroid cysts of the neck and mediastinum. Acta Chir Scand 155:211-216, 1989.
9) Margolis IB, Wayne R, Organ CH: Parathyroid cysts: Functional and mediastinal. Surgery 77:969-975, 1971.
10) Okamura K, Ikenoue H, Sato K, Yoshinari M, Nakagawa M, Kuroda T, Fujishima M: Sclerotherapy for benign parathyroid cysts. Am J Surg 163:344-345, 1992.
11) Page GW, Burke ML, Metzger WT: Parathyroid cysts. Am Surg 50:29-32, 1984.
12) Rogers LA, Fitter B, Pette WPJ: Parathyroid cyst and cystic degeneration of parathyroid adenoma. Arch Pathol 88:476-479, 1969.
13) Rosenberg J, Orlando R, Ludwig M, Pyrtek LJ: Parathyroid cysts. Am J Surg 143:473-480, 1982.
14) Sandstrom I: Om en ny Kortel hos menniskan och atskilliga daggdjur. Upsala Lakarforening For Handlingr 15:441-471, 1880.
15) Selye H, Ortega MR, Tuchweber B: Experimental production of parathyroid cysts. Am J Pathol 45:251-259, 1964.
16) Silverman JF, Khazanie PG, Norris T, Fore WW: Parathyroid hormone (PTH) assay of parathyroid cysts examined by fine-needle aspiration biopsy. Am J Clin Pathol 86:776-780, 1986.
17) Takeuchi N, Dohi K, Matsumoto H, Nishiki M, Kishi N, Fujii T, Matsuyama T, Fujikura T, Ezaki H: A parathyroid cyst effectively treated with a sclerosing agent. Jpn J Surg 15:405-407, 1985.

非機能性上皮小体嚢胞の1例

阿部　元[1)]，谷　徹[1)]，迫　裕孝[2)]，白石　享[1)]
藤田　益嗣[3)]，小玉　正智[1)]

1）滋賀医科大学第一外科，2）近江八幡市民病院外科，3）甲南病院外科

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，左前頸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 で左前頸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30カ月再発を認めていない．

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頸部にみられ，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．