

Multiple Myeloma Presenting as Chest Wall Lesion: A Case Report

PRAKRITI R PATIL¹, RAVI KUMAR YELI², SHIVANAND V PATIL³, SATISH D PATIL⁴

(CC) BY-NC-ND

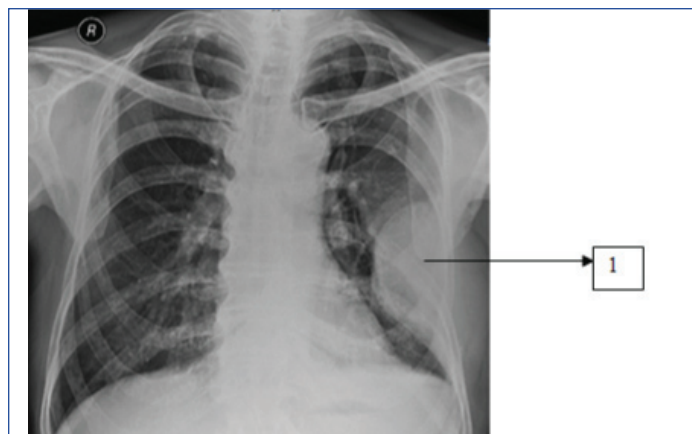
ABSTRACT

Multiple myeloma is defined by >10% of clonal plasma cells in bone marrow or biopsy-proven extramedullary plasmacytoma and by the evidence of end-organ damage including bone lesions and renal insufficiency. It usually occurs in the age group of 50-70 years with higher incidence in males. Swelling on the chest wall is an uncommon presentation of multiple myeloma. In this case of 85-year-old male patient, two soft tissue density lesions on the posterolateral and anterior chest wall, multiple punched-out lesions in the skull, diffuse osteopenia and multiple lytic lesions were noted in ribs, sternum and thoracic spine, with evidence of myeloma cells in the bone marrow and bence jones protein in urine. Radiologic imaging plays an important role in providing a provisional diagnosis and thus, helping the clinician in such cases.

Keywords: Lytic lesions, Osteopenia, Plasma cells

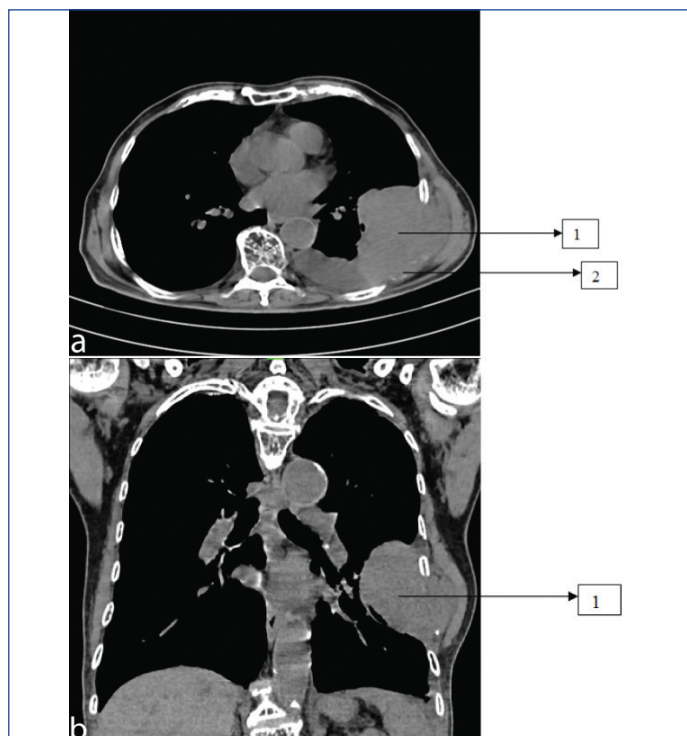
CASE REPORT

An 85-year-old male presented to the Outpatient Department (OPD) with complaint of swelling, since 15 days on the posterolateral aspect of the chest wall, on the left side. The patient also complained of generalised weakness and loss of weight since six months. No history of trauma, alcohol intake, smoking and diabetes mellitus. No evidence of cervical lymphadenopathy. On examination, the swelling was mildly tender, firm in consistency measuring, about 5-6 cm in size. Chest X-ray Posteroanterior (PA) view shows a large well-defined homogenous soft tissue mass lesion arising from the 7th rib causing its destruction in the posterolateral aspect of chest wall on left side [Table/Fig-1].



[Table/Fig-1]: Chest X-Ray PA view showing well defined soft tissue mass lesion (represented by arrow: (1) From 7th rib with destruction in the posterolateral chest wall on left side.

On Non-Enhanced Computed Tomography (NECT), there was evidence of well-defined multilobulated frond-like soft tissue density lesion [Table/Fig-2], measuring about 81×68×79 mm (AP X TR X SI) in the posterolateral chest wall with intra and extrathoracic component involving the intercostal muscles and causing destruction of posterolateral aspect of 7th rib and lateral aspect of 6th rib. The lesion is limited by serratus anterior muscle posterolaterally and parietal pleura medially. The lesion was seen abutting the left lung parenchyma and parietal pleura. Another similar lesion was noted involving anterior aspect of chest wall on left side measuring about 29×28×31 mm (AP X TR X SI) with destruction of sternum on left side, left 4th and 5th ribs at sternocostal junction [Table/Fig-3].

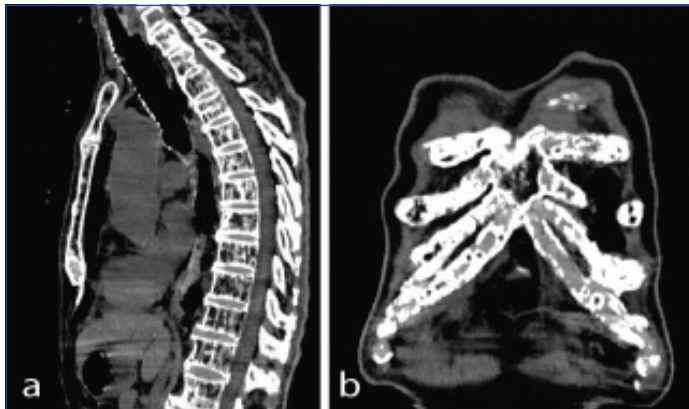


[Table/Fig-2]: Axial (a) and coronal (b) CT scan image showing well-defined multilobulated soft tissue density mass lesion represented by arrow 1 in the posterolateral chest wall with destruction of 7th rib represented by arrow 2.



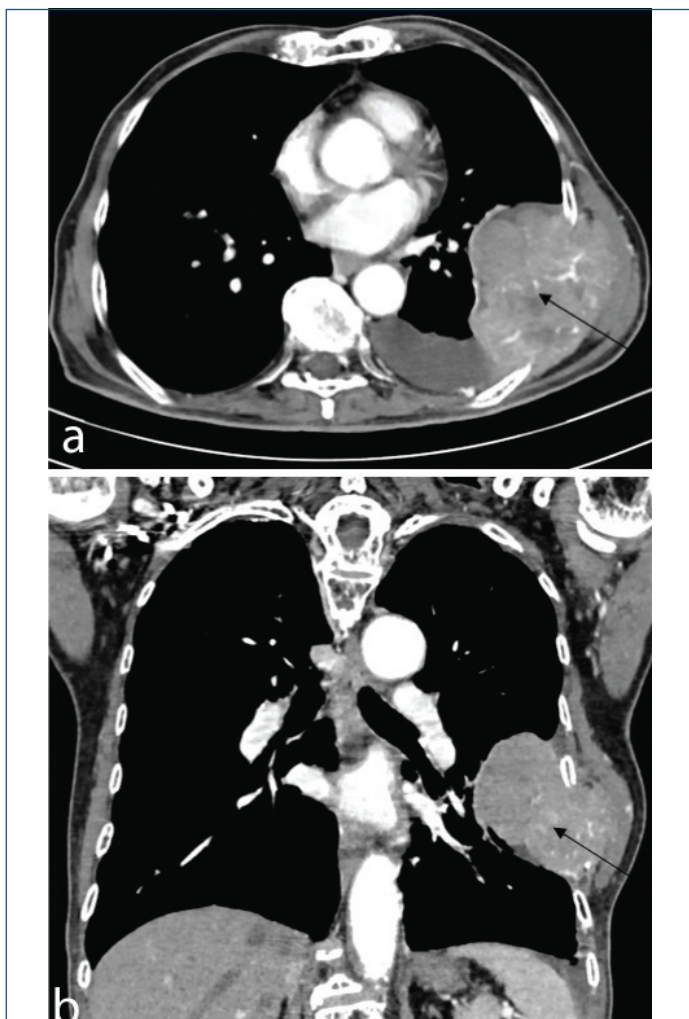
[Table/Fig-3]: Axial CT scan image showing soft tissue density mass in anterior aspect of chest wall.

On the basis of patient's age and above findings, differential diagnoses of chondrosarcoma, chest wall metastasis and multiple myeloma was made. There was evidence of diffuse osteopenia [Table/Fig-4a] with multiple lytic lesions [Table/Fig-4b] involving the ribs, sternum and thoracic spine.



[Table/Fig-4]: Sagittal and coronal CT scan images showing a) diffuse osteopenia with b) multiple lytic lesions are noted in ribs and thoracic spine.

On Contrast-Enhanced Computed Tomography (CECT), It shows heterogenous enhancement with central non-enhancing necrotic areas [Table/Fig-5]. With the presence of diffuse osteopenia, multiple lytic lesions in ribs and thoracic spine, a provisional diagnosis of multiple myeloma was made. Hence, the reporter took a skull X-ray Anteroposterior (AP) and Lateral view and advised Fine Needle Aspiration Cytology (FNAC) of the chest wall lesion. The skull X-ray shows multiple well defined 'punched-out' rounded lytic bone lesions [Table/Fig-6] involving skull vault, well appreciated on the lateral view. Lesions give a raindrop appearance to the skull.



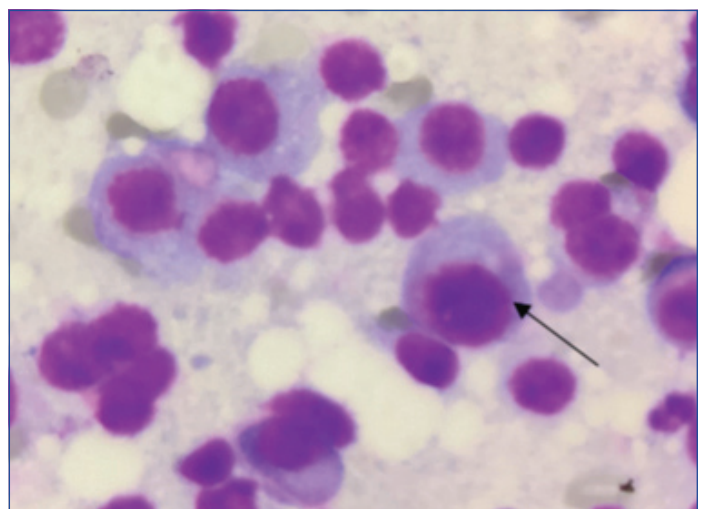
[Table/Fig-5]: Axial (a) and coronal (b) CECT images showing heterogenous enhancement of soft tissue density lesion represented by arrow.



[Table/Fig-6]: X-ray Skull Anteroposterior (a) and lateral (b) Views well-defined 'punched-out' rounded lytic bone lesions are seen.

On FNAC of posterolateral chest wall lesion,

Multiple smears showed scant-to-moderate cellularity and composed of variable sized mature and immature/atypical plasma cells [Table/Fig-7], arranged singly and in clusters with varying pleomorphism. Atypical plasma cells have centrally/eccentrically placed nuclei with finely dispersed chromatin and few showing nucleoli. Perinuclear halo is seen in few cells. Occasional binucleation of the cells was seen. The bone marrow aspiration showed 50% plasma cells. Urine was positive for bence jones proteins. With all these findings, the final diagnosis of multiple myeloma was made. Follow-up scan could not be done for the patient, since patient passed away after two and half months.



[Table/Fig-7]: Smear showing plasma cells with pleomorphism (Giemsa 100x).

DISCUSSION

Multiple Myeloma is the most common primary bone marrow malignancy in adults. Most plasmacytomas arising from bone are osteolytic in nature and usually do not contain intralésional calcifications [1]. The differentials to be considered on the basis of imaging findings of chest wall lesion were chondrosarcoma, chest wall metastasis and multiple myeloma [1]. Chondrosarcomas are malignant cartilaginous tumours most commonly seen in older patients within the long bones. Chondrosarcoma is often seen involving the sternum or costochondral cartilage in case of chest wall lesions. These lesions have ring-and-arc type of calcification [2] which was not seen in present case. Expansile osteolytic chest wall metastases can occur mostly from primary renal or thyroid carcinomas which can have a similar appearance. However, in this case renal and thyroid carcinomas were ruled out by screening on ultrasound.

Multiple myeloma is defined by >10% of clonal plasma cells [3]. in bone marrow or biopsy-proven extramedullary plasmacytoma and by the evidence of end-organ damage including bone lesions and renal insufficiency. Among plasma cell neoplasms, multiple myeloma is the most common. Multiple myeloma present as multiple osteolytic lesions with distinct margins in the vertebral column, ribs or clavicles [4]. The typical appearance of multiple myeloma on plain radiographs consists of well-defined, osteolytic punched-out lesions throughout the skeleton, most classical in the skull. These lesions can be seen in clavicles, ribs, long bones and pelvic bones. These lesions are more uniform in size in comparison to lytic metastatic lesions. Generalised osteopenia is another more common presentation [5]. Multiple myelomas represent systemic disease with less five years survival rate, plasmacytomas represents local forms of plasma cell neoplasms. Solitary plasmacytomas and multiple myeloma are a spectrum of disease ranging from localised clonal plasma cell infiltration to multiple extramedullary lesions. Plasmacytoma is divided into osseous (solitary plasmacytoma of bone) and non-osseous (extramedullary plasmacytoma) primary lesions. Solitary plasmacytomas of bone have a tendency to involve axial skeleton with 50% cases involving spine. The rib, sternum, clavicle, or scapula is involved in 20% cases. The extramedullary plasmacytoma occur majorly in the head and neck region. In a study conducted by Jena M, the cytodiagnosis of multiple myeloma presenting as chest wall swelling was evaluated. The study showed plasmacytoid cells showing pleomorphism with bi and multinucleation on FNAC similar to present study. Jena M did not study the radiological aspect of multiple myeloma, which is included in the present study [6]. In another study, conducted by Kumar S et al., studied multiple cystic swellings as initial presentation of multiple myeloma which showed

lateral skull radiograph with multiple punched-out lesions. However, this study did not evaluate the chest swelling on cross-section as in the present study [7].

Uddin MS et al., presented a case report of solitary plasmacytoma of rib origin in a young adult which mainly discussed the surgical aspect. The radiological and pathological aspect was not studied in detail in this study conducted by Uddin MS et al., [8]. This case has been presented due to its uncommon presentation of multiple myeloma as chest wall swelling. In this case, two soft tissue density lesions on the anterior and posterolateral chest wall, multiple punched-out lesions in the skull, diffuse osteopenia and multiple lytic lesions were noted in ribs, sternum & thoracic spine with evidence of myeloma cells in the bone marrow and bence jones protein in urine. Presently, multiple myeloma remains incurable, although the use of thalidomide, lenalidomide, and bortezomib (proteasome inhibitor) has showed significant survival rates. These are used in combination with other older drugs such as cyclophosphamide, melphalan and prednisolone. Stem cell transplant with postchemotherapeutic/radiotherapy bone marrow ablation are also used, although relapse is unpreventable [9].

CONCLUSION(S)

Multiple myeloma presenting as chest wall lesion is rare. Radiologic imaging plays an important role in providing a provisional diagnosis and thus, helping the clinician in such cases. FNAC or biopsy is required to come to a final diagnosis.

REFERENCES

- [1] Mullan CP, Madan R, Trotman-Dickenson B, Qian X, Jacobson FL, Hunsaker A. Radiology of chest wall masses. *American Journal of Roentgenology*. 2011;197(3):W460-70.
- [2] Murphey MD, Flemming DJ, Boyea SR, Bojeskul JA, Sweet DE, Temple HT. Enchondroma versus chondrosarcoma in the appendicular skeleton: Differentiating features. *Radiographics*. 1998;18(5):1213-37.
- [3] Rajkumar SV, Dimopoulos MA, Palumbo A, Blade J, Merlini G, Mateos MV, et al. International Myeloma Working Group updated criteria for the diagnosis of multiple myeloma. *The Lancet Oncology*. 2014;15(12):e538-48.
- [4] Tavel L, Fontana F, Garcia Manteiga JM, Mari S, Mariani E, Caneva E, et al. Assessing heterogeneity of osteolytic lesions in multiple myeloma by ¹H HR-MAS NMR metabolomics. *International Journal of Molecular Sciences*. 2016;17(11):1814.
- [5] George ED, Sadosky R. Multiple myeloma: Recognition and management. *American Family Physician*. 1999;59(7):1885.
- [6] Jena M. Cytodiagnosis of multiple myeloma presenting as chest wall swellings. *Journal of Cytology/Indian Academy of Cytologists*. 2012;29(2):135.
- [7] Kumar S, Jain AP, Waghmare S. Multiple cystic swelling: Initial presentation of multiple myeloma. *Indian journal of medical and paediatric oncology: Official journal of Indian Society of Medical & Paediatric Oncology*. 2010;31(1):28.
- [8] Uddin MS, Ahamed F, Bashir A, Murshed M, Alam AK. Solitary plasmacytoma of rib origin in a young adult- A rare case report. *Journal of Surgical Sciences*. 2017;21(1):39-41.
- [9] Goldschmidt H, Ashcroft J, Szabo Z, Garderet L. Navigating the treatment landscape in multiple myeloma: Which combinations to use and when? *Annals of Hematology*. 2019;98(1):01-08.

PARTICULARS OF CONTRIBUTORS:

1. Postgraduate Resident, Department of Radiology, Shri B M Patil Medical College, Vijayapura, Karnataka, India.
2. Assistant Professor, Department of Radiology, Shri B M Patil Medical College and Research Centre, BLDE University, Vijayapura, Karnataka, India.
3. Associate Professor, Department of Radiology, Shri B M Patil Medical College and Research Centre, BLDE University, Vijayapura, Karnataka, India.
4. Associate Professor, Department of Radiology, Shri B M Patil Medical College and Research Centre, BLDE University, Vijayapura, Karnataka, India.

NAME, ADDRESS, E-MAIL ID OF THE CORRESPONDING AUTHOR:

Prakriti R Patil,
Room No-B17, NRI Hostel, Bangaramma Sajjan Campus, BLDE Hospital,
Bijapur-586103, Bijapur, Karnataka, India.
E-mail: prakriti18294@gmail.com

PLAGIARISM CHECKING METHODS: [Jain H et al.]

- Plagiarism X-checker: Jul 10, 2020
- Manual Googling: Oct 12, 2020
- iThenticate Software: Nov 24, 2020 (13%)

ETYMOLOGY: Author Origin

AUTHOR DECLARATION:

- Financial or Other Competing Interests: None
- Was informed consent obtained from the subjects involved in the study? Yes
- For any images presented appropriate consent has been obtained from the subjects. Yes

Date of Submission: **Jul 08, 2020**
Date of Peer Review: **Aug 26, 2020**
Date of Acceptance: **Oct 12, 2020**
Date of Publishing: **Jan 01, 2021**