Mediastinal metastasis of the thyroid papillary carcinoma mimicking thymoma

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Abstract Mediastinal tumors are a common condition encountered by general thoracic surgeons, and the most frequent of such tumors is thymoma. However, metastatic mediastinal tumors are rare. Here we report a case of papillary carcinoma of the thyroid to the mediastinum that mimicked thymoma. The patient, a 60-year-old woman who had been treated for thyroid cancer 6 years previously, visited our hospital because of an abnormal shadow in the anterior mediastinum. Radiological findings and laboratory data did not suggest any recurrence of the thyroid cancer, but computed tomography examination revealed a thymoma-like mass. 18F-Fluoro-2-deoxy-D-glucose positron emission tomography revealed two lesions: an anterior mediastinal mass and a right breast nodule. We resected both tumors. Histological examination revealed that the mediastinal mass was a metastasis from the thyroid papillary carcinoma, whereas the nodule was an early breast cancer. At the 9-month follow-up examination the patient was well without evidence of recurrence of either cancer.

Key words Mediastinum · Metastasis · Papillary carcinoma

Introduction Mediastinal tumors comprise one of the common diseases treated by general thoracic surgeons. Thymomas are the most common neoplasm of the anterior mediastinum, with an incidence of 0.15 cases per 100,000. Other anterior mediastinal tumors include teratomas, lymphomas, thymic cancers, thymic carcinoids, thymic cysts, and metastatic tumors. However, there have been few reports of metastatic mediastinal tumors. Thyroid cancer rarely metastasizes to the mediastinum. We report a case in which a mediastinal metastasis from thyroid cancer that had not metastasized to any other sites mimicked thymoma.

Case A 60-year-old woman, who had been diagnosed with thyroid cancer when she was 54 years old, had undergone right thyroid lobectomy and cervical lymph node dissection. The thyroid cancer had been classified as stage III (T3N1aM0, according to the AJCC/UICC 6th edition TNM) pathologically, and the histological subtype was papillary carcinoma. Close follow-up and postoperative radiotherapy were performed. An abnormal shadow in the anterior mediastinum was detected on a computed tomography (CT) scan of the chest 6 years after the operation. Contrast-enhanced CT examination revealed a heterogeneous mass shadow with a clearly defined border and slightly enhanced region (Fig. 1). There had been no recurrences of the thyroid cancer prior to detection of the abnormal mediastinal opacity. The serum thyroglobulin concentration was 12 ng/ml (normal 0–30 ng/ml), and the acetylcholine receptors autoantibody concentration was 0.3 nmol/l (normal 0–0.3 nmol/l). Thyroid scintigraphy revealed that there were no abnormal accumulations.
D-glucose positron emission tomography (FDG-PET) revealed increased uptake by the mediastinal tumor and by a nodule in the right breast (Fig. 2).

Images of the mediastinal tumor resembled those of a thymoma. A heterogeneous mass shadow with a clear defined border and slight enhancement effect is a commonly observed feature of thymoma. The FDG-PET findings suggested a thymoma or thymic cancer. The right breast nodule was diagnosed as breast cancer by fine-needle biopsy. The mediastinal mass and thymus were resected en bloc by the mid-sternotomy approach.

The mass was grossly encapsulated, elastic hard, and fastened to the thymus and the anterior mediastinal fat tissue (Fig. 3). The mass measured $30 \times 25 \times 18$ mm. Histological examination of the resected mass (Fig. 4) revealed metastatic papillary carcinoma from the thyroid cancer. Although almost the entire mass was located in the thymus, histological examination revealed involvement of mediastinal fat tissue. Therefore, we were unable to determine whether the mass was a metastasis to the thymus. The right breast cancer was resected and diagnosed as early-stage disease. According to histological subtype, it was invasive ductal carcinoma and solid-tubular carcinoma.

Discussion
Thyroid cancer accounts for approximately 1% of all new malignant disease: about 0%–5% of cancers in men and 1%–5% in women. Most thyroid cancers are differentiated carcinoma. Differentiated thyroid carcinoma is