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Research Article

Asymptomatic Multiple Myeloma Masquerading as Accidental Fracture

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A B S T R A C T

Multiple myeloma (MM) is a disease caused by the diffuse, uncontrolled proliferation of plasma cells. Recent estimates indicate that nearly 140,000 new cases are diagnosed each year worldwide. The presenting symptoms have usually been severe bone pain, osteolytic bone damage and pathologic fractures, hypercalcemia, kidney damage, compromised immune function, anaemia. We report two cases of multiple myeloma, which presented as fractures following an accident. Biopsy of both the cases showed multiple fragments of bone mixed with fibro collagenous tissue and sheets of mature and immature plasma cells. Both the cases were diagnosed as cases of multiple myeloma, which presented with pathological fracture. Their treatment was started immediately.

Keywords: Multiple Myeloma, Fracture, Plasma Cells

Introduction

Multiple Myeloma (MM) is a disease caused by the diffuse, uncontrolled proliferation of plasma cells. Recent estimates indicate that nearly 140,000 new cases are diagnosed each year worldwide. The presenting symptoms have usually been severe bone pain, osteolytic bone damage and pathologic fractures, hypercalcemia, kidney damage, compromised immune function, anaemia. The patient age is typically over 40, with the majority of the cases diagnosed between ages 50 and 70. The male to female ratio is approximately 2:1. They commonly present as bone pain, especially back pain (58%), fatigue due to anemia (32%), pathologic fractures (34%), weight loss (24%), paresthesia (5%) and fever (0.7%). Some can also be asymptomatic (34%). We report two cases of multiple myeloma, which presented as fractures following an accident.

Case Report

Case 1: A 59-year-old female is presented to the orthopaedic department with severe pain and swelling of left proximal arm after history of fall while walking. Her pain got aggravated by movement and relieved with rest. On physical examination, the proximal humerus region was tender and range of motion for left shoulder was slightly painful and no limitations in all the directions. Other range of motion values of all joints were within normal limits. Muscle strength and neurological examination were also normal. The general condition of the patient was fair with mild pallor. No abnormalities detected in neurological, respiratory and abdominal examination.

Case 2: A 60-year-old male was admitted to the male medicine ward with complaints of fever on and off for past six months, decreased appetite and weight loss and sudden pain and swelling in left forearm bone. There was no similar past history in both the cases.

X-ray for both the patients was ordered revealed fracture in the proximal part of right humerus in case 1 (Figure 1)

and fracture of left side radius and ulna in case 2 (Figure 2).

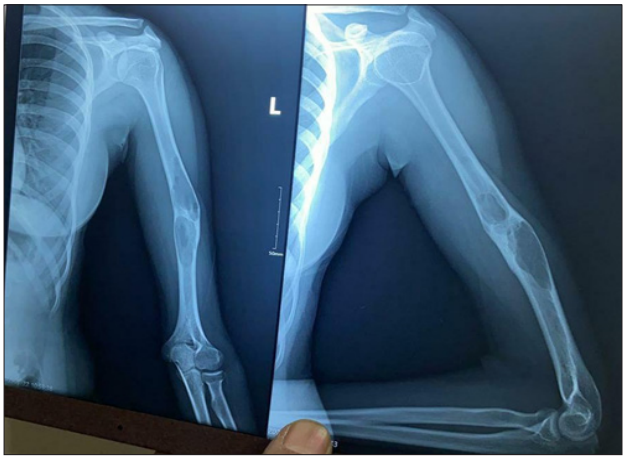

Figure 1.Fracture in the Proximal part of Right Humerus

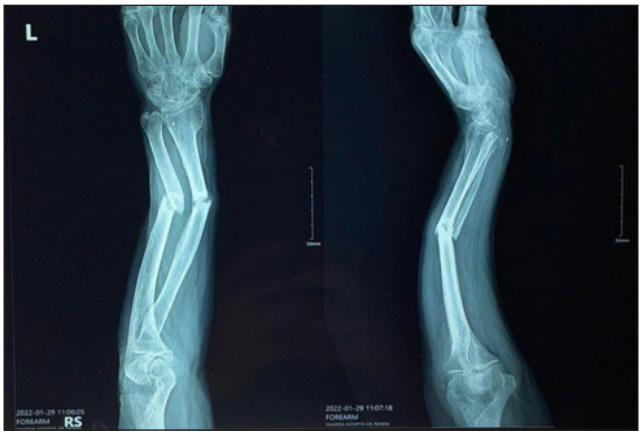

Figure 2.Fracture of Left Side Radius and Ulna

Routine investigations for both the patients were done and in case 1 laboratory tests revealed patient was anaemic (low Hb = 9.8g/dl), erythrocyte sedimentation rate (ESR) (90 mm/h, normal range 0-30) and C-reactive protein (CRP) (1.38 mg/L, normal range 0-0.5) were elevated. The level of 25-OH vitamin D3 was at 25.90 mg/L. For case 2, investigations concluded that the patient was anaemic (Hb 7.6 g/dL), peripheral smear showing microcytic hypochromic anaemia whereas erythrocyte sedimentation rate (ESR) (110 mm/h, normal range 0-30) and C-reactive protein (CRP) (1.92 mg/L, normal range 0-0.5) were elevated. The level of 25-OH vitamin D3 was at 78.90 mg/L.

However, even after treatment, on follow up examination after a month, the swelling persisted along with pain. Biopsy was sent to rule out pathological fracture. Biopsy of case 1 showed multiple fragments of bone mixed with fibro collagenous tissue, sheets of mature and immature plasma cells (Figure 3). Granulation tissue from the fracture site of case 2 revealed a similar picture showing mature and immature plasma cells admixed with multiple fragments of bone.

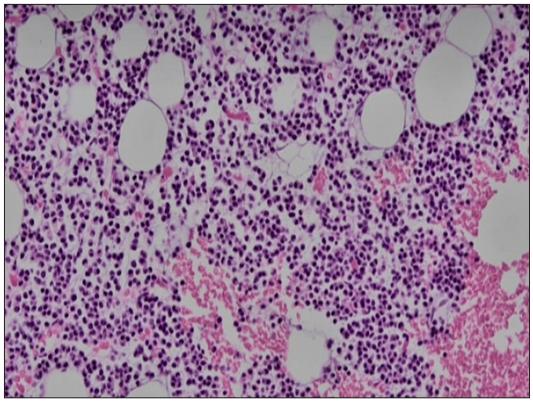

Figure 3.Multiple Fragments of Bone Mixed with Fibro Collagenous Tissue, Sheets of Mature and Immature Plasma Cells

A tentative diagnosis of plasma cell dyscrasia was made in both the cases. Subsequently, following investigations were performed.

Serum calcium (9.76 mg/dL, normal range 8.6-10.6), lactate dehydrogenase (LDH) (137 U/L, normal range 0-248), alkaline phosphatase (ALP) (94 U/L, normal range 30-120), parathyroid hormone (PTH) (65.8 ng/L, normal range 15-68.3) were within normal limits, Serum M band electrophoresis was done. It showed sharp and dense M band in fast gamma region. Serum free kappa = 6.37 (normal range = 3.3 to 19.4 mg/l) and serum free lambda light chain 67.35 normal range = 5.71-26.3 mg/l). Whole body PET CT Scan was done for disease evaluation and to see metastasis showed extensive osteolytic lesions in the axial and proximal appendicular skeleton (Case 1).

Calcium (6.54 mg/dL, normal range 8.6-10.6) and Serum M band electrophoresis showed sharp and dense M band in fast gamma region (Case 2).

Bone marrow aspiration and biopsy was ordered next for both. Bone marrow aspirate of case 1 was cellular showing 20% plasma cells. Bone marrow biopsy showed marked increase in plasma cells (average plasma cells = 50-60% consistent with plasma cell myeloma. Bone marrow aspiration and biopsy of case 2 also revealed plasma cell myeloma. Both the cases were diagnosed as multiple myeloma, which presented with pathological fracture. Their treatment was started immediately. They are continuing follow up with a good general medication, decreased pain and normal physical examination.

Discussion

Multiple Myeloma is a systemic disease that affects the bone marrow. The most obvious symptom of the disease is pain, more often in the lower back and pelvis. The sources of pain are osteoporosis and compression fracture due to lytic bone lesions. The release of Osteoclast Activating Factor (OAF) enhances through the IL-1 beta and IL-6 around the

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accumulation of plasma cells resulting in increased bone destruction and suppressed osteoblastic activity. Other symptoms include pathological fractures as we saw in these two cases. Bones involved can be ribs, skull, pelvis, spine, proximal long bones, scapula and sternum. In one third of patients, multiple myeloma is diagnosed after a pathologic fracture occurs; such fractures commonly involve the axial skeleton. Two thirds of patients complain of bone pain, commonly with lower back pain. The bone pain is frequently located in the back, long bones, skull and pelvis.[1]

A typical presentations include gastrointestinal symptoms like abdominal pain, hepatosplenomegaly, acute pancreatitis and dysphagia. Neurological symptoms like headache, hemiplegia, drowsiness, nausea, gait instability. Renal symptoms like polyuria, glomerulonephritis, tubulo-intestitial nephritis and end stage renal disease. Orbital diseases like proptosis, macular detachment, tearing of lacrimal sac and visual loss.[2]

MM patients with a fracture at diagnosis had an inferior survival compared to MM patients without a fracture at diagnosis, which indicates that fractures are a proxy for a more established and/or active disease at diagnosis.[3]

It has also been documented that a high percentage of patients presenting without apparent symptoms of myeloma but were later diagnosed to have stage III myeloma (as in our case). Bone involvement in MM has been related to the severity of the disease and adverse outcomes.[4,5]

MMs are often seen not respond to conventional chemotherapeutic agents. Immunomodulatory drugs and the proteasome inhibitors have revolutionised the management of newly diagnosed MM.[6,7]

Initiation of chemotherapy and assessment of eligibility for autologous stem cell transplantation is evaluated for such group of patients. Most patients with multiple myeloma will receive prophylaxis against infection at some point in their treatment. The patients are assessed for infection, adverse treatment effects, renal and thrombotic complications, in managing issues related to pain, nutrition, psychosocial support.[8,9]

Conclusion

Although the diagnosis of Multiple Myeloma is simple but in presence of pathological fracture on X-ray examination in some cases, an accurate diagnosis is obtained only by pathological examination. Multiple Myeloma is an important pathology that should not be ignored in the differential diagnosis in skeletal system pain even if typical findings are not initially detected especially in older people.

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