Multiple Brown Tumors in Secondary Hyperparathyroidism

Sekonder Hiperparatiroidiye Bağlı Multipl Brown Tümörleri

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Dear Editor,

A 25-year-old female patient who was receiving hemodialysis three times a week for five years was admitted to our clinic with the complaints of chest and back pain lasting for three months. Patient history revealed increasing pain severity, which was associated with immobilization. Physical examination showed tenderness in the anterior chest wall. Neurological and muscular findings were normal.

Laboratory results were as follows: parathyroid hormones (PTHs) 1705 pg/mL (N, 11.1–79.5), serum phosphate 4.2 mg/dL (N,2.7–4.5), serum calcium 9.0 mg/dL (N, 8.4–10.6), serum alkaline phosphatase 527 U/L (N, 40–150), creatinine 5.4 mg/dL (N, 0.2–1.2); hemoglobin 7.9 g/dL; C-reactive protein (CRP) 1.25 mg/L (N, 0.1–0.5); erythrocyte sedimentation rate (ESR) 36 mm/first hour, and 25-OH Vitamin D 3.2 ng/mL.

Plain chest X-ray showed a radioopaque lesion, which was superimposed on the left posterior of the 10th rib with smooth margins and an expansile lytic lesion of the left clavicle (Figure 1). Computed tomography revealed a 40x45 mm expansile lytic lesion of the left posterior of the 10th rib with cortical destruction pattern. Expansile lytic bone lesions were also detected in the right posterior of the 10th rib, right anterior of the fourth rib, left lateral of the sixth rib, the left clavicle and corpus sterni (Figure 2). The patient was diagnosed with secondary hyperparathyroidism-associated Brown tumors. Conventional treatment for hyperparathyroidism such as calcitriol, calcium, phosphate binders and cinacalcet was initiated.

Brown tumors are also known as osteitis fibrosa cystica, which is the classic manifestation of hyperparathyroid bone disease (1). These tumors give rise to both primary (3-7%) and secondary hyperparathyroidism (1-2%) (2). Brown tumors are well-documented complications of secondary hyperparathyroidism in the setting of end-stage renal disease (3). Hyperparathyroidism may cause cortical bone loss, microfractures, and secondary hemorrhage. Increased osteoclastic activity may also reduce bone mineralization, leading to bone resorption and extracellular matrix expansion (2).

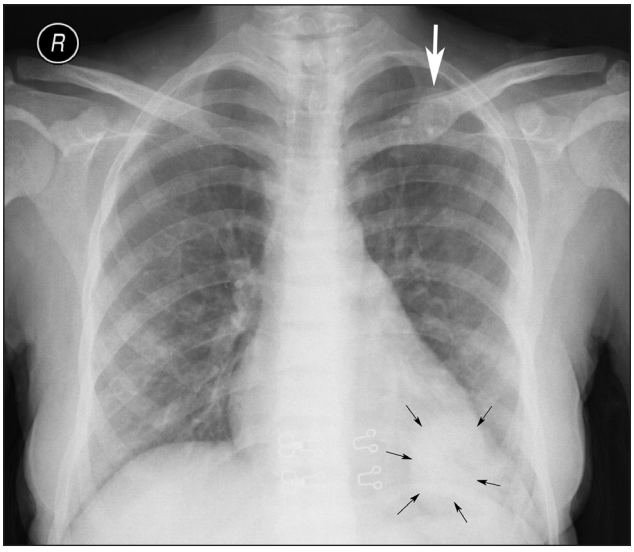

Figure 1. Plain chest X-ray showing a radiopaque lesion on the left posterior of the 10th rib (black arrows) and an expansile lytic lesion of the left clavicle (white arrow).

Radiographically, Brown tumors are usually characterized by purely lytic unilocular or multilocular lesions with well-defined margins, which evoke little reactive bone formation. On CT scan, these tumors appear as hyperdense or heterogenous lytic lesions or expansile lucent lesions with calcified rim and bone remodeling (4).

Effective cure of Brown tumors inhibits hyperparathyroidism. Standard therapy for secondary hyperparathyroidism includes phosphate binders, vitamin D supplements, and cinacalcet. Arabi et al. reported that alpha-calcidiol and calcitriol can decrease PTH secretion, parathyroid cell hyperplasia, and tumor regression with this treatment (5). Parathyroidectomy is the surgical treatment of the disease. The study has demonstrated that spontaneous regression of cord compression after parathyroidectomy in a patient with Brown tumors involving the posterior arch of the vertebra (6). Surgery is indicated for the treatment of Brown tumors in the case of a critical anatomical localization of the tumor or the neurological deficit. Decompression is often performed in the presence of spinal involvement and spinal cord compression (2).

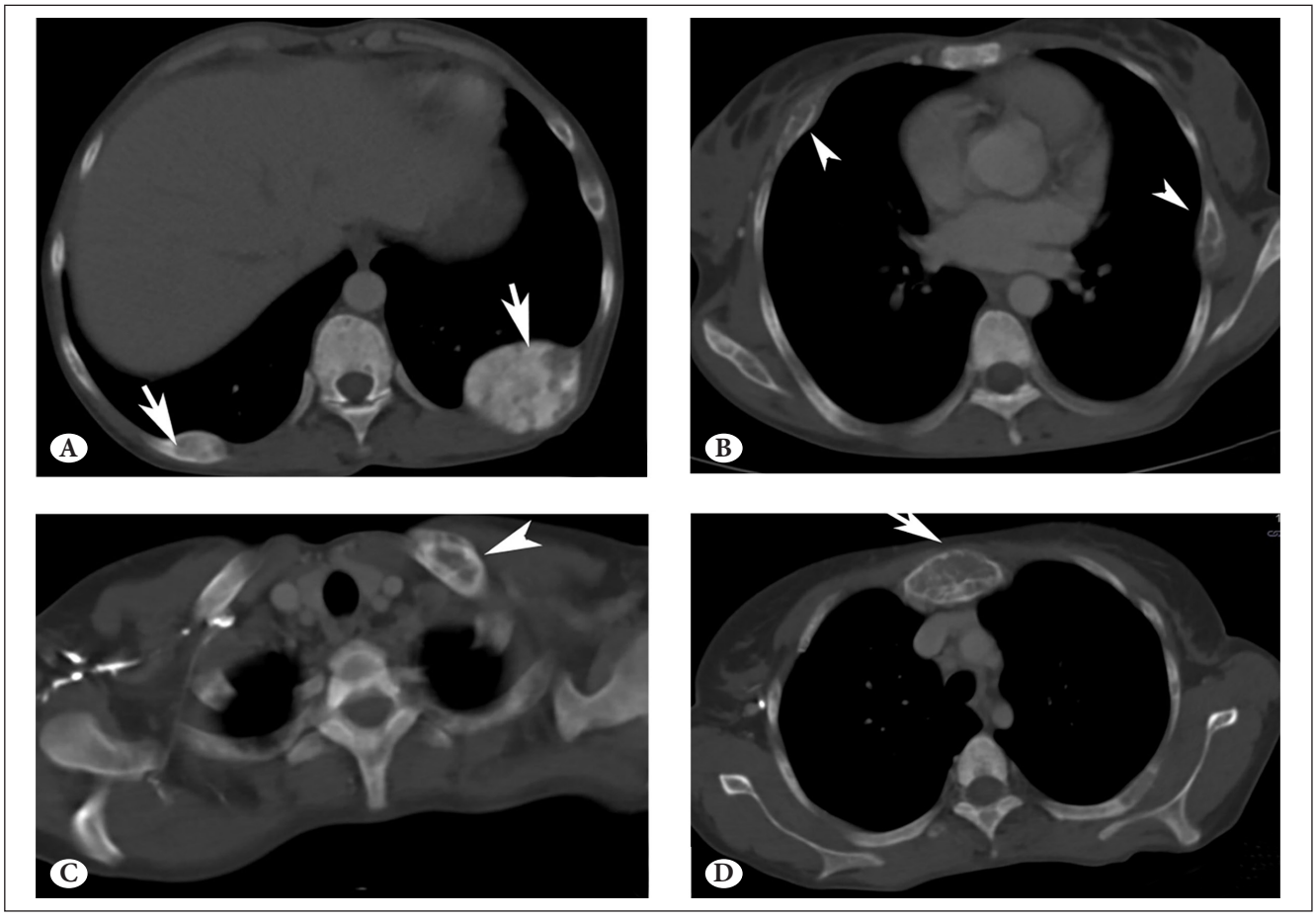

Figure 2. Computed tomography demonstrates a 40x45 mm expansile lytic lesion of the left posterior of the 10th rib, the right posterior of the 10th rib (A), right anterior of the 4th rib, left lateral of the 6th rib (B), the left clavicle (C) and corpus sterni with cortical destruction pattern (D).

In conclusion, Brown tumors should be considered in patients on hemodialysis presenting with low back pain and back pain, radiculopathy, and spinal cord compression. We recommend imaging studies for the evaluation of Brown tumors in such patients. Furthermore, total parathyroidectomy or calcimimetic therapy should be immediately initiated, if needed.

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