

CASE REPORT

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Hemangioma of the Thyroid

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Abstract

Introduction: Thyroid hemangioma is very rare, and only a few cases have previously been reported. We encountered a patient with thyroid hemangioma diagnosed after surgery.

Case Report: A 71-year-old woman visited our hospital with a mass in the left thyroid region. A 5-cm, elastic mass of the thyroid was palpable in the left anterior neck. On cytology by fine-needle aspiration (FNA), the specimen mainly contained blood components without apparent atypical cells. A tumor with abundant blood flow was suspected based on Doppler ultrasonography. Adenomatous goiter was suspected, and subtotal thyroidectomy was performed. A blood clot was present in the tumor, and hemangioma was diagnosed on postoperative histopathological examination.

Discussion: Preoperative diagnosis of thyroid hemangioma is difficult. However, Doppler ultrasonography and FNA are useful for diagnosis. A differential diagnosis of hemangioma should be considered when blood flow is abundant and only blood components are collected.

Keywords: thyroid, hemangioma, ultrasonography, Doppler

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Background

Hemangioma is a benign tumor derived from vascular endothelial cells, and about 65% of all cases develop in the head and neck region.¹ Most cases of thyroid hemangioma represent secondary hemangioma or pseudomalignancies,² caused by vascular proliferation according to the organization of fine-needle aspiration (FNA)-induced hematoma. However, primary thyroid hemangioma is very rare, with only a small number cases previously reported (Table 1).^{3–11} We encountered a patient who underwent surgery for adenomatous goiter, but the tumor was identified as thyroid hemangioma after surgery. Preoperative diagnosis of this entity is very difficult. However, we suggest that Doppler ultrasonography and FNA are useful in achieving a diagnosis. We report this case herein and discuss with reference to the literature.

Case Presentation

A 71-year-old woman visited a physician because a left thyroidal mass was detected in the swollen anterior neck on a medical check-up in 2000. The patient had been unaware of the mass and experienced no subjective symptoms. Adenomatous goiter was suspected, and the patient was orally administered

levothyroxin, but the size of the lesion remained unchanged. The patient was referred to the outpatient clinic of the Head and Neck Surgery Department at the Cancer Institute Hospital for a second opinion in November 2001. No past medical or family history of note was elicited. Physical examination identified a soft, movable, elastic thyroid tumor measuring 5 × 3 cm in the left anterior neck. No recurrent nerve paralysis was noted.

Results of a thyroid function test are summarized in Table 2. Ultrasonography detected a 52 × 48 × 35-mm tumor in the left thyroid (Fig. 1A). The surface was smooth, the boundary was clear, and the content was partially cystic. Blood flow was abundant on Doppler ultrasonography (Fig. 1B).

Cytology following FNA showed that the specimen mainly contained blood components, suggesting a tumor with abundant blood flow. No follicular epithelial component was present. Macrophages phagocytosing red blood cells were also noted (Fig. 2).

Based on these findings, adenomatous goiter was suspected, consistent with the diagnosis by the previous physician. Surgery was indicated based on the tumor size, and was performed on February 22, 2001. Subtotal thyroidectomy leaving the right upper pole was performed, because calcification was noted in

Table 1. Previously reported cases of thyroid hemangioma.

Case	Authors	Year published	FNA	Size	Preoperative diagnosis	Treatment
1	Pickleman ³	1975	–	4 cm	Hemangioma	Lobectomy
2	Pendse ⁴	1998	Only blood	6 cm	–	Lobectomy
3	Kumar ⁵	2000	Only blood	4 cm	Hemangioma	Surgery
4	Rios ⁶	2001	–	4 cm	Multinodular goiter	Total thyroidectomy
5		2001	–	3 cm	Cold nodule	Lobectomy
6	Suzuki ⁷	2004	Only blood	2.5 cm	Malignant thyroid tumor, hemangioma	Lobectomy
7	Senthilvel ⁸	2005	–	6 cm	Arteriovenous anomaly, lymphoma, undifferentiated carcinoma, angiosarcoma, hemangioma	Lobectomy
8	Kumamoto ⁹	2005	Only blood	7 cm	Adenoma	Lobectomy
9	Kano ¹⁰	2005	–	5.5 cm	Papillary carcinoma	
10	Lee ¹¹	2007	–	17 cm	Thyroid mass	Thyroidectomy
11	Our case	2009	Only blood	5 cm	Adenomatous goiter	Subtotal thyroidectomy

Table 2. Thyroid function test.

	Value	Normal value
FT4	1.22 ng/dl	0.9–1.8 ng/ml
FT3	3.41 pg/ml	2.4–4.3 pg/ml
TSH	1.46 mU/ml	0.24–3.70 mIU/ml
Tg	540 ng/dl	<30 ng/ml
TgAb	9.4 U/ml	<40 U/ml
TPOAb	0.5 U/ml	<50 U/ml

Abbreviations: FT4, free thyroxine; FT3, free triiodothyronine; TSH, thyroid-stimulating hormone; Tg, thyroglobulin; TgAb, anti-thyroglobulin antibody; TPOAb, anti-thyroid peroxidase antibody.

the lower region of the right lobe. The tumor was not adherent to the surrounding organs, and was relatively easily detached. Intraoperative blood loss was 150 g. The tumor was encapsulated, and the cut surface was cystic and semi-solid (Fig. 3).

Blood clot was present in some regions of the tumor. Macroscopic observation did not contradict adenomatous goiter. Postoperative course was uneventful and the patient was discharged on hospital day 6.

Histopathological examination (Fig. 4) showed dilated blood vessels with irregular lumina retaining blood. Cavernous hemangioma was therefore diagnosed. No recurrences have been identified as of 6 years after surgery.

Discussion

Hemangioma is a tumor characterized by vascular growth, and about 65% of cases develop in the head and

neck region.¹ In this region, the tumor develops in the parotid gland, tongue, larynx, pharynx or oral cavity, but rarely in the thyroid. Ten cases have been reported. Only two reported cases have been correctly diagnosed preoperatively, because the difficulty of preoperative diagnosis.

Various tests have been investigated,¹ such as plain radiography, computed tomography, magnetic resonance imaging, ultrasonography, scintigraphy, and angiography. Plain radiography and computed tomography may detect phleboliths, thus facilitating the diagnosis, but definitive diagnosis is still elusive because adenomatous goiter included in the differential diagnosis of hemangioma may contain grossly calcified regions, and microcalcification may also be present in papillary carcinoma. Pickleman et al³ performed angiography to identify the feeding blood vessel distributed from the inferior thyroid artery, and diagnosed hemangioma before surgery. Most arteries distributed in cavernous hemangioma were blurred, and the feeding artery or outflow vein was not dilated.¹² Embolization may be considered before surgery for hemangioma present over an extended area,¹³ and angiography is necessary for these cases, but reported cases of thyroid hemangioma have all been localized with a diameter of 4–5 cm. Invasive tests such as angiography may not be necessary for such cases. In the present patient, the mass could be diagnosed as a tumor with abundant blood flow by Doppler ultrasonography before surgery, but not as hemangioma. However, ultrasonography is very useful as a less invasive test compared to other

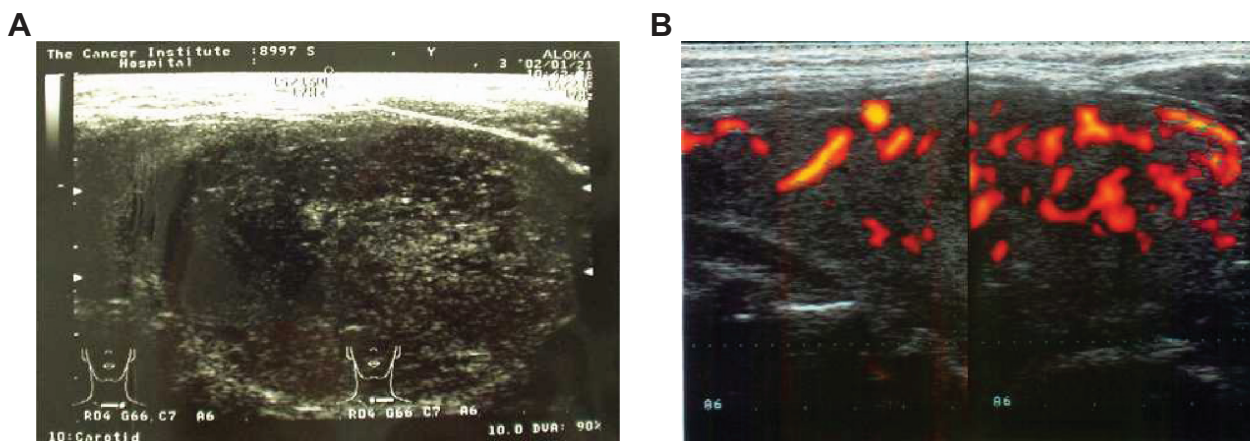


Figure 1. Ultrasonographic examinations. **A)** Ultrasonography detected a 52 × 48-mm tumor in the left thyroid. The surface was smooth, boundaries were clear, and content was partially cystic. **B)** Blood flow was abundant on Doppler ultrasonography.

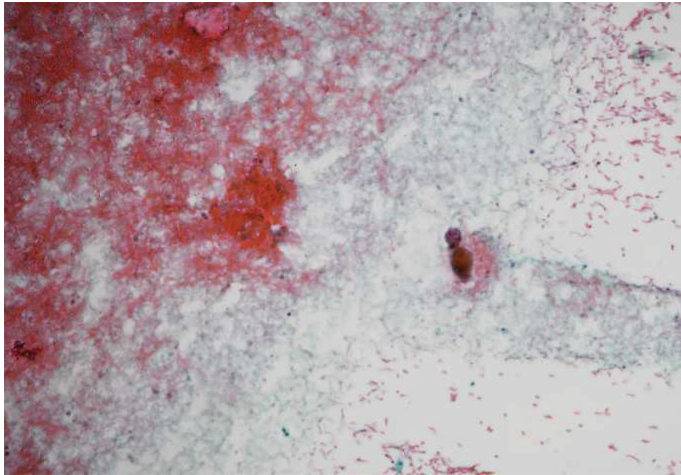


Figure 2. Cytological examination. The specimen mainly contained blood components, suggesting a tumor with abundant blood flow. No follicular epithelial component was present.

methods, and tumors with abundant blood flow can be detected using the Doppler method.

FNA is essential for the diagnosis of thyroid tumors in most cases. The specimen of hemangioma contains only blood components as a feature. FNA was performed twice in some cases, but only blood components were obtained both times. However, hemangioma cannot be diagnosed based on the finding that only blood components are present in the FNA specimen. Only blood components may be collected from some cases of adenoma with abundant

blood flow, and such specimens may also be obtained due to technical failure. However, tumors with rich blood flow are predictable, and the detection of such tumors leads to the inclusion of hemangioma in the differential diagnosis.

Treatment as for other benign thyroid tumors is reportedly applicable. Observation of the clinical course is selected when the tumor is small or asymptomatic, and surgical resection is applied when tumor properties change or tumor growth is identified. Since preoperative diagnosis is very difficult, most cases have been diagnosed after resection.

The tumor was also diagnosed as hemangioma after surgery in this patient. Preoperative diagnosis is difficult, and a definitive diagnosis can only be made by postoperative pathological examination. However, we consider Doppler ultrasonography and FNA as useful for diagnosing thyroid hemangioma. When blood flow in a suspected adenomatous goiter is abundant on Doppler ultrasonography, and only blood components are collected by FNA, as in this patient, hemangioma should be kept in mind as a differential diagnosis.

Summary

Preoperative diagnosis of thyroid hemangioma is difficult, and a definitive diagnosis can only be made by postoperative pathological examination.

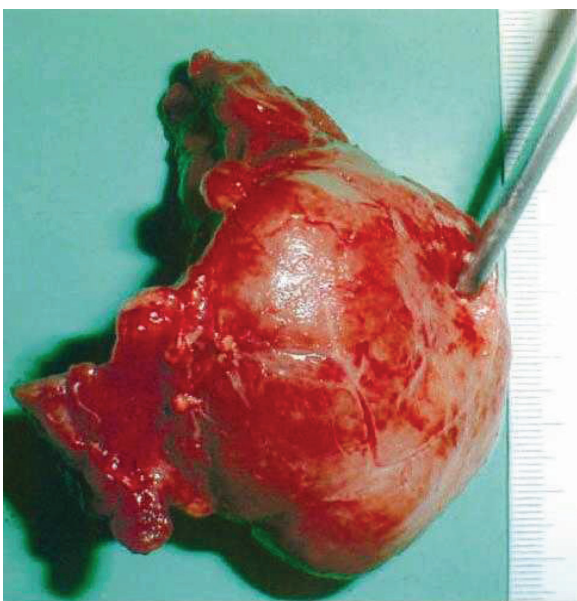


Figure 3. Pathological examination. The tumor was encapsulated, with blood clot present in some regions.

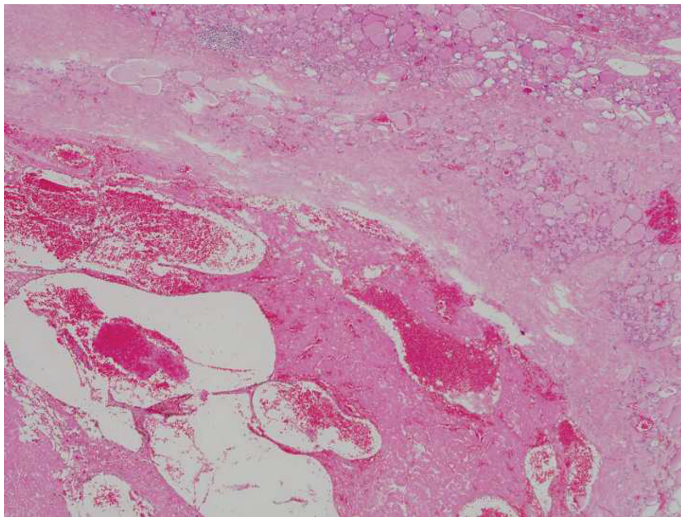


Figure 4. Histopathological examination. Dilated blood vessels with irregular lumina retaining blood were noted.

Doppler ultrasonography and FNA are useful for diagnosis.

A differential diagnosis of hemangioma should be considered when blood flow is abundant and only blood components are collected.

Disclosures

The authors report no conflicts of interest.

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