CHEST

A 38-Year-Old Woman With an Osteolytic Rib Lesion

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A 38-year-old black woman with a medical history significant for hypertension and depression presented to the emergency department with a 2-week history of lower back pain. This visit was her second in 1 week with the same symptoms, after attaining minimal pain relief with cyclobenzaprine. CHEST 2016; 149(3):e79–e85

KEY WORDS: bone; chest wall; histology; Rosai-Dorfman disease

Case Presentation

To further evaluate the patient's back pain, the emergency department physicians obtained a CT scan of the abdomen and pelvis, which incidentally revealed a lytic lesion on the posterior portion of the right ninth rib (Fig 1). Outpatient follow-up with her primary care physician included a repeat chest radiograph and CT scan of the thorax 1 month later. These scans confirmed an osteolytic lesion with an underlying pathologic fracture that had expanded in nature (Figs 2, 3). She was then referred for thoracic surgical evaluation.

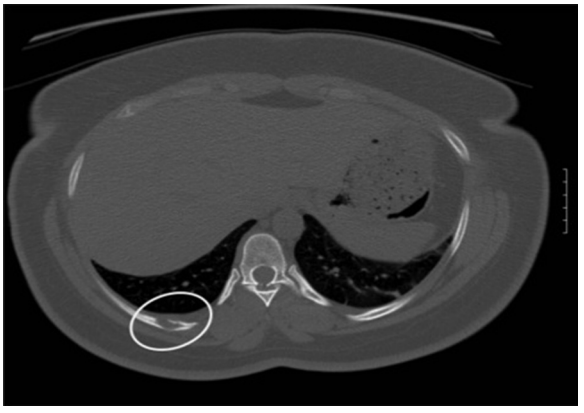

Figure 1 – *Initial CT scan of the abdomen and pelvis in the study patient revealing an incidentally found right ninth rib lytic lesion (circle).*

At the surgical evaluation, the patient denied recent fevers, chills, dyspnea, orthopnea, chest pain, abdominal pain, or history of trauma or malignancy. She reported a history of intermittent night sweats (which preceded this presentation) and a 4-pound weight loss over the past month. Her physical examination was notable for clear breath sounds bilaterally, mild point tenderness over the right posterior ninth rib, and no evidence of any palpable cervical or supraclavicular lymphadenopathy. Results of laboratory testing revealed a hemoglobin level of 11.1 g/dL and a WBC count of 5.07 $\times$ 10^3/mL (differential, 55% neutrophils, 38% lymphocytes, 4% monocytes, and 2% eosinophils). Her C-reactive protein level was elevated at 16.1 mg/L, and the erythrocyte sedimentation rate was just above the normal level at 34 mm/h. The patient's 25-hydroxy vitamin D level was significantly reduced at 8.2 ng/mL. Total calcium, ionized calcium, and intact parathyroid hormone levels, as well as results of serum and urine protein electrophoresis, were all within normal limits.

Given the presence of an expansile, lytic rib lesion in the absence of other significant medical findings, as well as

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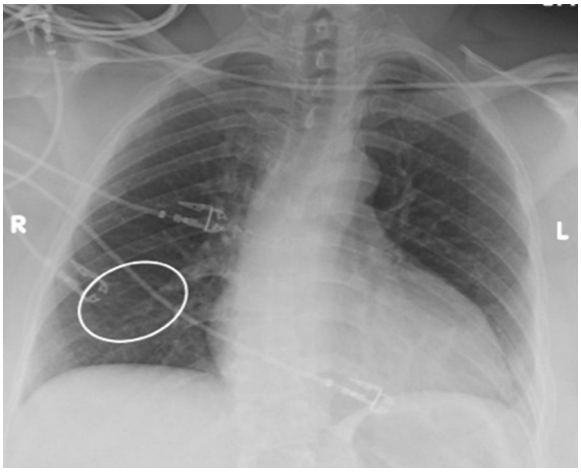

Figure 2 – *Chest radiograph confirming the presence of the lytic lesion (circle).*

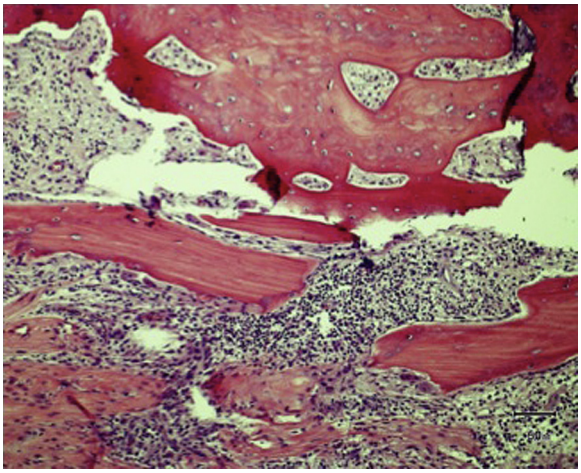

Figure 4 – *Low-power view of fracture and fibrosis with cellular infiltrate and bone destruction. (Original magnification ×4).*

to obtain a definitive diagnosis and guide further treatment, an excisional biopsy of the ninth rib was performed. Because the patient's symptoms were localized to the right ninth rib, additional imaging (eg, bone scan, PET scan) was not obtained. These additional imaging modalities should strongly be considered, however, to rule out other asymptomatic lesions. Although a percutaneous rib biopsy was presented as an alternative, the patient elected to proceed with the excisional biopsy.

The excised rib grossly demonstrated a poorly defined, firm lesion measuring 2 cm in greatest dimension. It appeared to arise from the medullary cavity and involved the cortex in an expansile manner, focally extending through the cortex into the attached intercostal muscle. Located within the lesion was an irregular defect spanning through the medullary cavity. These findings are consistent with the radiographic identification of a lytic lesion with pathologic fracture. At low power, histologic sections exhibited a cellular lesion circumscribed by fibrosis, arising from the medullary cavity. Associated fracture of cortical bone was seen, with no evidence of destruction (Fig 4). Within the lesion were collagen fibers and associated fibroblasts intersecting between and separating areas of

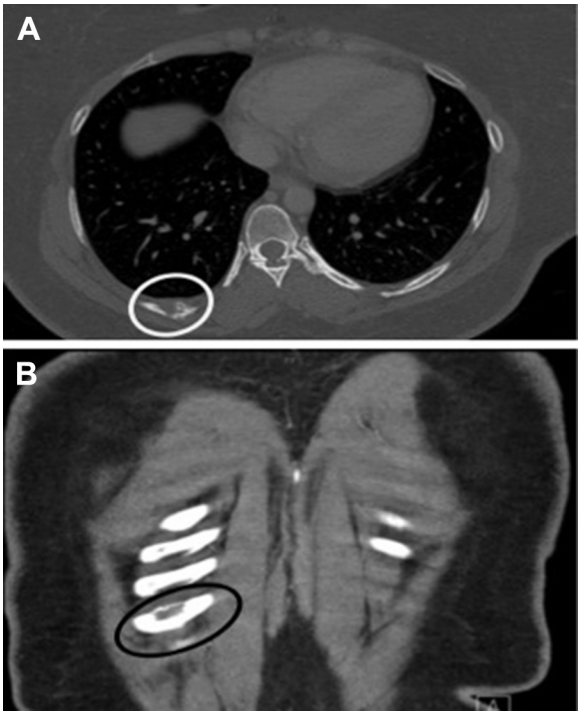

Figure 3 – *CT scan of the thorax. (A) Axial and (B) Coronal images revealing an expansile lytic lesion (circles).*

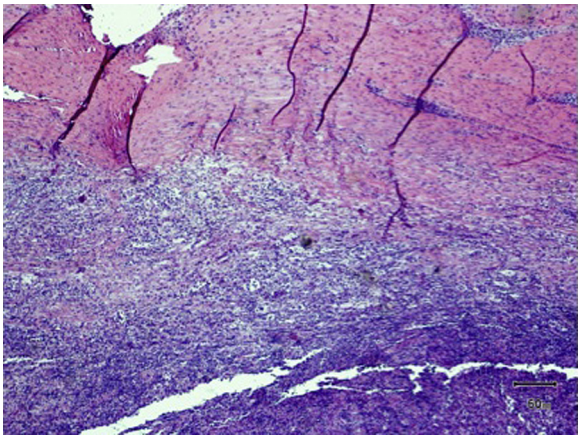

Figure 5 – *Low-power view of cellular medullary lesion and surrounding reactive fibrosis. (Original magnification ×4).*