

Pathologic Fracture of Humerus as the Initial Manifestation of Metastatic Thyroid Carcinoma

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Clinical Image

An 85-year-old male patient presented at age 83 with acute onset pain in his left elbow without previous trauma. He had a history of hypertension, ex-smoker, chronic obstructive pulmonary disease, aortic valve replacement due double lesion and revascularized chronic ischemic heart disease. The examination revealed severe pain and swelling in the distal third of arm and marked limitation of elbow mobility. Plain radiograph showed a pathological non-displaced fracture of the distal third of the left humerus (Figure 1A). Computed tomography demonstrated an expansile lytic bone lesion of 3.6 cm in diameter with extensive cortical destruction in the posterior, anterior and lateral surfaces of the distal humerus and associated fracture (Figure 1B). The patient underwent surgery for curettage, synthesis with nails and cement filling of the lesion. The histopathological study was compatible with bone metastases with extension to surrounding soft tissues of a Thyroid Carcinoma (TC) with follicular pattern (Figures 2A and 2B). Ultrasound identified a thyroid nodule of 13 mm in diameter in the right lobe and aspiration biopsy was also consistent with a TC with follicular pattern. Total thyroidectomy was performed and confirmed that the node corresponded to a follicular variant of Papillary Thyroid Carcinoma (PTC) (stage pT1bNxM1), with few typical nuclear alterations and occasional papillary foci, surrounded by a thick capsule with foci of calcification and tumor nests, and blood vessels with tumor invasion into surrounding tissue. The patient was treated with Iodine-131 and opioids, but he developed progression of the disease with metastases in cerebellum, gastric mucosa, left iliac bone, lung nodules and lymphadenopathy. He was still alive until 2 years of follow-up.

Bone metastases from differentiated TC, PTC and Follicular Thyroid Carcinoma (FTC), occur in 2-13% of patients and they are more frequent in FTC (7-28%) compared with PTC (1.4-7%) [1]. These bone metastases are usually osteolytic and represent an important source of morbidity and mortality in these patients because they may develop severe complications such as pathological fractures, spinal cord compression, need for radiotherapy or surgery for symptom control, and

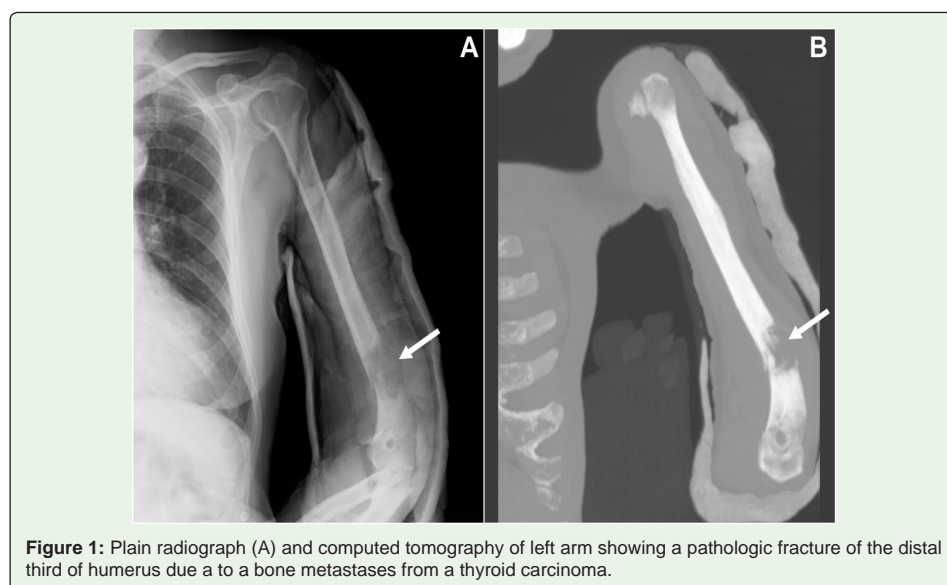


Figure 1: Plain radiograph (A) and computed tomography of left arm showing a pathologic fracture of the distal third of humerus due to a bone metastases from a thyroid carcinoma.

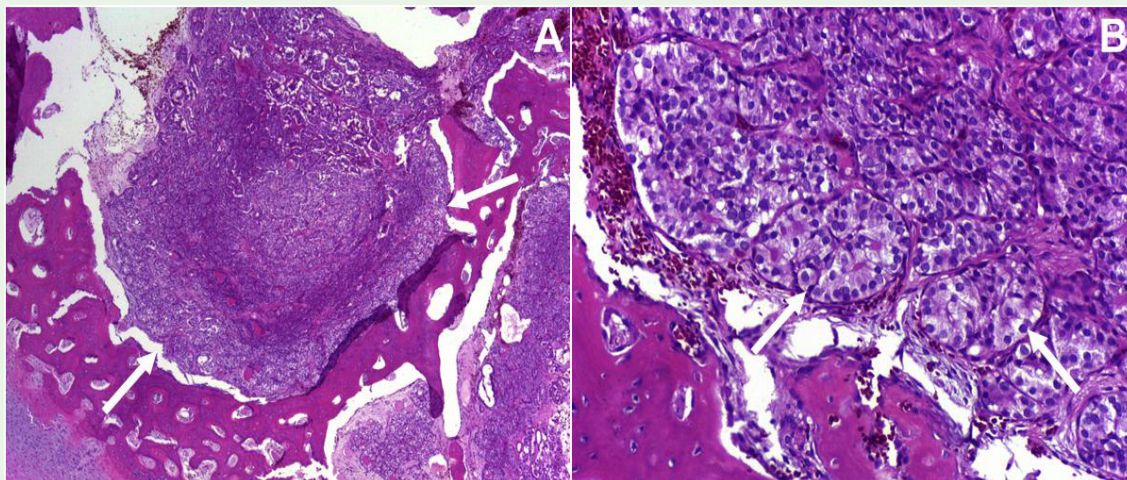


Figure 2: The histopathological study revealed that bone lesion corresponded to a metastasis of thyroid carcinoma with follicular pattern (A, hematoxylin-eosin 4X, arrow). At higher magnification was evident the presence of follicles without papillary changes or typical nuclear alterations of papillary thyroid carcinoma (B, hematoxylin-eosin 20X, arrows).

hypercalcaemia [2]. The incidence of pathological fractures in these patients is 13% and the overall 10-year survival rate when bone metastases are present is 40% [3,1]. Plain radiographs can show bone destruction and sclerosis in the zone of bone metastases, but lesions may not appear on X-rays for several months before the pathologic fracture occurs because the limit of detection of lesions >1cm. Computed tomography can evaluate the extent of metastatic lesions even in sites difficult to evaluate such as the spine and pelvis and its diagnostic sensitivity for bone-seeking cancers is 71-100% [1].

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