

Thymolipoma Combined with Hyperthyroidism Discovered by Neurological Symptoms

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Thymolipomas are rare slow-growing mediastinal thymic neoplasms. Most cases are asymptomatic and are sometimes discovered as a huge mass on chest x-ray films. A few cases have been discovered during examinations for other diseases. We report the second case of thymolipoma combined with hyperthyroidism in the English language literature. Neurological symptoms suddenly appeared in a 45-year-old woman. Central nervous system disorder was suggested but no significant abnormalities were found on brain MR nor were there any neurological signs. Several months later, neurological and systemic examinations on admission revealed hyperthyroidism and an anterior mediastinal tumor, 9.0×5.0×3.0 cm in size on chest CT films. Despite treatment of hyperthyroidism by medication, her neurological symptoms remained. Neurologists recommended resection of the mediastinal tumor. Malignancy could not be ruled out because of the irregularity of the tumor appearance on contrast-enhanced chest CT. Furthermore, the tumor appeared to be attached to the ascending aorta, so cytological and/or pathological diagnosis by CT-guided needle biopsy before operation were contraindicated. Extended thymectomy was performed in May 2005. The pathological diagnosis was benign thymolipoma consisting of mature fatty tissue and thymic tissue structures with Hassall's corpuscles. Her neurological symptoms seemed slightly but not markedly improved. The relationship between thymolipoma and hyperthyroidism is still unknown. (*Ann Thorac Cardiovasc Surg* 2007; 13: 114–7)

Key words: thymolipoma, hyperthyroidism, neurological symptom

Introduction

Thymolipomas are mesenchymal mediastinal tumors constituting only a small fraction of all thymic neoplasms and their pathogenesis as well as biological characteristics are unknown.¹⁾ This case was discovered by neurological symptoms suggesting hyperthyroidism. To the best of our knowledge, this is only the second of thymolipoma combined with hyperthyroidism reported in the interna-

tional English literature.²⁾

Case

A 45-year-old woman suddenly fell on her right side whilst getting up in March 2003. Thereafter, it was possible to walk whilst balancing against the wall. She was nauseous and her right hand trembled. Three days later, she received a clinical consultation on the island where she was living alone. Whenever she turned her head her head to the left, it exacerbated her dizziness. She had a decrease of muscular power in the right upper arm. She was referred to the department of neurology of our hospital on the suspicion of a central nervous system disorder 5 days after the initial onset, but neither neurological examinations nor brain MR showed any abnormalities. She was observed for several months.

At the end of August of the same year, she complained

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Fig. 1. Chest x-ray films appear normal.

A | B

of pain in the fingers of both hands and sensory disturbance in both feet. Evoked electromyogram of the post-tibial nerve was markedly prolonged. No abnormality in peripheral nerve conduction speed was revealed.

She was admitted in November 2003, and thorough systemic examinations were performed to clarify the cause of her illness. Finally, hyperthyroidism (TSH $<0.05 \mu\text{IU}$, F-T3 22.92 pg/mL, F-T4 $>6.00 \text{ ng/dL}$) and a mediastinal tumor were diagnosed. Ophthalmoptosis was not found. Although hyperthyroidism improved by medication, her neurological symptoms remained. The resection of the mediastinal tumor was recommended by her attending neurologist.

She was referred to our department in May 2004. Tumor markers and anti-acetylcholine (anti-Ach) receptor antibody were all within normal limits. Chest x-ray film showed no abnormalities (Fig. 1). Chest CT scan showed the tumor to be located in the anterior mediastinum, 9.0×5.0×3.0 cm in size. The density of the tumor was similar to fat tissue, but some parts showed irregular enhancement. The tumor seemed to be attached to the ascending aorta (Fig. 2). Invasion of the tumor to surrounding tissues was not clear. Preoperative cytological or

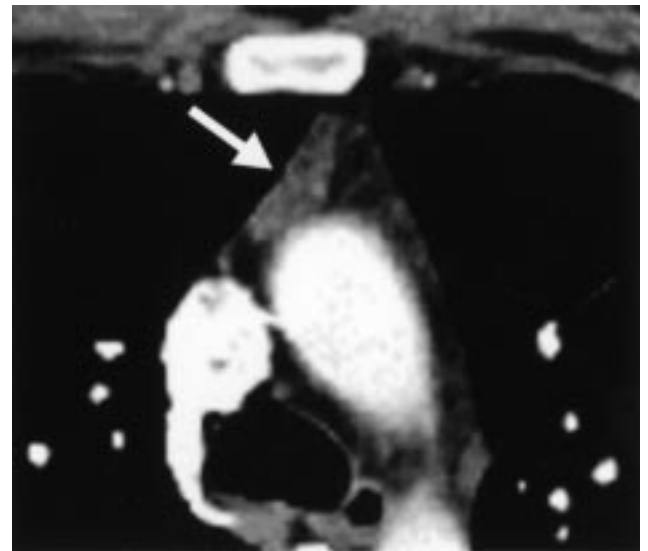


Fig. 2. Chest CT shows a flat anterior mediastinal tumor (white arrow) attached to the ascending aorta with irregular enhancement.

pathological examinations were thought to be dangerous and were not performed.

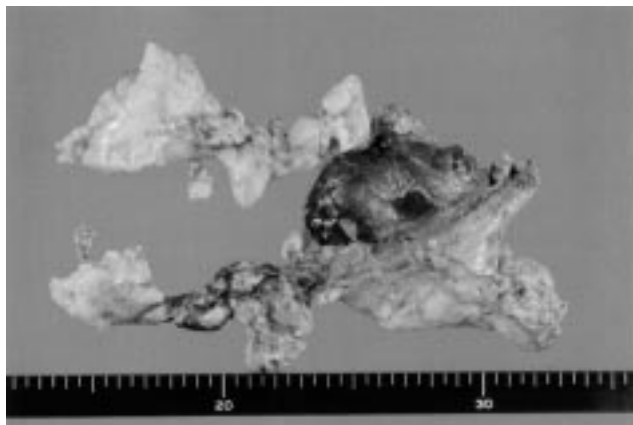


Fig. 3. Macroscopic findings of the resected thymus including the tumor.

Intra-tumor hemorrhage during operation resulted in a red appearance (shown in black).

Treatment

Extended thymectomy was performed by median sternotomy in May 2004. The tumor did not involve the surrounding tissue or organs, and complete resection of the thymus with the tumor was possible. She was discharged with no postoperative complications. Her neurological symptoms were slight but not markedly improved.

Pathological Findings

The tumor was elastic and soft, and the color was irregularly red due to bleeding during operation (Fig. 3). The histopathological diagnosis was benign thymolipoma consisting of mature fatty tissue and thymic tissue structures with Hassall's corpuscles (Fig. 4).

Discussion

Thymolipoma was first reported by Lange in 1916 in Germany.¹⁾ Since then, various cases have been reported in the literature. Thymolipomas are rare slow-growing mediastinal tumors constituting only 2% to 9% of all thymic neoplasms.³⁾ Most patients are asymptomatic and some cases are discovered as huge anterior mediastinal masses on chest x-ray. The age of patients ranged from 3 to 76 year (mean 37) and there were no gender differences.³⁻⁵⁾

Complications associated with thymolipoma include myasthenia gravis (MG), aplastic anemia, Hodgkin's disease, ALS, hypogamma-globulinemia and hyperthy-

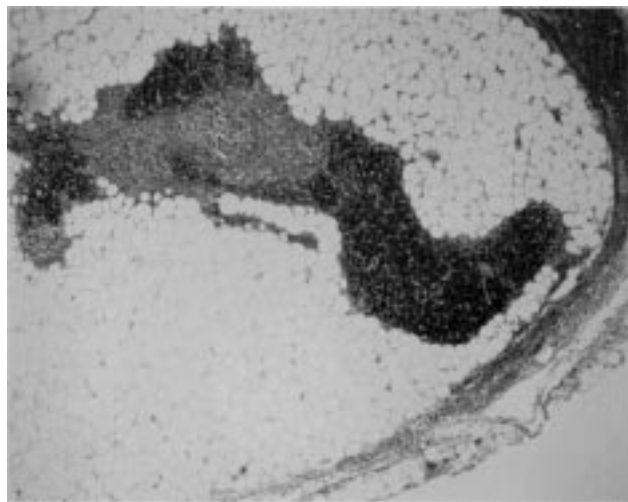


Fig. 4. Microscopic findings reveal mature fatty tissue and thymic tissue structures with Hassall's corpuscles.

Islands of noninvolved thymic tissue were found in fatty tissue.

roidism.^{2,4-10)}

The pathogenesis of thymolipoma is still unknown, but 4 theories have been proposed.³⁾ The first is "lipoma of the thymus" meaning a lipoma consisting of thymic fat or a lipoma of multicentric origin with involution of the thymic gland. The second is "involved thymic hyperplasia" meaning that thymic hyperplasia is replaced by fatty tissue. The third is "typical thymolipoma" meaning a mixed neoplasm of mesenchymal and endodermal origin. The fourth is "fatty degeneration of thymoma" meaning occurrence of fatty degeneration in the thymoma during aging. Our case seems to be a typical thymolipoma, a mixed tumor of mesenchymal and endodermal origin in which islands of noninvolved thymic tissue are found in fatty tissue.

The cause of Graves' disease is not completely understood. Gunn et al. reported 32% of Graves' disease patients also have thymic hypertrophy.⁹⁾ Furthermore, immunoglobulins in cases with Graves' disease stimulate thymocyte proliferation and cause enlarged thymus.¹⁰⁾ The ophthalmoptosis often recognized in the patients with hyperthyroidism is caused by hypertrophy of retro-orbital tissue. But it is still unknown why only retro-orbital tissue shows hypertrophy.¹¹⁾ Be that as it may, it is apparent some immunologic mechanisms cause systemic disorders in hyperthyroidism.

In this case, we decided to perform extended thymectomy because of, (i) remaining neurological symptoms after treatment of hyperthyroidism with medication, (ii)

the possibility that the tumor and/or thymus secrete some unknown substances resulting in her neurological symptoms by some immunologic mechanisms as mentioned above and (iii) malignancy could not be denied because of the irregular appearance of the tumor by contrast-enhanced chest CT. Furthermore, the tumor appeared to be attached to the ascending aorta, so it was thought to be impossible to obtain a cytological or pathological diagnosis before operation. After surgery, her neurological symptoms seemed slightly but not significantly improved, suggesting that the neurological symptoms were mainly caused by not thymolipoma but hyperthyroidism. There are two remaining possibilities in this case. One is that thyroid hormones or some unknown immunoglobulins stimulated the growth of fat tissue of the thymus causing thymolipoma. The other is that the thymolipoma secreted some unknown substances causing her neurological disturbance.

We must remember that Graves' disease is often complicated by many systemic diseases or symptoms including several thymic diseases. If we cannot completely rule out the malignant potential of such an anterior mediastinal tumor with hyperthyroidism, we should perform extended thymectomy. This case is only the second case of thymolipoma with hyperthyroidism in the English language literature and further examinations may clarify this relationship.

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