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Multiple myeloma revealed by a monoarthritis: A case report

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ABSTRACT

Introduction: Multiple myeloma (MM) is defined by the presence of monoclonal protein in the urine and/or serum, and bone-marrow plasma cells greater than 10%. Musculoskeletal manifestations of this disorder are rare. Case Report: We report a case of an 80-year-old female patient presenting with monoarthritis and joint swelling, detailed investigations revealed that she was suffering from multiple myeloma in which monoarthritis was a musculoskeletal complication of the disease. Conclusion: We report a case of a patient presenting with monoarthritis and joint swelling diagnosed with multiple myeloma.

Keywords: Multiple myeloma, Monoarthritis, Malignancy, Musculoskeletal manifestation

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INTRODUCTION

Multiple myeloma (MM) is characterized by a neoplastic proliferation of plasma cells associated, in more than 95% of cases, with the production of a single class of immunoglobulins known as a monoclonal protein, which can be either its subclass or its light chain in the serum or urine. Multiple myeloma can occasionally manifest with joint disease. We report an unusual case of MM initially manifested by monoarthritis and joint swelling.

CASE REPORT

An 80-year-old female patient with a history of hypertension referred to the rheumatology department with a 20-day history of progressive disabling monoarthralgia and knee swelling. Hypertension was diagnosed 10 years ago. There were no other chronic comorbidities such as diabetes mellitus, renal disease, recurrent urinary tract infections, chronic alcoholism, or pre-existing joint damage such as chronic arthritis and prosthetic joints.

At the admission the patient presented with a 10-day history of general malaise and fever. She also gave a five-day history of a painful and swollen right knee unrelated to trauma. Acute monoarthritis in adults can have many causes, but crystals, trauma, and infection are the most common. A diagnostic aspirate of the knee joint yielded minimal clear synovial fluid. Investigations showed normochromic normocytic anemia with a hemoglobin of 54 g/l, white cell count of 13.11×10^9/l ($4.0–10.0\times10^9$/l) and platelets of 278×10^9/l and a grossly raised erythrocyte sedimentation rate (>140 mm/hr). She was hypercalcemic (corrected calcium 132 mg/l), phosphate

65.5 mg/l, alkaline phosphatase 46 U/l (40–150 U/L) with normal liver function (ALT 7 U/l, AST 8 U/l, normal bilirubin). Significant renal disease was evident urea 1.36 g/l (0.13–0.43 g/l), creatinine 20.8 mg/l (6–13 g/l), uric acid 111.8 mg/l (26–60 mg/l), proteinemia 97 g/l (60–80 g/l) and β_2-microglobulinemia 59.29 mg/l (0.5–2.4 g/l). Here albumin was 19 g/l (40–50 g/l), Fibrinogen 4.30 g/l (2.0–4.0 g/l) and C-reactive protein was 149.4 mg/l (0.0–5.0 mg/l). Acute monoarthritis was caused by a crystal deposition of uric acid.

Immunoturbidimetric analysis showed that monoclonal hypergammaglobulinemia was due to the increase of IgG with the value of 28.96 g/l (8–16 g/l). Serum protein electrophoresis revealed a big paraprotein band (98 g/l) (Figure 1). Serum immunofixation showed the presence of an IgG-Lambda gammopathy (Figure 2). Urine immunofixation showed also the presence of an IgG-Lambda gammopathy (Figure 2). A bone marrow smear revealed that 37% of plasma cells were dystrophic. Bone X-ray of the skull showed multiple lytic lesions. Multiple myeloma was diagnosed by examining of bone marrow aspiration and biopsy showing the existence of plasma cells infiltration and plasmacytosis with 32% malignant plasma cells. Thus a diagnosis of MM stage III of the International Staging System was made.

DISCUSSION

Here we report a case of an 80-year-old female patient presenting with monoarthritis and joint swelling,

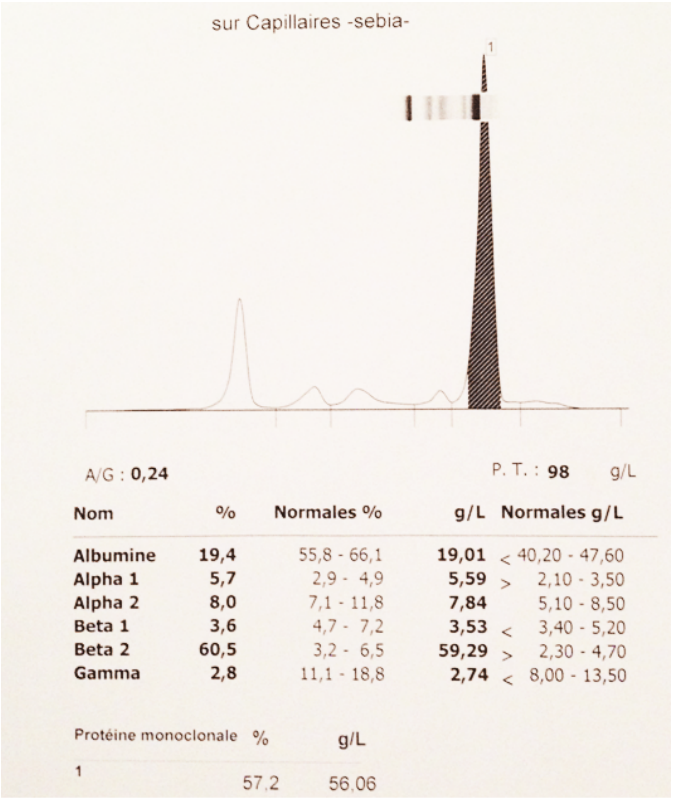

Figure 1: Serum protein electrophoresis.

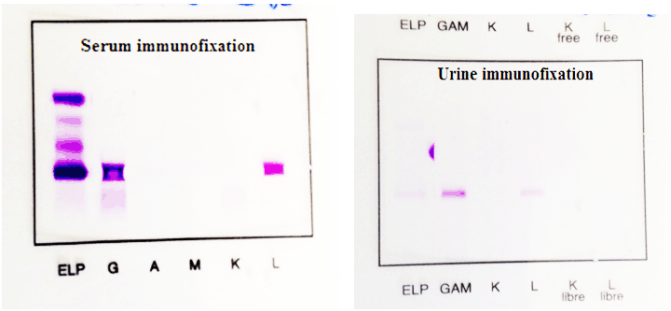

Figure 2: Serum and urine immunofixation

detailed investigations revealed that she was suffering from MM in which monoarthritis was a musculoskeletal complication of the disease. On review of the literature, a few case reports have described articular presentations associated with MM. MM is defined by the presence of monoclonal protein in the urine and/or serum, and bone-marrow plasma cells greater than 10%. Symptomatic disease is characterized by evidence of end-organ damage caused by plasma cell proliferation, or CRAB features: C: hypercalcaemia (>11.5 mg/dL (2.65 mmol/L]); R: renal failure (serum creatinine >2 mg/dL [1.73 mmol/L]); A: anemia (hemoglobin <10 g/dL [12.5 mmol/L] or >2 g/dL [1.25 mmol/L] below the lower limit of normal); and B: bone disease (lytic lesions, severe osteopenia or pathologic fractures) [1].

Also, investigations revealed acute kidney injury associated with MM. The most common cause of severe renal failure in patients with MM is a tubulointerstitial pathology that results from the very high circulating concentrations of monoclonal immunoglobulin free light chains. These endogenous proteins can result in isolated proximal tubule cell cytotoxicity, tubulointerstitial nephritis and cast nephropathy [2]. The increase in uric acid level in this case may be a consequence of decreased clearance caused by the impairment in glomerular filtration rate, or it may reflect local tissue hypoxia or increased cell breakdown associated with renal disease [3]. Hyperphosphatemia is linked to renal failure. Thus, loss of phosphorus homeostasis due to excretion failure in chronic kidney disease and the effects of disordered bone remodelling results in hyperphosphatemia [4]. The beta-2 microglobulin is elevated in proportion to tumor mass and is associated with the renal failure in this case.

Monoarthritis and joint swelling were the initial presentation of MM in this case report. Indeed, the mechanism underlying joint involvement in MM could be either due to both septic arthritis and gouty arthritis [5]. In this case, serum uric acid level was very out of range, but no crystals were found on the synovial fluid examination, probably this monoarthritis is a gouty arthritis.

Other pathophysiological mechanisms, underlying joint involvement in MM are erosive arthritis due to local synovial precipitation of cryoprecipitable paraproteins

[6] or immunoglobulin crystals [7], that activate the inflammatory response. Secondly, a carpal tunnel syndrome may develop from intrasynovial deposition of amyloid protein or immunoglobulins [8].

CONCLUSION

We report a case of an 80-year-old female patient presenting with monoarthritis and joint swelling, detailed investigations revealed that she was suffering from multiple myeloma in which monoarthritis was a musculoskeletal complication of the disease. On review of the literature, a few case reports have described particular presentations associated with multiple myeloma.

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Author Contributions

Aissam El Maataoui – Substantial contributions to conception and design, Acquisition of data, Analysis and interpretation of data, Drafting the article, Revising it critically for important intellectual content, Final approval of the version to be published
Nabiha Kamal – Analysis and interpretation of data, Revising it critically for important intellectual content, Final approval of the version to be published

Guarantor

The corresponding author is the guarantor of submission.

Conflict of Interest

Authors declare no conflict of interest.

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