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Multiple Myeloma in a Male Patient with Inadequate Response to Osteoporosis Treatment: A Case Report

Osteoporoz Tedavisine Yetersiz Yanıt Veren Erkek Hastada Multipl Miyelom: Olgu Sunumu

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Abstract

Secondary causes of osteoporosis are more common in males compared to females, and multiple myeloma is a scarce cause in men. This case report emphasizes the necessity of exploring the reasons for secondary osteoporosis in menwho have inadequate responses to osteoporosis therapies.

Keywords: Multiple myeloma, osteoporosis, treatment failure

Öz

Osteoporozun ikincil nedenleri erkeklerde kadınlara göre daha sık görülür ve multipl miyelom erkeklerde nadir görülen bir nedendir. Bu olgu sunumunda, osteoporoz tedavisine yetersiz yanıt veren erkek hastalarda sekonder osteoporozun nedenlerinin araştırılmasının önemi vurgulanmaktadır.

Anahtar kelimeler: Multipl miyelom, osteoporoz, tedavi başarısızlığı

Introduction

Osteoporosis typically goes unnoticed in men as it presents no symptoms unless a fracture occurs. Even though males experience higher rates of mortality and morbidity from osteoporosis, they tend to be assessed less frequently for osteoporosis (1). The occurrence of secondary factors leading to osteoporosis is higher in males compared to females (1,2). Among the infrequent causes of osteoporosis in men is multiple myeloma (MM). This case report highlights the significance of examining the reasons for secondary osteoporosis in a male individual experiencing treatment failure to osteoporosis therapy.

Case Report

A man aged 66 came in complaining of pain in his chest and şank a year prior. The individual experienced discomfort that began during a playful engagement with his three-year-old grandson and persisted for two days. Upon careful examination, the thoracic region was found to be devoid of any swelling, bruising, or crepitus. The radiological assessment conducted for the patient revealed no evidence of rib fractures; However, a notable reduction in the height of the lower thoracic vertebrae was observed (Figure 1). A request was made for bone

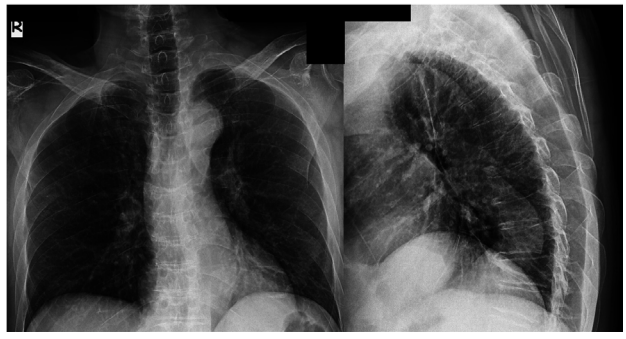

Figure 1. The radiologic imaging shows vertebral body height loss in the patient's lower thoracic vertebrae

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mineral density (BMD) measurements and various laboratory analyses. Results from laboratory tests indicated a hemoglobin level of 12.6 g/dL, an mean corpuscular volume of 96, an erythrocyte sedimentation rate (ESR) of 62 mm/h, a vitamin B12 concentration of 126 pg/mL, and an elevated leukocyte count in the urine. The findings from the comprehensive laboratory assessments, encompassing total protein, albumin, serum calcium and phosphorus, uric acid, liver function tests, kidney function tests, thyroid function tests, parathormone, free testosterone, gonadotropin, prolactin, prostate-specific antigen, and C-reactive protein, were all determined to be within normal limits. Additionally, the concentration of 25-hydroxyvitamin D was measured at 34.30 ng/mL. The results of the bone mineral densitometry assessment were as follows: the total T score for the L1-L4 region was -3.1, with a BMD of 0.750 g/cm². For the femur, the total T score was -1.5, corresponding to a BMD of 0.802 g/cm². The femoral neck presented a t-score of -1.1 and a BMD of 0.774 g/cm². Alongside antibiotic therapy and vitamin B-12 replacement, a plan was set to include intravenous zoledronic acid at a dosage of 5 mg, as well as treatments with calcium carbonate and cholecalciferol. It was mentioned that there would be a follow-up examination in 1 to 3 months. After a gap of 11 months since his initial visit, the patient came back to our facility with a complaint of pain in his flank. In the results from the control laboratory tests, the total protein concentration was recorded at 8.2 g/dL, while the ESR indicated a significant elevation of 106 mm/h. The hemoglobin level was measured at 11.7 g/dL, and the platelet count was noted as 141000. The parathormone level was determined to be 9.2 pg/dL, with magnesium levels at 1.7 mg/dL. Additionally, serum calcium and phosphorus levels, uric acid, liver function tests, kidney function tests, thyroid function tests, free testosterone, gonadotropin, prolactin, prostate-specific antigen, C-reactive protein, 25-hydroxyvitamin D, and albumin values were all within the normal reference intervals. He had no complaints such as weight loss, fever, or night sweats. The results from the bone density evaluation showed that the total t-score for the L1-L4 region was -3.7, with a BMD of 0.680 g/cm². The femur's total t-score was -1.4, indicating a BMD of 0.819 g/cm², and the femoral neck had a t-score of -1.0 with a BMD of 0.790 g/cm². Computed tomography of the vertebral column revealed degenerative changes in the vertebral bodies (osteophytes, increased sclerosis), approximately 25% loss of height in the T10 vertebral body, and a sclerotic lesion in the T3 vertebral body (Figure 2). A thorough evaluation was performed, including serum and urine electrophoresis, as well as immunofixation. Protein and creatinine levels were measured in both spot and 24-hour urine samples. The analysis included assessments of immunoglobulins IgA, IgG, IgM, and both kappa and lambda light chains. The patient was referred to the hematology clinic due to the observed elevation in IgA and kappa light chains. Finally, the diagnosis of MM was confirmed with bone marrow aspirate findings showing 39% plasma cells. After the chemotherapy, the patient underwent autologous stem cell transplantation. A written informed consent was obtained from the patient.

Discussion and Conclusion

Malignancy should always be considered a reason for osteoporosis and fractures (3). MM is classified as a hematologic malignancy characterized by the abnormal proliferation of clonal plasma cells. This disorder is associated with various severe complications, including the formation of destructive bone lesions, renal dysfunction, anemia, and elevated calcium levels in the blood (2,4-8). The loss of bone in MM is attributed to an increase in the resorption of bone by osteoclasts, coupled with a decrease in the formation of new bone structures (5-9). Bone disorders associated with MM may result in various severe issues, including fractures, spinal cord compression, and hypercalcemia. These complications significantly diminish patients' quality of life, contributing to severe pain, psychological challenges, loss of independence, and an elevated risk of mortality (2,7,8). In a study to define

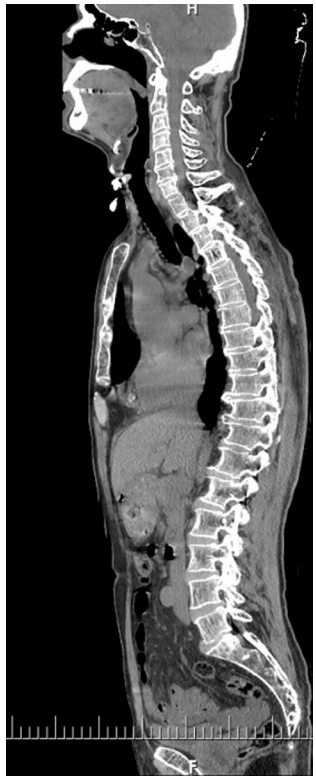

Figure 2. Degenerative changes in the vertebral bodies (osteophytes, increased sclerosis), approximately 25% loss of height in the T10 vertebral body, and a sclerotic lesion in the T3 vertebral body in computed tomography of the vertebral column

and investigatethe diagnostic process of patients with MM from the rare and undiagnosed diseases cohort study, Vijjhalwar et al. (10) found that 52% of participants had received a diagnosis other than MM, with musculoskeletal diseases including osteoporosis, costochondritis, or muscle strains. The initial symptoms reported with the highest frequency comprised back pain and fractures in the vertebrae, with subsequent presentations including chest pain, shoulder pain, rib pain, and fatigue. MM is a crucial medical condition that should be considered in the differential diagnosis for individuals experiencing treatment failure for osteoporosis therapy. Measuring serum protein electrophoresis and immunofixation is essential for evaluating elderly osteoporosis patients, especially those with unexplained fragility fractures, as this could indicate an underlying plasma cell disorder needing monitoring and potential treatment (9).

Mumford et al. (11) reported a case of severe osteoporosis and IgA myeloma combined with multiple vertebral fractures. IgA myeloma was detected in this patient during an examination for persistent pain in the spine and hips that did not improve within the expected time. The patient, who initially had a vertebral fracture at L3, experienced deterioration in BMD, acute fractures in the vertebrae at T9, T11, and T12, and sustained loss of heightat L3 despite bisphosphonate treatment during the six-month interval that has transpired. In this period, serum electrophoresis showed no monoclonal bands, and the urine Bence-Jones protein test was negative. The administration of teriparatide commenced ten months subsequent to the occurrence of the initial fracture. However, investigating ongoing intense pain in the thoracic region and hip 12 months after the first vertebral fracture, revealed the presence of Bence-Jones protein, and the findings from the serum immunofixation analysis have substantiated the presence of IgA kappa paraprotein. Also, multiple lytic lesions were detected and then bone marrow aspirate provided definitive confirmation of the diagnosis of MM (11).

Pain is the most common symptom of MM, while weight loss and anemia are other common findings (6). Anemia, thrombocytopenia, elevated ESR, hypercalcemia, hyperuricemia, renal dysfunction and reversal of albumin-globulin ratio may occur. Unusual serum electrophoresis warns the physicians that myeloma may be present. Radiologically, lytic bone lesions can be observed, particularly in the proximal regions of the spine and limbs, and pathological fractures may ensue (6,7). The patient initially had macrocytic anemia with B-12 deficiency and an elevated ESR of 62 mm/h. furthermore, an elevated count of leukocytes was detected in the urine, while all other laboratory assessments showed normal findings. Imaging revealed height loss in the patient's lower thoracic vertebrae without lytic lesions. Since there were no accompanying findings such as hypercalcemia, hyperuricemia, renal dysfunction, and reversal of the albumin-globulin ratio, we did not initially suspect MM and therefore did not request electrophoresis. Anti-osteoporotic treatment was initiated after the diagnosis of osteoporosis was confirmed through bone densitometry results. When he applied again 11 months later with şank pain, electrophoresis was requested due to inadequate response to osteoporosis treatment, anemia, increased ESR, and increased total protein. Findings suggestive of myeloma were detected on electrophoresis. After the bone marrow biopsy, the diagnosis of MM was established for the patient.

MM represents a critical condition that warrants careful consideration when evaluating skeletal system pain and osteoporosis, even if typical findings cannot be detected at first. Managing osteoporosis in patients with MM requires a multidisciplinary approach. Treatment for MM, such as chemotherapy and steroids, might deteriorate bone density and worsen osteoporosis. Individualized treatment plans and close monitoring are essential to optimizing outcomes and reducing the risk of skeletal complications.

MM should be considered for cases experiencing treatment failure to osteoporosis therapy, particularly older individuals with high ESR and acute fractures. Our case report highlights the importance of considering the possibility of MM and requesting appropriate tests for OP patients without waiting for treatment failure.

Ethics

Informed Consent: A written informed consent was obtained from the patient.

Footnotes

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