International Journal of Science and Research (IJSR)
ISSN: 2319-7064
Impact Factor 2024: 7.101

Right Atrial Mass Lesion Discovered Following a Pathological Fracture: A Rare Presentation of Evolving Plasma Cell Neoplasm

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Abstract: ***This case report describes a rare and evolving presentation of a plasma cell neoplasm in a 57-year-old female who initially presented with a solitary pathological tibial fracture and no prior history of multiple myeloma. Biopsy of the fracture-associated soft tissue mass confirmed plasmacytoma. Subsequent PET-CT and echocardiography revealed a right atrial mass. Initial serum electrophoresis showed no monoclonal band, but a later repeat confirmed an M- protein spike, supporting evolving multiple myeloma. The atrial mass regressed following radiotherapy but recurred after systemic chemotherapy, indicating aggressive extramedullary behaviour. This case highlights the importance of comprehensive evaluation in patients presenting with isolated bone lesions.***

Keywords: Monoclonal antibodies, Multiple myeloma, Hypergammaglobulinemia, PET CT, Extramedullary plasmacytoma, Radiosensitive

1. Introduction

Plasma cell neoplasms may present as solitary plasmacytoma or as part of multiple myeloma (MM). Solitary lesions can progress to MM over time. Cardiac involvement by plasmacytomas is exceedingly rare and often suggests advanced disease. A high index of suspicion and thorough systemic evaluation are essential in patients presenting with pathological fractures, even in the absence of prior hematologic disease.

2. Case Presentation

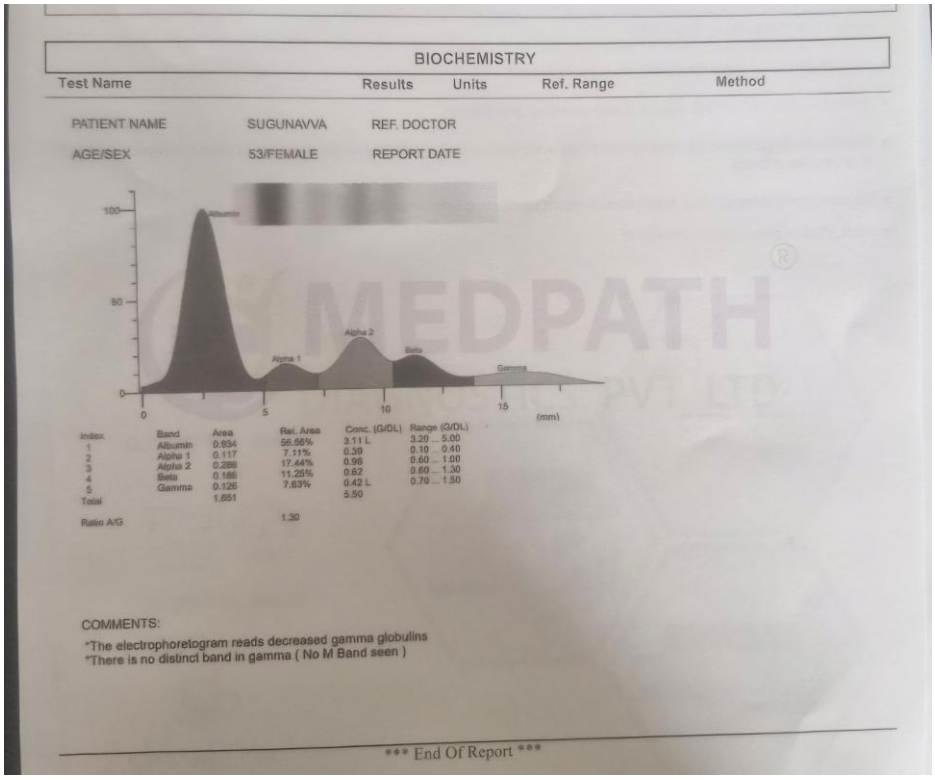
Patient Details:
A 57-year-old female with no known chronic illnesses presented to the orthopaedic outpatient department with pain and swelling in her right leg after minimal trauma. Imaging revealed a fracture of the tibia with a lytic lesion and adjacent soft tissue mass.

Histopathological Evaluation:
Biopsy of the mass showed sheets of monoclonal plasma cells, confirming a plasmacytoma.

Laboratory Investigations:

Test Result Normal Range
- Serum Calcium 7.6 mg/dL 8.5–10.5 mg/dL
- Serum Creatinine 0.9 mg/dL 0.6–1.2 mg/dL
- Haemoglobin 10.8 g/dL 12–15 g/dL

Serum Protein Electrophoresis:
June 2024:



BIOCHEMISTRY

Test Name	Results	Units	Ref. Range	Method

PATIENT NAME SUGUNAVVA REF. DOCTOR

AGE/SEX 53/FEMALE REPORT DATE

Index	Band	Area	Rel. Area	Conc. (G/DL)	Range (G/DL)
1	Albumin	0.934	56.56%	3.11 L	3.20 ... 5.00
2	Alpha 1	0.117	7.11%	0.39	0.10 ... 0.40
3	Alpha 2	0.288	17.44%	0.96	0.60 ... 1.00
4	Beta	0.186	11.25%	0.62	0.60 ... 1.30
5	Gamma	0.126	7.63%	0.42 L	0.70 ... 1.50
Total		1.651		5.50	

Ratio A/G 1.30

COMMENTS:

*The electrophoretogram reads decreased gamma globulins
*There is no distinct band in gamma (No M Band seen)

*** End Of Report ***

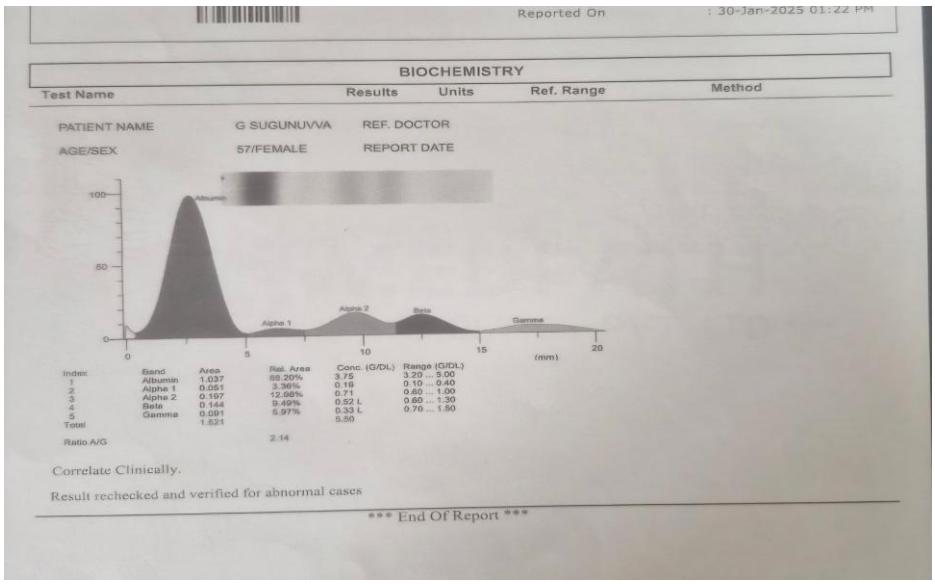
Gamma globulin: 0.91 g/dL

No M-band

A/G ratio: 1.30

Comment: Hypogammaglobulinemia, no monoclonal spike

January 2025 (Repeat):



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BIOCHEMISTRY

Test Name	Results	Units	Ref. Range	Method

PATIENT NAME G SUGUNUVVA REF. DOCTOR

AGE/SEX 57/FEMALE REPORT DATE

Index	Band	Area	Rel. Area	Conc. (G/DL)	Range (G/DL)
1	Albumin	1.037	68.20%	3.75	3.20 ... 5.00
2	Alpha 1	0.051	3.36%	0.18	0.10 ... 0.40
3	Alpha 2	0.197	12.98%	0.71	0.60 ... 1.00
4	Beta	0.144	9.49%	0.52 L	0.60 ... 1.30
5	Gamma	0.091	5.97%	0.33 L	0.70 ... 1.80
Total		1.521		5.50	

Ratio A/G 2.14

Correlate Clinically.

Result rechecked and verified for abnormal cases

*** End Of Report ***

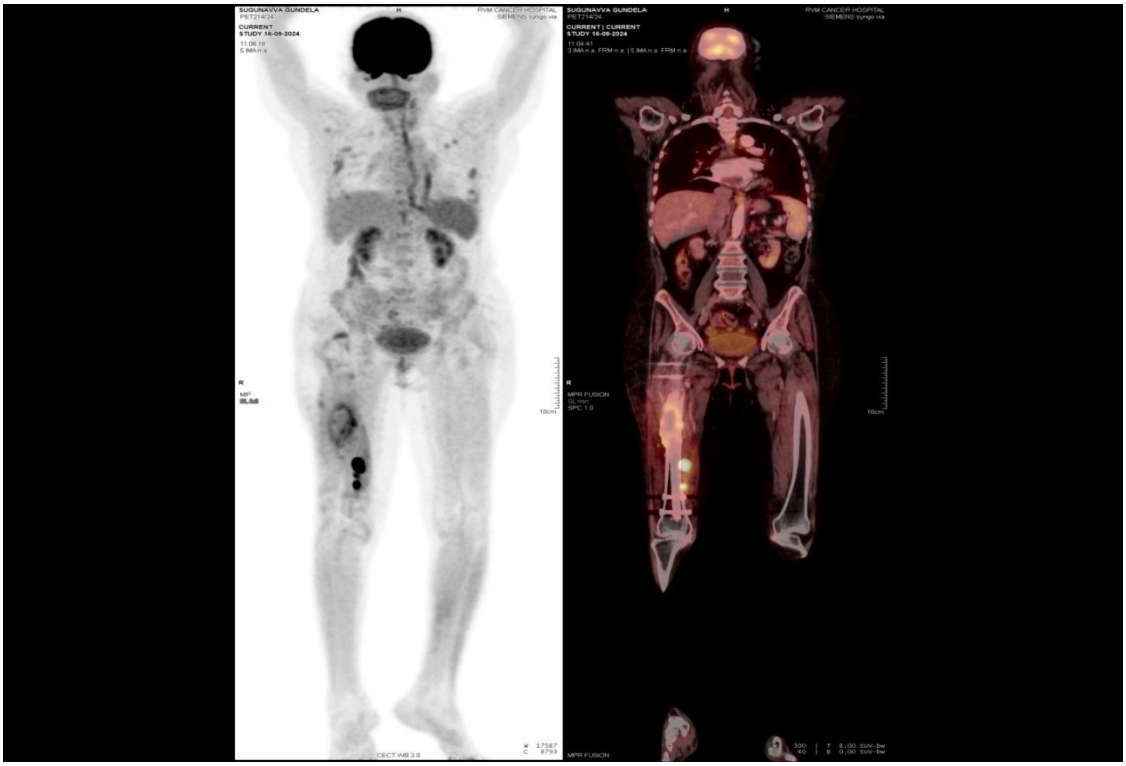
Gamma globulin: 1.05 g/dL

M-band present in gamma region
A/G ratio: 2.14

Interpretation: Monoclonal gammopathy consistent with evolving MM

Imaging Studies:

PET-CT scan:



Multiple lytic lesions in the skull, vertebrae, and pelvis

A hypermetabolic soft tissue mass in the right atrium, suggesting extramedullary plasmacytoma

2D Echocardiography:

Revealed a mobile intracavitary mass in the right atrium
No signs of obstruction or pericardial effusion

3. Management and Clinical Course

The patient was started on localized radiotherapy to the right atrial mass.

Post-radiotherapy echocardiogram confirmed complete resolution of the cardiac mass.

Systemic chemotherapy was initiated, given the progression toward multiple myeloma.

Despite treatment, repeat imaging revealed recurrence of the right atrial mass, indicating extramedullary relapse.

4. Discussion

This case represents a rare initial presentation of a plasma cell disorder with no prior diagnosis of MM. The diagnosis began with a seemingly isolated fracture, which turned out to be a plasmacytoma. Initial absence of an M-band on electrophoresis indicated non-secretory or early disease, but a repeat study later showed a monoclonal spike, consistent with evolving multiple myeloma.

Cardiac involvement is an uncommon and ominous finding in plasma cell neoplasms. The initial regression of the cardiac mass with radiotherapy supports the radiosensitive nature of plasmacytomas, while recurrence post-chemotherapy raises concerns about clonal evolution or inadequate systemic control.

Normal renal function and low calcium levels are atypical findings in MM, reinforcing the unique nature of this presentation. The case underscores the need for systemic evaluation in isolated bone lesions and demonstrates the diagnostic evolution of MM over time.

5. Conclusion

This case illustrates a rare and evolving plasma cell neoplasm initially presenting with an isolated fracture and no systemic features. Serial imaging and laboratory evaluations were critical in establishing the diagnosis of plasmacytoma with probable progression to multiple myeloma, evidenced by M-band appearance and cardiac involvement. Early recognition and aggressive multimodal management are key to improving outcomes in such atypical presentations.

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