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MULTIPLE MYELOMA PRESENTING WITH SEVERE BACK PAIN: A CASE REPORT

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Abstract

This study aims to highlight the diagnostic challenges and management strategies in a case of Multiple Myeloma (MM), a hematologic malignancy characterized by malignant plasma cells in the bone marrow. The case involves a 40-year-old male who presented with persistent back pain for two months, impacting his mobility. Initial physical and neurological assessments were largely unremarkable, but laboratory and radiological investigations revealed multiple osteolytic lesions suggestive of MM. Typical MM symptoms include hypercalcemia, renal dysfunction, anemia, and bone pain, though this patient did not present all the classical signs, which underscores the diagnostic complexity. A bone marrow puncture was planned for definitive diagnosis. The study emphasizes the importance of radiological evaluation in MM diagnosis and the need for prompt treatment addressing acute symptoms, such as hypercalcemia and renal insufficiency, followed by a comprehensive long-term management plan. Early oncology consultation and a multidisciplinary approach are critical for improving patient outcomes. The case demonstrates the importance of a holistic, symptom-based approach in MM management, incorporating regular monitoring and coordinated care to address the multifaceted nature of the disease.

Keywords: multiple myeloma, back pain, case report

Introduction

Multiple Myeloma (MM) is a hematologic malignancy characterized by the proliferation of malignant plasma cells in the bone marrow, leading to the overproduction of monoclonal proteins (Abd & Mohammed, 2020; Abduh, 2024). It accounts for approximately 1% of all cancers and around 10% of hematologic malignancies (Rajkumar, 2022). MM often presents with a range of clinical manifestations, including bone pain, anemia, hypercalcemia, and renal insufficiency (Landgren & Waxman, 2010). Bone involvement, particularly in the spine, is one of the most common clinical features. However, the presentation can sometimes be atypical, making diagnosis challenging (Kyle et al., 2003).

Back pain, while a common symptom in the general population, is also a frequent presentation in MM patients, often due to vertebral fractures or lesions. The early and accurate diagnosis of MM in patients presenting with such symptoms is crucial to initiate timely treatment and potentially improve outcomes (Coluzzi et al., 2019).

In this case report, we discuss a patient who presented with severe back pain, ultimately diagnosed with multiple myeloma, emphasizing the importance of a high index of suspicion for MM in patients with persistent back pain and associated neurological symptoms. This study aims to highlight the diagnostic challenges and management

strategies in a case of Multiple Myeloma (MM), a hematologic malignancy characterized by malignant plasma cells in the bone marrow.

Case Presentation

A 40-year-old male patient presented with a chief complaint of persistent back pain for the past two months. The pain was described as severe, restricting the patient's ability to walk and sit without discomfort. This pain, exacerbated by movement, felt as though the back was being tightly gripped. The patient denied experiencing symptoms like dizziness, nausea, and vomiting. Furthermore, there were no reports of fever or respiratory difficulties. The patient utilized a bedpan for both urination and bowel movements, both of which were reported as normal. The patient's appetite remained unaffected, and they reported satisfactory sleep. There was no medical history indicative of hypertension, diabetes mellitus, or heart diseases. Notably, a consultation with the oncology department had been undertaken.

Vital signs at presentation included a GCS of 15 with a fully alert and oriented state (CM), blood pressure at 139/90 mmHg, a body temperature of 36°C, respiratory rate of 20 breaths/min, heart rate of 100 beats/min, and an oxygen saturation (SpO2) level of 100%. On physical examination, the chest shape of the lungs was normal, the breathing movements were symmetrical, the right and left palpable fremitus were strong symmetrical, right and left sonor percussion, vesicular breath sounds in both lung fields, no rales and wheezing were found. Physical examination of the heart revealed palpation of ictus cordis at ICS V linea axillaris anterior left, regular single S1S2 auscultation, no murmur. Neurological assessment showed normotonus muscle tone and eutrophic muscle bulk. Motor strength was graded at 4/4 for the upper limbs and 3/3 for the lower limbs. Other neurological examinations were unremarkable.

Laboratory examination showed anemia, increased LED, low globulin levels and high uric acid. Serum protein electrophoresis did not reveal any monoclonal gammopathy. On biopsy examination, the histological results of plasmacytoma cells were found, and an increase in plasma cells of 10%. Then CD138 (+), CD 38(+), CD 56(+), Lambda (+) were obtained with the impression that they were myeloma markers.

Radiological examinations provided more insights. A head X-ray (AP Lateral) depicted multiple osteolytic processes across all calvarial lobes, with signs suggestive of increased intracranial tension or abnormal calcifications pointing towards metastasis. The chest X-ray (Thorax AP Supine) was remarkable for multiple lytic lesions of varying sizes across all visualized bones, hinting at primary bone lesions, possibly indicative of multiple myeloma. MRI of the thoracolumbar spine revealed marrow edema and compression fractures, consistent with metastasis, in vertebrae T6 through T9, T11, and T12, in addition to a bulging intervertebral disc at the L4-L5 level. Lastly, a CT scan of the thorax and abdomen showcased lytic lesions with a punch-out appearance, corroborating the multiple myeloma diagnosis. These were scattered across the bilateral clavicles, right proximal humerus, sternum, ribs, cervico-thoraco-lumbar vertebrae, pelvis, and bilateral proximal femurs. The CT scan also unveiled a mild compression fracture at the T7 vertebra, two suspected cystic nodules in the liver's fourth segment, bilateral non-obstructive nephrolithiasis, fibrosis in segments of the right lung with bilateral postero-basal pleuritis, and an unenlarged heart with no signs of pericardial effusion. Other thoraco-abdominal structures appeared normal.

Based on the clinical findings and radiological results, the patient was diagnosed with multiple myeloma and a comprehensive treatment regimen was initiated. The patient was prescribed ranitidine (Acitral) 3x1 tablet, aluminum hydroxide and magnesium hydroxide (Maganol) 3x1 tablet, fluoxetine (Kalxetin) 2x20 mg, allopurinol 1x300 mg, pregabalin (Provelyn) 3x75 mg, celecoxib (Celebrex) 2x200 mg, lactulose (Laxadime) 1x2 c.orig, tamsulosin (Prostam SR) 1x1 tablet, clonazepam (Sincronik) 3x1/2 tablet, ceftriaxone 1x2g, dexamethasone (Indexon) 3x5 mg, ketorolac 3x30 mg, domperidone (Arcolase) 1x40 mg, and pamidronate (Bonevel) 6 mg drip in normal saline. Additionally, an intravenous drip of Ringer's lactate solution (Asering) at 500cc/12 hours was administered.

Results and Discussion

A patient with persistent back pain and notable radiological findings presented a clinically complex and diagnostically challenging case. The significance of this case lies not only in its intricate presentation but also in the importance of a comprehensive approach for diagnosis and management.

The presentation of MM can vary greatly. Although the symptoms are often more subacute and insidious, the disease can manifest with severe symptoms. Typical symptoms of MM often include hypercalcemia, renal insufficiency, anemia, and bone pain with lytic lesions and other symptoms such as nausea, vomiting, headaches, spinal compression, susceptibility to infection. Laboratory examinations found increased LED and serum uric acid. In a retrospective study, the most common symptoms were anemia (73%), bone pain (58%), increased creatinine (48%), and hypercalcemia (28%) (Kyle et al., 2003). Based on the 2014 International Myeloma Working Group criteria, the diagnosis of multiple myeloma is made if clonal bone marrow is found in plasma cells of ≥10% or extramedullary plasmacytoma is found on biopsy and includes one or more myeloma defining events, namely: (1) evidence the presence of organ damage that contributes to plasma cell proliferative disorders such as hypercalcemia (>2.75 mmol/L), renal insufficiency (creatinine clearance <40 mL/minute or serum creatinine >2 mg/dL), anemia, and bone lesions (skeletal radiography, CT, or PET-CT); (2) one or more positive signs of the following malignancy biomarkers are found: bone marrow clonal plasma cells ≥ 60%, > 1 focal lesion discovered by magnetic resonance imaging (MRI), uninvolved serum free light chain (FLC) ratio ≥ 100 (Rajkumar et al., 2014).

On physical examination revealed severe bone pain that interfered with his mobility, and was supported by the patient's X-ray, MRI, and CT scan results showing various lytic lesions throughout the sceletal structure, which indicated primary bone lesions or possible multiple myeloma. Although these findings are characteristic of MM, the accuracy and completeness of the radiological examination provides depth in the radiological supporting diagnosis. The presence of osteolytic lesions on radiological examination can appear due to an imbalance between the osteoblast and osteoclast processes of the bone which causes bone loss so that the bones can become damaged and fragile which manifests with pain like being gripped. in the bones, this is in line with what our patient experienced (Gaudio et al., 2020). Then a blood lab examination found an increase in LED, an increase in uric acid levels, and anemia caused by myeloma cells attacking normal bones, then removing healthy red blood cells while the hemoglobin in the blood cells red cannot deliver oxygen to the whole body which causes the patient to be tired and pasty (Mohty et al., 2010). This case shows anemia and bone lesions so it

can be classified as active MM. And on biopsy examination, the histological results of plasmacytoma cells were found, and an increase in plasma cells of 10% supported the diagnosis of Multiple Myeloma. In addition, the distinction between MM and MGUS is important due to their different prevalence and treatment requirements, therefore serum protein electrophoresis (SPEP) helps differentiate multiple myeloma from other causes of monoclonal gammopathy (Tripathy, 2012). This is in line with these diagnostic criteria, and the absence of monoclonal gammopathy Serum protein electrophoresis excludes MGUS as a diagnosis.

Treatment for MM, especially in high-risk cases, often involves a multi-pronged approach. The key to immediate treatment is to stabilize the acute problem, in this case such as the risk of infection, unbearable pain, high uric acid levels, anemia (Terpos et al., 2015). Based on recent studies, it has been found that long-term administration of bisphosphate can minimize bone damage.

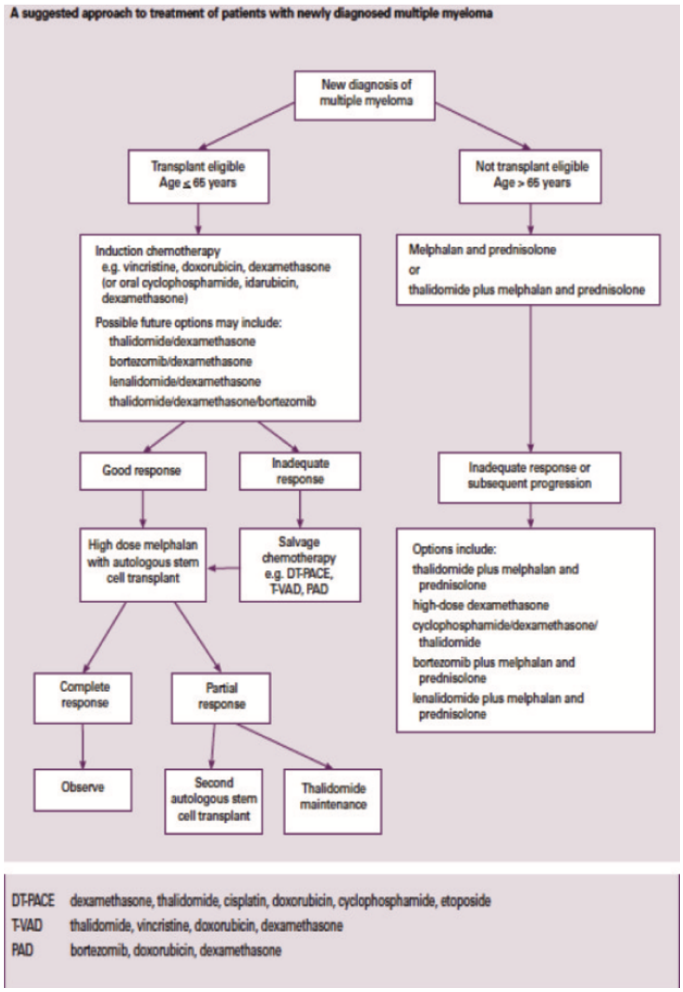

Figure 1. Suggest Approach to Treat Patient with Newly Diagnosed Multiple Myeloma

Intravenous pamidronate and zoledronic acid, and oral clodronate are used for the management of MM bone disease. CLO has been shown to reduce the development of new osteolytic lesions by 50% after 2 years of administration, as well as reduce the degree of hypercalcemia and hypercalciuria, and reduce bone pain. CLO is administered orally in a 1600-mg single dose or in two divided doses (800 mg). The tablets should be taken

on an empty stomach with fluid (not milk) at least 1 h before or 1 h after food, on a daily basis, in order to maximize bioavailability which is low, in the range of 2%. Infusion of BPs has the advantage of higher compliance rates, Intravenous administration of BP (PAM and ZOL) is generally performed as an outpatient procedure in a clinical setting ensuring compliance. Infusion time ranges from 15 minutes (ZOL) to 2–4 hours (PAM). For patients where administration in an outpatient clinic is not possible, a home visit for BP infusion has been shown to significantly improve the patient's quality of life (Terpos et al., 2009).

Early consultation with an oncologist is essential, especially when patients present with complex symptoms or the presence of progressive bone disease. Situations such as spinal cord compression or hyperviscosity, given their emergency nature (Kaasa et al., 2018; Sørensen et al., 2022). Additional treatments involving chemotherapy should be discussed in consultation with hematologists and oncologists.

In choosing the initial treatment for multiple myeloma, it is necessary to consider the patient's suitability for receiving ASCT (Autologous Stem Cell Transplantation). Age is the main determinant of whether patients receive ASCT. For high-risk patients who are transplant eligible, it is common practice to administer vincristine-doxorubicin-dexamethasone (VAD) followed by early ASCT (Rajkumar, 2022).One of the regimen options for MM patients who are transplant candidates
covered by BPJS in Indonesia is VAD where the method of administration consists of a combination of 4 days of continuous infusion of vincristine (0.4 mg/day) and doxorubicin (7 mg/m2) given via a venous catheter centrally accompanied by intermittent administration of dexamethasone (40 mg every morning for 4 days). This regimen is given at 4 week intervals. Duration of response in patients with relapsed MM using a VAD regimen has a median survival of approximately 9 months (Yusuf & Rizki, 2023). A multi-disciplinary approach, combining hematology, anesthesia, and radio-oncology specialists, can significantly optimize patient outcomes.

Conclusion

This case reinforces the necessity of a holistic approach in diagnosing and managing MM. From recognizing the typical and atypical symptoms to adopting a multi-pronged treatment strategy and emphasizing the importance of regular monitoring and multidisciplinary care, this case serves as a beacon for future medical practices in handling similar complexities.

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