INTERNAL MEDICINE

□ CASE REPORT □

Occult Thyroid Follicular Carcinoma Diagnosed as Metastasis to the Chest Wall

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Abstract

Chest wall tumors are relatively rare, and hematogenous metastasis to the chest wall is very rare. We herein describe a rare case of occult thyroid carcinoma as metastasis to the chest wall in an 80-year-old woman. The patient received detailed examinations of the chest wall tumor, and the results suggested that she had occult thyroid carcinoma. Surgery was then performed to remove all of her thyroid. As a result, she was diagnosed with follicular carcinoma of the thyroid. We report an extremely rare case of occult thyroid carcinoma diagnosed as hematogenous metastasis to the chest wall.

Key words: chest wall tumor, chest wall metastasis, hematogenous metastasis, occult thyroid carcinoma

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Introduction

Chest wall tumors are rare and include both benign and malignant tumors. Most malignant chest wall tumors are metastases from the primary lesion or direct invasion from adjacent organs (1). Occult carcinoma is a primary microcarcinoma in which metastatic lesions are detected previously. Most occult thyroid carcinomas are papillary carcinoma, and the route of metastasis is usually lymphogenous (2). In this case report, we describe an extremely rare case of occult thyroid follicular carcinoma diagnosed as hematogenous metastasis to the chest wall.

Case Report

An 80-year-old woman was referred to our hospital and admitted for a detailed examination of an abnormal chest shadow. A chest radiograph showed a tumor shadow in the right middle lung field (Fig. 1a). Chest computed tomography (CT) showed a right chest wall tumor 27×47 mm in size with bone invasion at the eighth rib, but there were no other abnormal findings in the lung field or mediastinum (Fig. 1b and c).

The patient had a history of smoking (20 pack-years). The results of physical examinations were as follows: body temperature, 35.7°C; pulse rate, 88/min; blood pressure, 149/105 mmHg; and oxygen saturation, 97% in room air. Her breathing sounds were normal, as were the results of cardiac and abdominal examinations. No peripheral lymphadenopathy was observed in the cervical regions. Neither thyroid enlargement nor thyroid tenderness was observed.

Laboratory tests showed a slightly elevated level of cytokeratin-19 fragments (CYFRA: 3.7 ng/mL). Positron emission tomography (PET) with fluorine-18 2-deoxy-2-fluoro-D-glucose (FDG) integrated with CT of the whole body showed a right chest wall tumor (maximum standardized uptake value [SUVmax] of 2.3) (Fig. 2a), and CT showed high calcification of the right dorsal thyroid, but no FDG accumulation was observed in the region (Fig. 2b).

We performed a CT-guided needle biopsy for the chest wall tumor. A histological examination of the specimens revealed aggregation of small cells that had nuclear hyperchromasia. Immunohistochemical staining revealed positive staining for CK-AE1/AE3, TTF-1 and CD56 and slightly positive staining for chromogranin A. These results suggested small cell carcinoma of primary lung cancer (Fig. 3).

However, chest CT showed no abnormal findings in the

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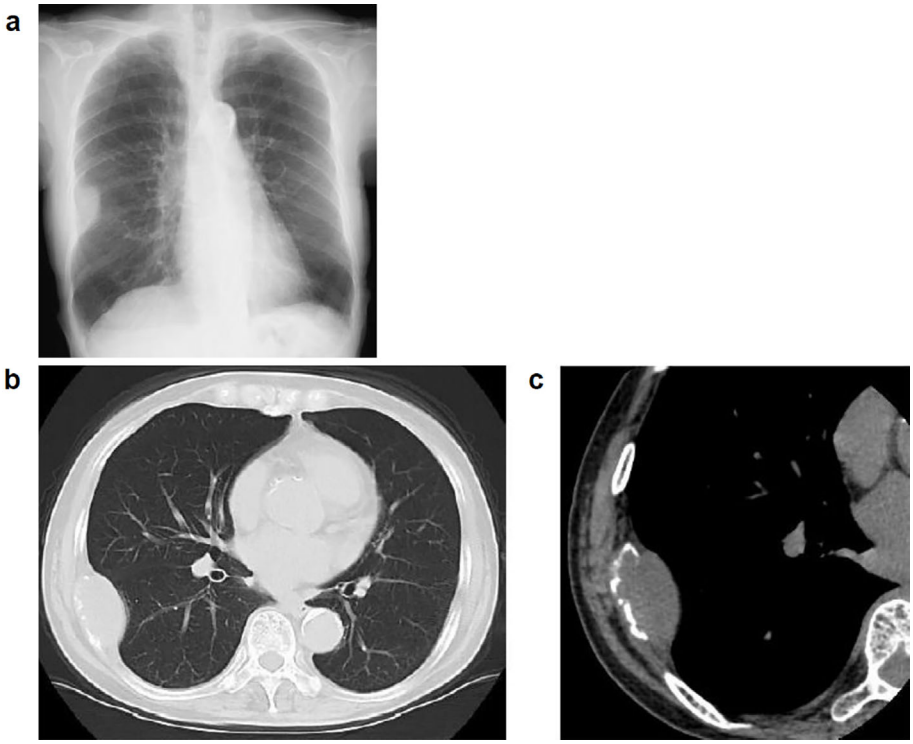

Figure 1. **(a) A chest radiograph showed a tumor shadow in the right middle lung field. (b) (c) Chest computed tomography showed a right chest wall tumor.**

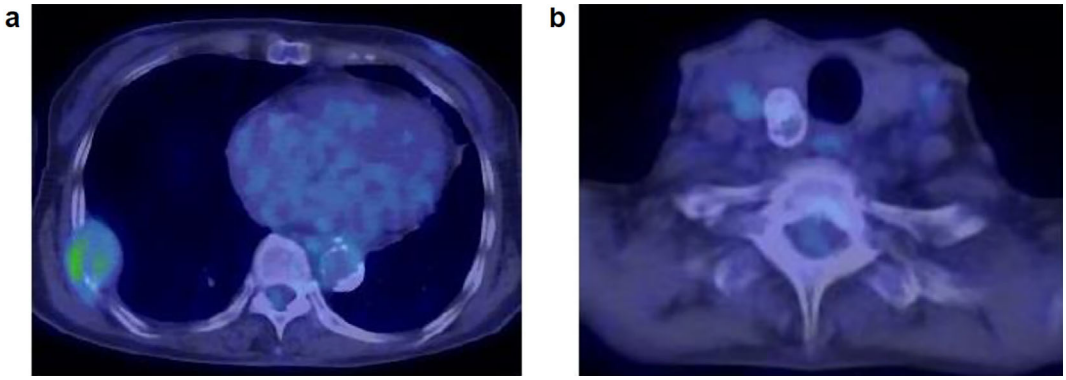

Figure 2. **(a) FDG accumulation was observed in the right chest wall. (b) No FDG accumulation was observed in the right dorsal thyroid.**

lung field or mediastinum, which was uncharacteristic of small cell lung cancer. We then performed an additional examination of specimens obtained from tumorectomy with composite resection of the eighth rib by video-assisted thoracic surgery (VATS). The specimens were composed of cubed tumor cells with relatively small round nuclei and acidophilic cytoplasm. The tumor had formed a follicle structure and had densely proliferated. The tumor had positive staining for thyroglobulin, thyroid transcription factor (TTF)-1 and CD56 and showed histology of follicular thyroid carcinoma (Fig. 4). We therefore considered the possibility of metastasis of thyroid carcinoma to the chest wall.

We consulted an otolaryngologist, and a fine-needle aspiration biopsy of the thyroid gland was performed because of echo findings of a calcified right lobe. However, no malignant cells were detected. This was thought to be due to failure of complete lesion extraction, and surgery was performed to remove all of her thyroid. The specimens obtained from the right lobe were composed of round tumor cells with a follicle structure (Fig. 5a), and calcification of the capsule was observed. Capsule invasion was not observed, but vascular invasion was revealed by the pathological findings (Fig. 5b). As a result, she was diagnosed with follicular carcinoma of the thyroid.

Discussion

Primary malignant chest wall tumors include various tumors such as chondrosarcoma and fibrosarcoma, but more than half of malignant chest wall tumors are metastases

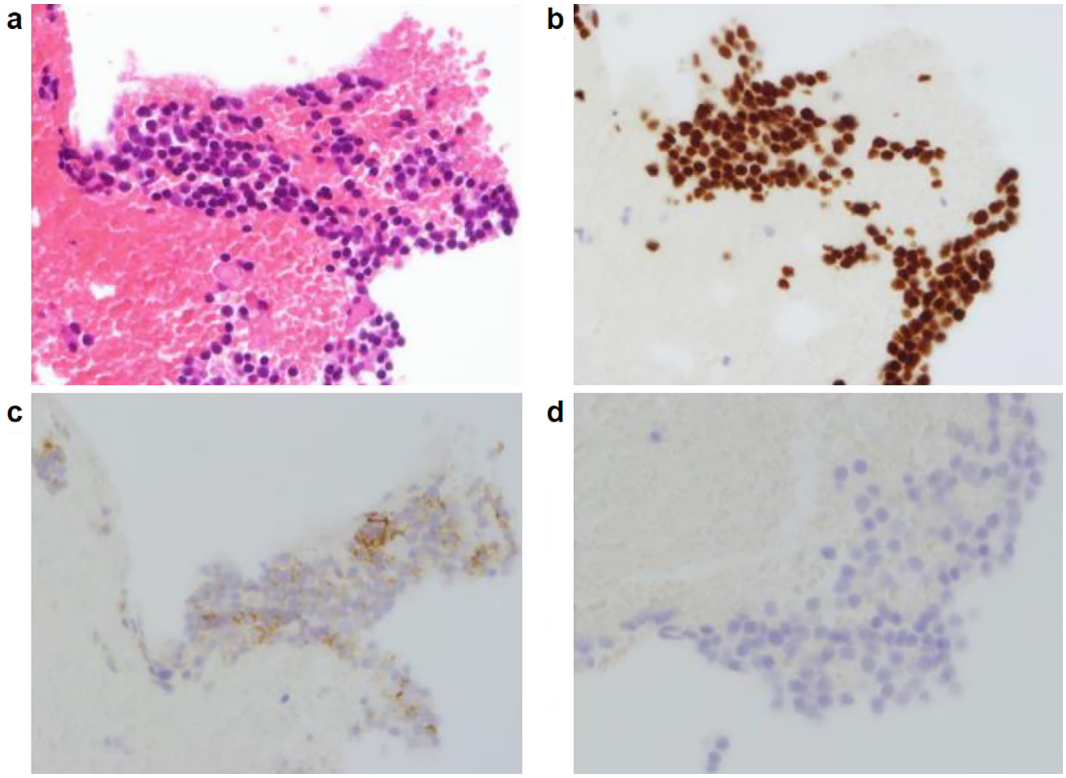

Figure 3. **Pathological findings of specimens obtained through a CT-guided needle biopsy: (a) Hematoxylin and Eosin staining, ×20, (b) TTF-1 staining, ×20, (c) CD56 staining, ×20, (d) chromogranin A staining, ×20.**

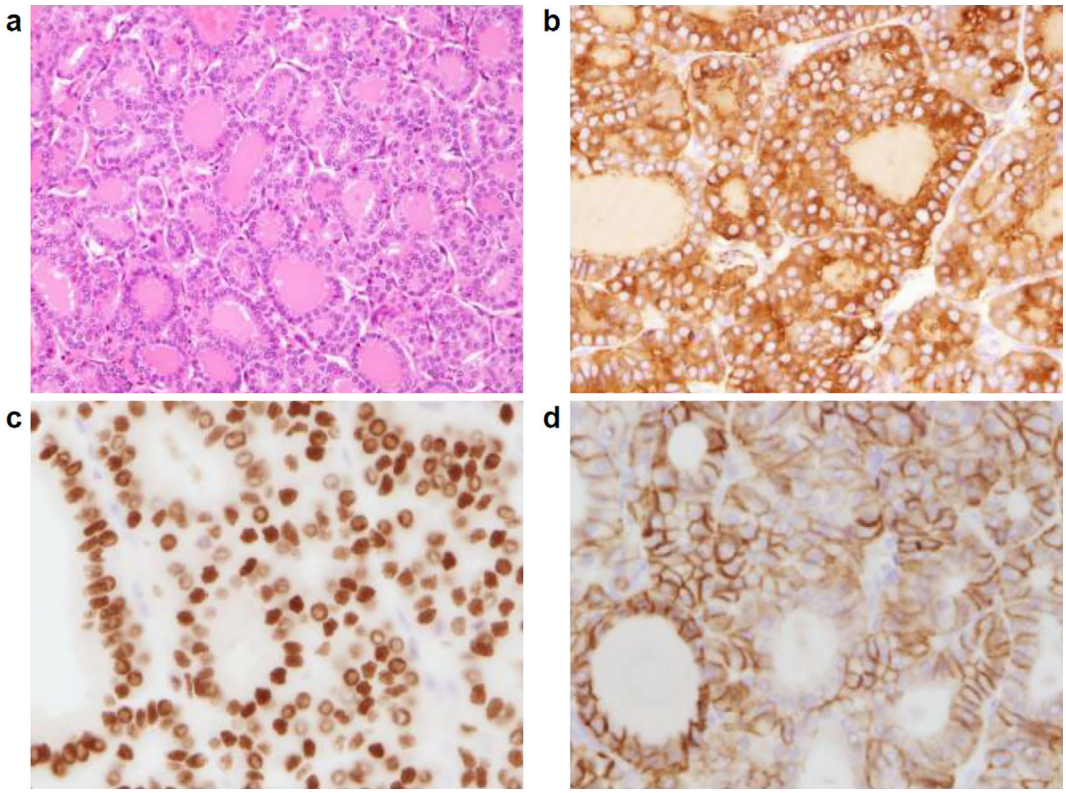

Figure 4. **Pathological findings of specimens obtained through tumorectomy by VATS: (a) Hematoxylin and Eosin staining, ×20, (b) thyroglobulin staining, ×20, (c) TTF-1 staining, ×20, (d) CD56 staining, ×20.**

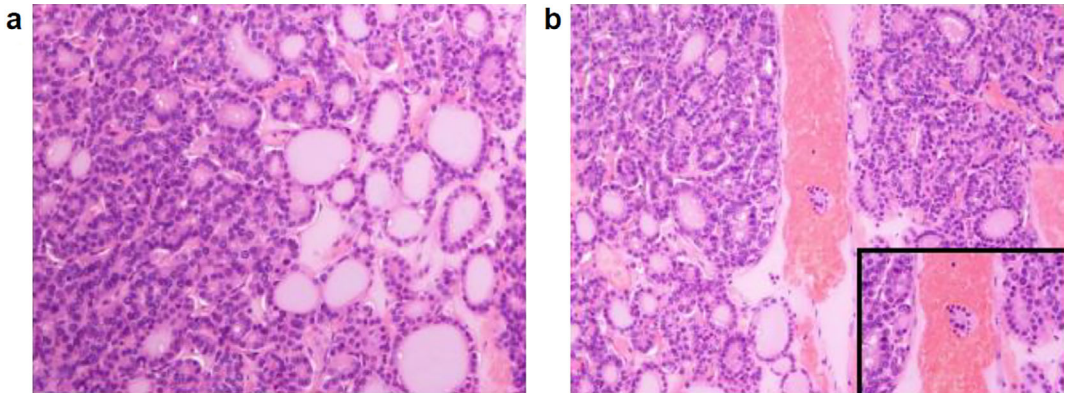

Figure 5. Pathological findings of specimens from the thyroid gland: (a) Hematoxylin and Eosin (H&E) staining, ×20, (b) H&E staining of the vascular invasion findings.

from a primary lesion or direct invasion from adjacent organs (1). However, if lung cancer and breast cancer are excluded, malignant chest wall tumors are very rare (3). In this case report, we describe an extremely rare case of occult thyroid carcinoma diagnosed as metastasis to the chest wall.

Some researchers use occult carcinoma and latent carcinoma synonymously. Occult carcinoma is a primary microcarcinoma in which metastatic lesions are detected previously, and latent carcinoma is a primary microcarcinoma that is detected for the first time at autopsy. Generally, latent carcinoma arises more frequently in thyroid carcinoma and prostate carcinoma than in other carcinomas (4, 5), and the incidence of latent thyroid carcinoma has been reported to be 2-7% (6). The incidence of occult thyroid carcinoma in thyroid carcinomas is 0.1-2.2% (7, 8). Most occult thyroid carcinomas are papillary carcinoma with a lymphogenous route of metastasis, so the carcinoma is usually found by cervical lymphadenopathy (2).

The metastatic routes of metastatic chest wall tumors are commonly hematogenous, lymphogenous and through the diaphragm (9). Iatrogenic metastasis caused by a CT-guided needle biopsy, liver biopsy and percutaneous bile duct drainage has also been reported (10). Our case is extremely rare because the occult thyroid carcinoma was not papillary carcinoma but follicular carcinoma, and it was not detected by cervical lymphadenopathy and was revealed pathologically to be hematogenous metastasis.

We first considered the possibility of small cell lung cancer in our case because of the findings of the CT-guided needle biopsy for the chest wall tumor. However, chest CT showed no abnormal findings in the lung field or mediastinum, so we performed an additional examination of specimens obtained from tumorectomy by VATS. The results suggested the possibility of metastasis of thyroid carcinoma. However, the biopsy specimens were very small, and there was no formation of a follicle structure, making an exact diagnosis difficult. Immunohistochemical staining of the biopsy specimens revealed positive staining for TTF-1 and CD56, and this agreed with the findings of follicular carcinoma.

Chest wall tumors themselves are relatively rare. Therefore, we always should be cautious about the diagnosis. A CT-guided needle biopsy is useful for a diagnosis, but it is difficult to obtain an adequate sample using this technique. Thus, if there are no issues with the patient's general medical condition, a surgical biopsy should be performed to determine the optimum therapeutic strategy.

We herein reported an extremely rare case of occult thyroid follicular carcinoma diagnosed as hematogenous metastasis to the chest wall.

The authors state that they have no Conflict of Interest (COI).

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