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Case Report

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A CASE REPORT OF MULTIPLE MYELOMA IN A YOUNG MALE WITH ATYPICAL PRESENTATION

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ABSTRACT

Multiple myeloma, characterized by the abnormal proliferation of malignant plasma cells in the bone marrow, typically manifests with symptoms such as bone pain, anemia, and renal insufficiency. However, its clinical presentation can vary widely, and atypical symptoms can present diagnostic challenges. We present a case of a 45-year-old male with chest pain radiating to the back for six months and right lower limb cellulitis, initially suspected to be cardiovascular in origin. Further investigations revealed an unexpected underlying etiology of multiple myeloma, underscoring the importance of considering unusual presentations in the diagnostic evaluation of hematological malignancies. The patient showed significant improvement with appropriate management, emphasizing the importance of early recognition and tailored treatment strategies in such cases.

KEYWORD:- MM (MULTIPLE MYELOMA), PIGN (POST INFECTIOUS GLOMERULONEPHRITIS), CXR (CHEST XRAY), BMBX (BONE MARROW BIOPSY), SPEP (SERUM PLASMA PROTIEN ELECTROPHORESIS), UPEP (URINE PROTIEN ELECTROPHORESIS), SFLC(FLOW CYTOMETRY).

INTRODUCTION

Multiple myeloma is a plasma cell neoplasm characterized by the abnormal proliferation of malignant plasma cells in the bone marrow, leading to the production of monoclonal immunoglobulins and clinical manifestations such as bone pain, anemia, hypercalcemia, renal insufficiency, and recurrent infections. While the disease typically presents with classical symptoms, atypical presentations can occur, posing diagnostic challenges. This case highlights the association of cellulitis and chest pain with multiple myeloma, which is not commonly recognized.

Key characteristics of multiple myeloma

1. **Cancer of plasma cells:** The abnormal growth of plasma cells in multiple myeloma disrupts normal blood cell production in the bone marrow, leading to weakened immunity, anemia, and other blood-related issues.
2. **Monoclonal Proteins (M-proteins):** Cancerous plasma cells produce large amounts of abnormal antibodies called M-proteins or paraproteins, which can accumulate in the body and damage organs such as the kidneys.
3. **Bone involvement:** Multiple myeloma often causes bone damage, leading to bone pain, fractures, and a condition called "lytic lesions" (areas where bone tissue is destroyed). The bones most commonly affected are the spine, ribs, and pelvis.

Risk factors

- **Age:** Most cases are diagnosed in individuals over 60, with the disease rarely occurring in people under 40.
- **Gender:** Men are more likely to develop multiple myeloma than women.
- **Race:** African Americans have a higher risk of developing multiple myeloma compared to other racial groups.
- **Family history:** Having a close relative with multiple myeloma or a related condition can slightly increase the risk.
- **Exposure to certain chemicals or radiation:** Long-term exposure to certain toxic substances (such as benzene) and previous radiation therapy may increase the risk.

Symptoms of Multiple Myeloma (often summarized as "CRAB" symptoms)

- **C (Calcium elevation):** High levels of calcium in the blood, which can cause nausea, vomiting, constipation, and confusion.
- **R (Renal failure):** Kidney dysfunction or failure due to the buildup of M-proteins and calcium.
- **A (Anemia):** A decrease in red blood cells, leading to fatigue and weakness.
- **B (Bone damage):** Bone pain, fractures, and lytic lesions due to cancer's impact on bone tissue

Case presentation

We report the case of a 45-year-old male with no significant past medical history, presenting with chest pain radiating to the back for six months and swelling of the right lower limb for two weeks. Initial evaluation revealed pallor, clubbing, and significant edema. Neurological and cardiovascular, respiratory examinations were unremarkable. Abdominal examination was unremarkable, but pitting edema was noted in the right lower limb. Initial suspicion of myocardial infarction was ruled out by doing ECG followed by troponin I and ck-mb which were unremarkable, usg doppler for right lower limb was done and was unremarkable and on further evaluation routine investigations were done in which low hemoglobin, raised serum creatinine and urea and serum calcium was out of proportinately raised and on doing usg whole abdomen it was found to be renal medical disease.patient was suspected to be a case of PIGN for which 24hr urinary protien and urine routine examination was sent - urine examination showed protienuria 1+ with no cast and crystals and 24hr urinary protien doesnot reveal nephrotic range protienuria .patient was still complaining of low grade back pain for which mri whole spine was done suspecting disc dislocation and bulging but mri revealed multiple disc bulging in lumbar dorsal and cervical spine with hyperintense round lesions in d2,d6,d11,d12,l1,l2 suggestive of ?secondaries after which malignancy was suspected. skull imaging studies and ncct kub also revealed lytic lesions and other abnormalities consistent with multiple myeloma. Further evaluation, including laboratory tests - serum protien electrophoresis was done in which m band was detected and bone marrow biopsy, confirmed the diagnosis of multiple myeloma with extra medullary involvement.

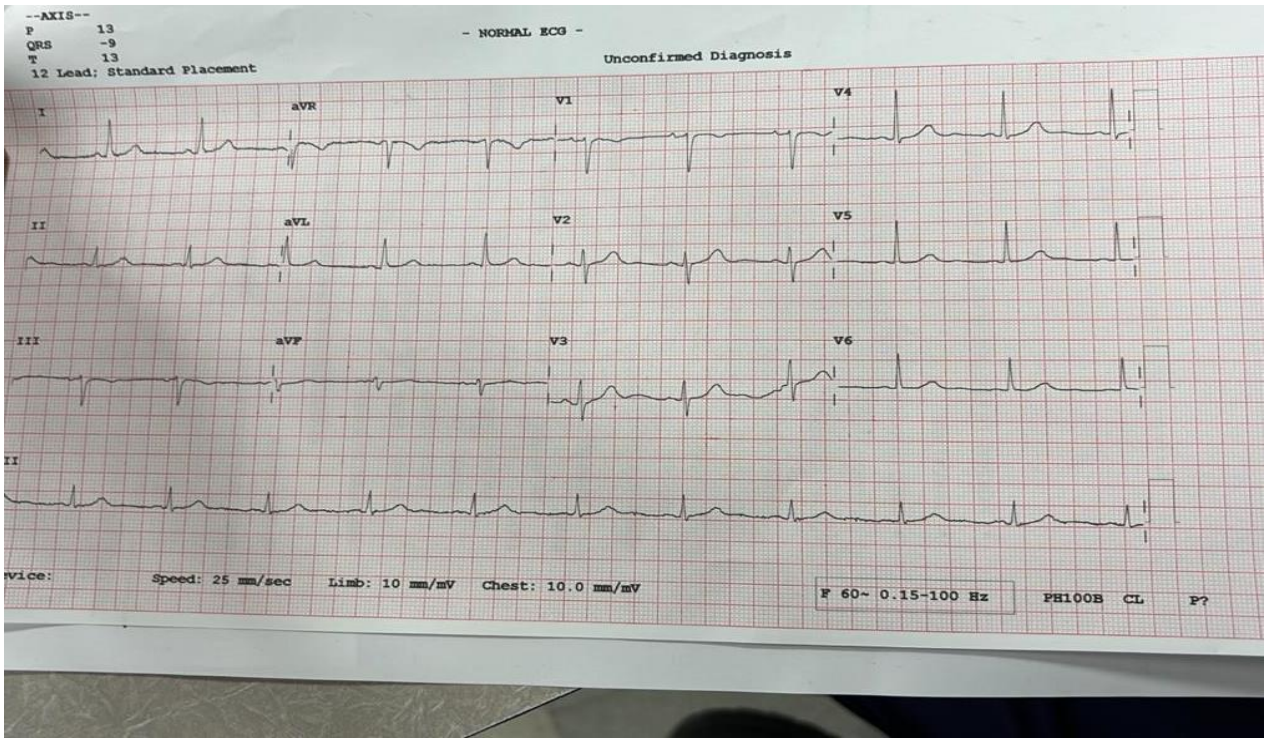

Figure 1

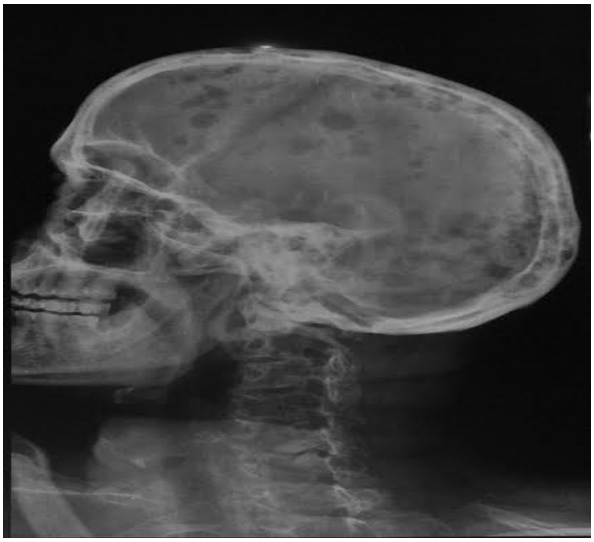

Figure 2

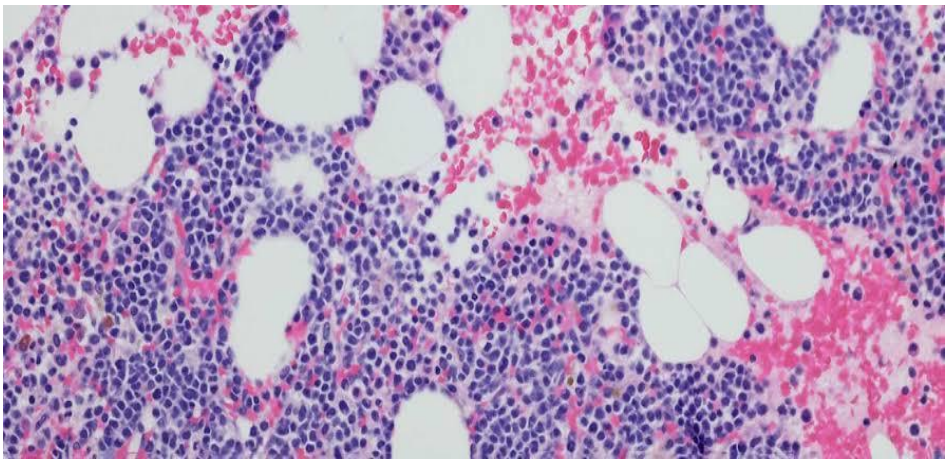

Figure 3

Name		Billing Date	: 03/11/2022 17:18
Age	: 46 Yrs	Sample Collected on	: 03/11/2022 17:21
Sex	: Male	Sample Received on	: 04/11/2022 07:14
P ID No.	: P1100300005636	Report Released on	: 04/11/2022 17:30
Accession No	: 110022055777		
Referred By	:	Ref no.	:

Report Status - Preliminary Report

Test Name	Result	Biological Ref. Interval	Unit
BIOCHEMISTRY			
KAPPA AND LAMBDA FREE LIGHT CHAINS			
# Kappa Free Light Chain Sample: Serum Method: Immunoturbidimetry	834.50 H	3.3 - 19.4	mg/L
# Lambda Free Light Chain Sample: Serum Method: Immunoturbidimetry	31.78 H	5.71 - 26.3	mg/L
# Kappa / Lambda Ratio Sample: Serum Method: Immuno Nephelometry	26.26 H	0.26 - 1.65	

** End of Report**

Result Awaited : Immunofix. 24hr Ur

Figure 4

Management and Outcome: The patient received supportive care, including PRBC transfusion and dialysis. With each dialysis session, there was gradual improvement in symptoms over several weeks. Close monitoring of disease response showed significant improvement in the overall condition of the patient. Treatment included chemotherapy and bisphosphonates, aimed at controlling the plasma cell proliferation and managing bone disease.

Common chemotherapy drugs for multiple myeloma

1. **Melphalan:** Often used in high doses before stem cell transplantation. It's also used in combination with other drugs for older patients or those not eligible for transplantation.
2. **Cyclophosphamide:** Another alkylating agent used either alone or with other treatments like steroids or bortezomib.
3. **Doxorubicin:** A type of anthracycline that is sometimes given in combination with other drugs like dexamethasone and bortezomib.
4. **Vincristine:** Occasionally part of a combination regimen but less commonly used in recent years.
5. **Bortezomib (Velcade):** Although classified as a proteasome inhibitor, it is often used alongside chemotherapy drugs to enhance the effect of treatment.

Chemotherapy Regimens

Chemotherapy is often administered in combination with other medications to improve outcomes. Some common regimens include:

- **VCD (Velcade, Cyclophosphamide, Dexamethasone):** A common regimen used to treat newly diagnosed myeloma.
- **VDT-PACE (Velcade, Dexamethasone, Thalidomide, Cisplatin, Adriamycin, Cyclophosphamide, Etoposide):** A more aggressive combination sometimes used in relapsed cases.
- **MPT (Melphalan, Prednisone, Thalidomide):** Often used for elderly patients who are not candidates for a stem cell transplant.
- In this particular case patient was given vcd therapy of 3 cycles.

Role of other therapies

In recent years, chemotherapy has often been combined with newer treatments:

- **Immunotherapy:** Drugs like daratumumab (Darzalex) target specific proteins on myeloma cells.
- **Proteasome inhibitors:** Bortezomib, carfilzomib, and ixazomib inhibit cell growth and are often part of first-line or relapsed myeloma treatment.
- **Stem cell transplantation:** After high-dose chemotherapy (usually melphalan), a stem cell transplant helps restore the bone marrow.
- **Corticosteroids:** Drugs like dexamethasone or prednisone are commonly used in combination with chemotherapy to reduce inflammation and kill myeloma cells.

DISCUSSION

Multiple myeloma (MM) (myelo-marrow and –oma mass in Greek) is a clonal plasma cell proliferative disorder characterized by the abnormal increase of monoclonal immunoglobulins. The classification of multiple myeloma is divided into three types, 1)Monoclonal Gammopathy of undetermined significance, 2) asymptomatic multiple myeloma (smoldering mm) (Indolent mm), 3)symptomatic multiple myeloma. This case highlights the atypical presentation of multiple myeloma in a young male, emphasizing the importance of considering uncommon presentations in the diagnostic evaluation of hematological malignancies. Early recognition and prompt initiation of appropriate treatment are crucial for optimal patient outcomes. Clinicians should maintain a high index of suspicion for underlying malignancies, even in the absence of classical symptoms, to ensure timely diagnosis and intervention .The association of cellulitis and chest pain with multiple myeloma, though rare, should be considered, especially when initial investigations for more common conditions are inconclusive.

keywords-MM, BMBX,CXR

Clinical features

- Bone or back pain
- Systemic symptoms
- Recurrent infections

Laboratory features

- Normocytic anemia
- Raised esr
- Hypercalcemia
- Renal impairement
- Proteinuria

SCREEN FOR MM

- SPEP
- SERUM FLC
- UPEP

M PROTEIN ABSENT NORMAL SPEP	M PROTEIN PRESENT ABNORMAL FLC RATIO
MM UNLIKELY WORKUP FOR OTHER CAUSE	MM POSSIBLE SCREEN FOR CRAB

CONCLUSION

Uncommon presentations such as young age, chest pain, and lower limb cellulitis can be the initial manifestations of hematological malignancies like multiple myeloma. Clinicians should be vigilant in recognizing such atypical presentations to facilitate timely diagnosis and management, ultimately improving patient outcomes.

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