J Exp Clin Med 2014;6(1):35–36

Contents lists available at ScienceDirect

Journal of Experimental and Clinical Medicine

journal homepage: http://www.jecm-online.com

LETTER TO THE EDITOR

Multiple Osteolytic Lesions with a Non-Traumatic Spinal Compression Fracture: A Case Report of Nonsecretory Multiple Myeloma

A 76-year-old woman with a history of type II diabetes mellitus initially came to our clinic for right hip pain after a fall. The hip radiographs revealed a "moth-eaten" pattern consistent with osteolytic lesions over the pelvis and bilateral femurs (Figure 1A). A whole body bone scan was therefore performed to rule out metastatic lesions, but it failed to show enhanced lesions. While awaiting these results, the patient presented to the emergency department owing to the sudden onset of severe lower back pain that was not associated with trauma. Physical examination revealed knocking tenderness over the lumbar spine, and radiographs demonstrated a newly developed L3 compression fracture. A lumbosacral spine magnetic resonance imaging (MRI) revealed a collapsed L3 vertebra with disseminated lesions with heterogeneous density throughout the spine (Figure 1B). Laboratory data disclosed hypercalcemia (serum calcium: 10.5 mg/dL), renal impairment (creatinine: 2.02 mg/dL), and anemia (hemoglobin: 5.5 g/dL). Under the suspect of symptoms related to multiple myeloma (MM), she was admitted for further examination.

The white cell count and the platelet count were 3400/dL with a normal differential and $1.69 \times 10^5/mm^3$, respectively. Other laboratory investigations showed 7.2 g/dL of total protein, 4.5 g/dL of albumin, 5.1 mg/dL of serum phosphate, and a normal serum parathyroid hormone level (11.1 pg/mL). Serum β_2 microglobulin was highly elevated (10,129 μg/L); however, tumor makers, including carcinoembryonic antigen (CEA), CA-199, and CA-125, were all within the normal ranges. A long bone survey revealed few lytic lesions on each humerus and femur. Confusingly, serum and urine protein electrophoresis were negative for monoclonal gammopathy. Quantitative immunoglobulin (Ig) studies revealed hypogammaglobulinemia with an IgG of 1.07 g/L (normal 5.3-16.5 g/L), IgA 0.12 g/L (normal 0.80-4.00 g/L), and IgM 0.03 g/L (normal 0.50-2.00 g/L). Because MM was still highly suspected, a bone marrow biopsy was performed, which showed scattered interstitial aggregates of plasmacytoid cells with marked atypia that were strongly positive for CD138 immunostain (specific for plasma cells). The CD138+ cells accounted for ~20% of the cellularity. She was finally diagnosed with nonsecretory MM and referred to hematology for chemotherapy. There was nearly a 2-month delay between the initial presentation and the final diagnosis. After 1 year on thalidomide, the symptoms of MM got controlled without no more fracture accident and β_2 microglobulin decreased to 3000 μg/L.

MM is the most common primary malignant bone tumor among patients older than 40 years of age and is characterized by the clonal proliferation of malignant plasma cells in the bone marrow, monoclonal protein in the blood and/or urine, and associated organ dysfunction.[1,2] Osteolytic lesions develop in the majority of patients (70-95%) with newly diagnosed MM, but only 58% of patients complain about bone pain.[2,3] These bone lesions predispose patients to an increased risk for vertebral and hip fractures.[3]

Nonsecretory MM, a rare variant of myeloma that cannot secret an Ig into the serum, accounts for ≤ 5% of all cases of MM.[4]

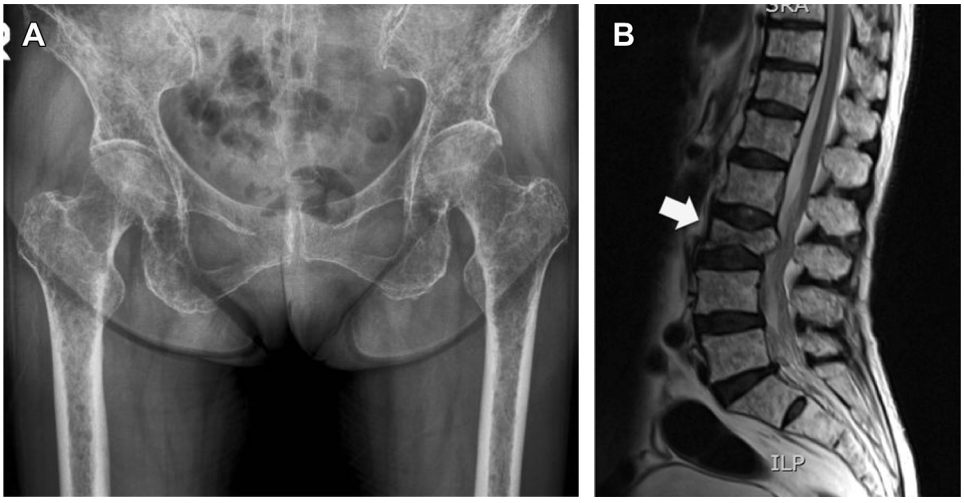

Figure 1 (A) "Moth-eaten" pattern consistent with osteolytic lesions over the pelvis; (B) T2-weighted sagittal MRI shows disseminated lesions with heterogeneous density throughout the spine and an L3 vertebra burst-type fracture (arrow).

http://dx.doi.org/10.1016/j.jecm.2014.01.005

Monoclonal protein in the serum or urine, which is characteristic for the diagnosis of MM, is not detectable, and makes the correct diagnosis difficult, especially for the clinicians. Diagnosis is based on bone marrow biopsy instead of serum or urine immunofixation electrophoresis. Delayed diagnosis is not uncommon for this rare variant of plasma cell myeloma.

Myeloma-related pathologic fractures, especially in the elderly, should always be listed in the differential diagnosis despite negative serum or urine electrophoresis studies. Hematology consultation and possible bone marrow biopsy may be necessary when the diagnosis of MM is strongly suspected.

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