

Pathological rib fracture as the first and only sign of occult follicular thyroid carcinoma: a rare case report

*Foliküler tiroid karsinomunun ilk ve tek bulgusu olarak patolojik kaburga kırığı:
Nadir bir olgu sunumu*

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ABSTRACT

A 51-year-old man presented with pleuritic pain after hearing a breaking sound on the right side of his chest, while lifting a heavy weight. Physical examination revealed crepitation with mild swelling and tenderness over the fourth rib in the mid-axillary line. Thoracic computed tomography showed a mass in the right hemithorax lateral to the fourth rib, suggesting a malignant soft tissue tumor causing bone destruction and a pathological fracture. Since malignancy was reported in the intraoperative frozen-section study, the lesion was removed with the third and fourth ribs. The result of the pathological examination was unexpectedly reported as a metastatic follicular thyroid carcinoma.

Keywords: Follicular thyroid carcinoma; metastasis; rib fracture.

A follicular thyroid carcinoma (FTC) is the second most common subtype of well-differentiated thyroid carcinoma.^[1,2] Distant metastases are typically found at the time of diagnosis or during follow-up in 10 to 15% of cases with differentiated thyroid cancer.^[1,2] The bone is the second most common site of metastasis after the lung, and 1 to 3% of well-differentiated thyroid cancers metastasize to the bone.^[1,2]

Herein, we report a case with occult FTC who presented with a pathological rib fracture. Although

ÖZ

Elli bir yaşında erkek hasta ağırlık kaldırırken sağ göğsünde kırılma sesi duyması sonrasında plöritik ağrı ile başvurdu. Fizik muayenesinde sağ dördüncü kaburga yanında hafif bir şişlik ve hassasiyetin olduğu krepitasyon saptandı. Torasik bilgisayarlı tomografisinde sağ hemitoraksta dördüncü kaburga yanında kemik harabiyetine ve patolojik kırığa neden olan malign bir yumuşak tümörü düşündüren bir kitle izlendi. Ameliyat sırasında dondurulmuş kesit incelemesinde malignite tespit edilmesi üzerine, lezyon, üçüncü ve dördüncü kaburga ile birlikte çıkarıldı. Patolojik inceleme sonucu, beklenmedik bir şekilde metastatik foliküler tiroid karsinomu (FTC) olarak rapor edildi.

Anahtar sözcükler: Foliküler tiroid karsinomu; metastaz; kaburga kırığı.

there are several known cases of FTC with distant metastasis, this is the first report of an initial presentation with a rib fracture due to a metastatic occult FTC.

CASE REPORT

An otherwise asymptomatic 51-year-old man presented with pleuritic pain after hearing a cracking sound on the right side of his chest, while lifting a heavy weight. His medical history was non-specific.



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Physical examination revealed mild swelling with tenderness over the fourth rib in the mid-axillary line. Crepitation of the rib was palpated. The remainder of the examination was normal. Chest X-ray revealed a 3x3 cm, well-circumscribed dense infiltration in the periphery of the right lower lung and disappearance of the fourth rib line. Thoracic computed tomography showed a 36x28x21 mm mass located laterally to the fourth rib in the right hemithorax, suggesting a malignant soft tissue tumor causing bone destruction and a pathological fracture (Figure 1). Cranial and abdominal computed tomography scans were unremarkable for the metastatic disease. The bone involvement of the fourth rib was demonstrated using whole-body bone scintigraphy (Figure 1).

Surgery with intraoperative frozen-section assessment was planned, as the patient was unable to tolerate the pleuritic chest pain, despite opioid analgesics treatment. A written informed consent was obtained, and he underwent surgery under general

anesthesia. An intraoperative frozen-section was reported as malignant; therefore, the lesion was removed with partial resection of the third and fourth ribs, achieving tumor-free margins for local control. The chest wall was, then, reconstructed with polypropylene mesh to obtain the chest wall integrity. Pathological examination of the specimen was unexpectedly reported as a metastatic FTC (Figure 1).

Based on the pathological diagnosis, the patient was re-interviewed and questioned about thyroid disease; however, his medical history was unremarkable with normal thyroid findings on physical examination. Thyroid function tests and routine biochemical parameters were also normal. However, thyroid ultrasonography revealed a 5 mm hypoechoic mass with increased vascularity in the right lobe of the thyroid which was reported as a solitary nodule suspicious for thyroid cancer. A total thyroidectomy was performed 30 days after the rib resection. Histopathological examination of the thyroidectomy specimen confirmed

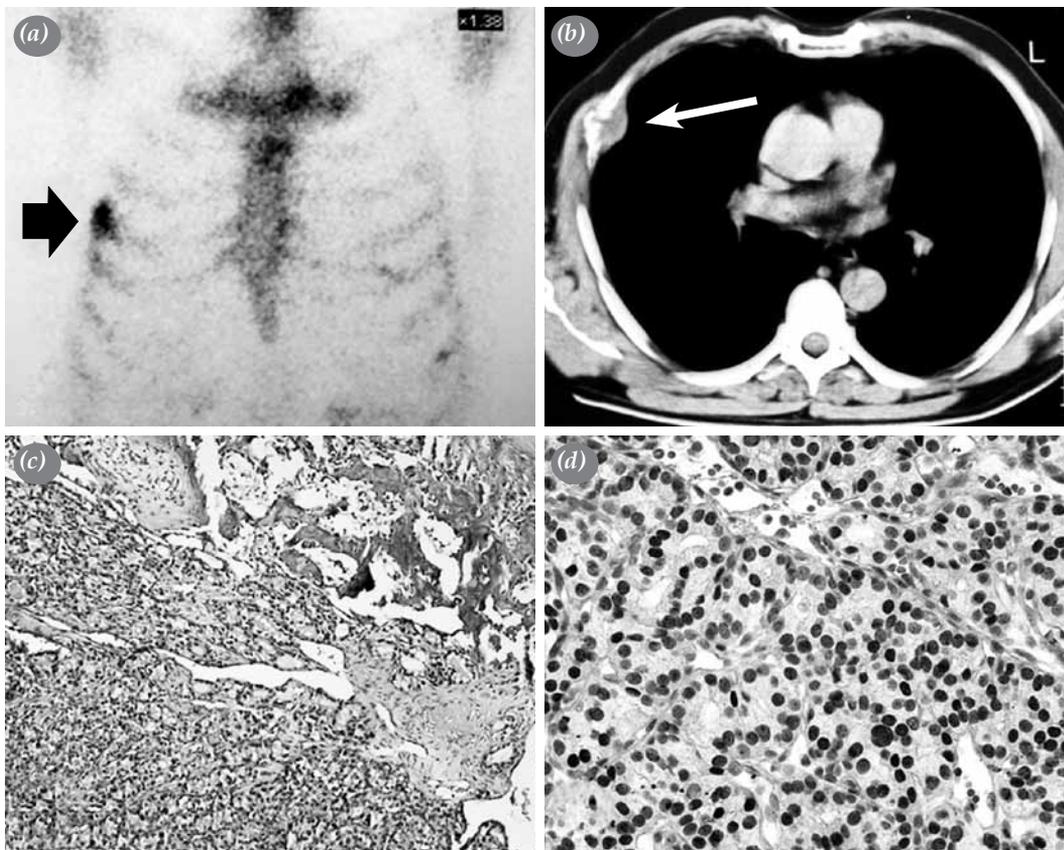


Figure 1. (a) Thoracic computed tomography showing a mass (white arrow) causing a pathological rib fracture and bone destruction. (b) Bone scintigraphy showing lateral involvement of the right fourth rib (black arrow). (c) The surgical specimen showing a follicular thyroid carcinoma with follicular cells in the scattered colloidal material within the bone tissue (H-E x 20). (d) Positive nuclear staining of tumor cells with thyroid transcription factor 1 in a slice obtained from the total thyroidectomy specimen (thyroid transcription factor 1 x 40).

the diagnosis of a FTC (Figure 1). Following thyroid surgery, the patient underwent radioiodine therapy, followed by thyrotropin-suppressive therapy. The patient is still free from recurrence or distant metastasis over more than two years of follow-up.

DISCUSSION

Primary chest wall tumors comprise 1 to 2% of all chest wall malignancies.^[3] More than 50% of all primary chest wall tumors in children and adults originate from malignant soft tissue tumors.^[3] The primary symptoms of these tumors are localized pain and swelling.^[3] In our case, there was a sudden-onset pain followed by swelling localized to the right chest wall after lifting a heavy weight. The initial diagnosis was primary chest wall malignancy based on the patient's medical history, physical examination, and imaging studies.

Although there are several reported cases of FTCs with bone metastasis, the initial presentation with distant metastasis in patients with a FTC is rare.^[4,5] The incidence of distant metastasis as the initial presentation is highest in older patients aged above 45 years.^[2] In our case, who was 51 years old, the initial finding of a FTC was only a pathological fracture of the fourth rib. Physical examination and medical history did not suggest thyroid disease, and imaging studies showed no other distant metastasis. In the preoperative evaluation, positron emission tomography-computed tomography is an essential requirement for scanning metastasis in such cases; however it is not available in our hospital setting and near region; therefore, we were unable to perform it. Additionally, preoperative histological evaluation via biopsy is also necessary in the management of such cases; however, the biopsy procedure was unable to be performed in our case, as he was intolerant to the pleuritic chest pain, despite opioid analgesics. As the radiological assessment of the lesion was reported as a localized primary malignant soft tissue tumor on the chest wall, we planned surgery with intraoperative frozen-section study. The histopathological examination revealed a malignant tumor, and the resection specimen was unexpectedly reported as metastatic FTC.

Furthermore, guidelines for metastatic FTCs include thyroidectomy, resection of the metastasis, whenever possible, for local control of the disease, and

radioiodine therapy, followed by thyroid-stimulating hormone-suppressing therapy.^[6] Accordingly, our case was treated with total thyroidectomy, after resecting the metastasis to the fourth rib, achieving tumor-free margins by including the third and fifth ribs. Following thyroid surgery, the patient underwent radioiodine therapy, followed by levothyroxine treatment. Shaha et al.^[2] also reported that appropriate treatment led to satisfactory long-term survival in up to 43% of patients with metastatic thyroid cancer. In our case, no recurrence or distant metastasis was observed during more than two-year follow-up.

In conclusion, although several cases of FTCs with distant metastasis have been described to date, this is the first report of initial presentation with a rib fracture due to metastasis of an occult FTC. Although rare, therefore, distant metastasis of a FTC should be included in the differential diagnosis of pathological rib fracture.

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