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Chest wall metastasis in postoperative thyroid cancer: a case report

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Abstract

Thyroid cancer is common in China. Thyroid adenocarcinoma metastases can be local or distal metastasis. Local metastasis presents as a hard and fixed lymph node in the neck, while distant metastases are found in the lung, skull, vertebrae, and pelvis. However, thyroid follicular carcinomas are mostly observed in hematogenous metastases. The thyroid adenocarcinoma and follicular carcinoma of the thyroid gland are often misdiagnosed. Here, we report the case of a 53-year-old female patient. More than 2 years after her initial diagnosis, her left chest wall was physically examined. The results revealed a progressive enlargement that had a hard quality, poor activity, unclear boundary, pressure pain, and percussion pain. Thyroid follicular cell carcinoma was subsequently diagnosed and treated surgically. The thyroid carcinoma had multiple bone metastases, and the thyroid follicular carcinoma had spread to the chest wall through the blood vessels. Thus, preoperative procedures and follow-up should be strengthened because early pathological thyroid follicular carcinoma and thyroid adenoma can easily be misdiagnosed. Pathologic consultation and follow-ups should be strengthened to prevent misdiagnosis.

Keywords

Thyroid carcinoma, thoracic wall, metastasis, adenoma, follicular carcinoma, misdiagnosis, bone metastasis

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Background

Thyroid cancer is common in China. Thyroid adenocarcinoma metastases usually manifest as local and distal metastases. The local metastasis presents as a hard and fixed lymph node in the neck, while distant metastases can be found in the

lung, skull, vertebrae, and pelvis.[1–3] Thyroid follicular carcinomas are mostly observed in hematogenous metastases. This is common in middle-aged and older women who are 40 to 60 years of age. The clinical manifestations are similar to those of papillary carcinoma.[4] However, the cancer blocks are generally large, with fewer local lymph node metastases and more distant metastasis.[5–7] Clinically, chest wall metastases in thyroid adenocarcinoma and follicular thyroid carcinoma are often confused with each other. A case of thyroid adenocarcinoma chest wall metastasis after surgery is presently reported. The retrospective report of this case is presented below.

Case presentation

The patient was a 53-year-old woman who was initially diagnosed at a local hospital and she underwent thyroidectomy in 2002. The postoperative pathological report indicated a benign tumor. In 2015, an ultrasound revealed that she had thyroid nodules and chest nodules with no tenderness or redness. Therefore, the patient underwent a second surgery, and the postoperative pathological report was follicular carcinoma. Two years later, the physical examination of the left chest wall revealed the following: progressive enlargement, hard quality, poor activity, unclear boundary, pressure pain, and percussion pain. No fever, redness, rash, secretion, or sinus formation occurred. A right thyroid adenoma had been performed in 2002. In 2015, surgical treatment for thyroid cancer was performed again, and a chest wall tumor was found at the same time as the thyroid cancer diagnosis. The thyroglobulin level was 8582 ng/mL. Chest computed tomography (CT) of the outer court in the lower ribs on the left side (approximately the same area as the ninth rib) revealed local soft tissue masses of approximately 6×4 cm. Magnetic resonance imaging (MRI) revealed a mass on the left side of the thoracic dorsal abdominal wall, which was approximately $5.4 \times 4.2 \times 4.0$ cm and it had unclear boundaries.

A neck ultrasound revealed the previous thyroid surgery, and the left area had a low echo at approximately 0.6×0.3 cm, the internal echo was uneven, and no obvious blood flow signals were found; there was also no clear occupying lesion in the right operative area. Additionally, there were no obvious enlarged lymph nodes in either the neck or the clavicle. The bilateral submandibular gland and parotid gland were not clearly occupied. Results of routine blood tests, biochemistry, blood coagulation, screening for infectious diseases, thyroid function, electrocardiogram, and pulmonary function were generally normal.

On 26 June 2017, left rib tumor resection with general anesthesia was performed. The intraoperative exploration of visible tumors showed that they were mainly located on the left chest below the ninth rib, near the posterior axillary line and they were approximately 6 cm in length. The surface was lifted, and the tumor was observed to have invaded the adjacent intercostal muscles. The tumor had a hard texture and rich blood supply on the surface. After surgery, the patient's recovery was uneventful. Combined with the patient's history and morphology, the disease was found to be consistent with follicular carcinoma of the thyroid. It is recommended to obtain the original film (papillary thyroid carcinoma). The tumor invaded the rib bone and the surrounding striated muscle. There was no cancer at the anterior edge of the ninth rib. Follicle nodules were microscopically observed within the thyroid tissue and the surrounding fat in the sections of the primary thyroid papillary carcinoma mass, some of which were dysplastic nodules. A few cells presented with nuclear grooves, and the papillary

structures were not obvious. The shape was similar to the mass that was observed during the surgery. However, this could not exclude the probability of metastatic follicular thyroid carcinoma. The number of sections was limited, which prevented examination of the whole tumor's appearance, and thus, the probability of metastatic papillary carcinoma was not excluded.

A review of the whole body bone imaging was performed after 3 months, and it revealed multiple foci on the left side of the clavicle, the posterior segment of the sixth left rib near the vertebral body, the right side of the humerus, and the right iliac bone. Multiple bone metastases were considered. The patient is presently receiving iodine-131 and thyroid hormone suppression therapy.

Written informed consent was obtained from the patient. The present study was approved by the Ethics Committee of Luoyang No. 1 Hospital of Traditional Chinese Medicine.

Discussion

In the present case, the patient was admitted to the hospital with a chest wall mass, and the MRI indicated the possibility that it was of bone origin. It was possible to exclude the primary bone tumor, other tumor bone metastasis, or tumor derived from the mesenchymal tissues. Regardless of the history of thyroid cancer, the patient had undergone thyroid surgery twice. Although the patient had thyroid cancer and metastasized tumors, there was no evidence of metastasis to other parts of the body. Thus, the possibility of double-source cancer could not be ruled out.

Malignant metastatic tumor disease was considered after the possible exclusion of patients with a primary tumor, but the diagnosis remained unclear. The history of thyroid cancer and postoperative disease screening analysis were combined, and thyroid papillary carcinoma with chest wall metastasis was considered. The 3-month postoperative review suggested multiple bone metastases, again suggesting blood metastasis, leading to multiple bone metastases. Based on the patient's history, she was more likely to have thyroid follicular carcinoma for the following reasons: (1) the metastatic tumor on her chest wall was consistent with the morphology of the thyroid tumor, and when this homology was considered, the pathological evidence was confirmed; and (2) she has a history of radical thyroidectomy in the past 2 years. The thyroid carcinoma was similar to the metastatic tumor of the chest wall, which was considered to be a possible follicular carcinoma. The patient had a right thyroid adenoma in 2002, and thus, there could be two possibilities: (1) the patient had thyroid adenoma, and the thyroid cancer was found to be accompanied by metastasis of the chest wall, which gradually evolved into multiple bone metastasis because of the high degree of malignancy; or (2) the patient might have been misdiagnosed, because it is difficult to distinguish between follicular thyroid adenocarcinoma and follicular thyroid carcinoma. These two are similar, and both have an apparently complete and thickened capsule. Microscopically, the tumor had a small follicular or trabecular structure and a similar cell morphology, and both presented with hemorrhage, necrosis, infarction, and splitting.

The key points for both of these presentations was as follows: both membrane invasion and blood vessel infiltration were necessary, and the invasion of the capsule was more practical.[7–9] However, the criterion for judging was often controversial, which could lead to misdiagnosis. Studies have been conducted on the potential value of multiple antibodies in the identification of follicular carcinoma and follicular adenoma, but no reliable indicators have been found.[10,11] The patient may have had

an early follicular carcinoma at that time, which was temporarily controlled after partial resection, and she subsequently relapsed after many years, which was accompanied by the metastasis of the chest wall and subsequent bone metastasis. This explanation seems to be more consistent with the development of the tumor over time. Through the case analysis of thyroid metastases from the chest wall tumor, it was found that the transition probability was low, and that this could easily be misdiagnosed, including follicular thyroid carcinoma metastasis through the blood to the chest wall. Additionally, its early occurrence cannot easily be detected, which pathologically proves that the adenoma in thyroid lesions is difficult and unclear. Thus, there is a need to increase clinical observation and follow-up efforts. Overall, thyroid follicular carcinoma can metastasize to the chest wall through blood flow metastasis, and preoperative and follow-up investigations should be strengthened. Additionally, early thyroid follicular carcinoma can easily be confused with thyroid adenoma pathology. Multiple pathological consultations and follow-up efforts should occur to prevent misdiagnosis.

Declaration of conflicting interest

The authors declare that there is no conflict of interest.

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