

Background

- Plasma cell myeloma is a neoplasm that arises from the bone marrow, encompassing multiple subtypes including multiple myeloma (MM), which accounts for 10% of all hematologic malignancies.¹
- MM often initially presents with back pain, followed by shoulder, chest, and rib pain secondary to lytic bone lesions and pathologic fractures.^{2,3}
- Lytic bone lesions measuring greater than 5 mm on MRI are diagnostic of myeloma bone disease.⁴
- We present a case of plasma cell myeloma discovered during workup for intractable thoracic and intercostal pain.

Purpose

The overall aim of our study was to bring awareness to potential neoplastic causes of thoracic pain refractory to multiple pain medications and interventions.

Case Description

- Chief Compliant:** An 84-year-old male with history of spinal cord stimulator placement for chronic back pain, type 2 diabetes, and atrial fibrillation presented with 1-month history of right upper and mid back pain radiating along the right chest wall.
- Initial Imaging:** X-ray of cervical and thoracic spines were normal and prior chest computed tomography (CT) was normal.
- Treatments:** Patient's pain was refractory to multimodal pain regimen including opioids (Table). Intercostal neuralgia was suspected.
- Interventions:** Patient's pain persisted despite a right erector spinae block, right suprascapular injection, and T7-10 intercostal nerve block followed by radiofrequency ablation (RFA).
- Further Plan:** Three days post-RFA, patient reported continued pain, and a decision was made to order a CT thoracic spine, which revealed a 3.2 cm destructive lesion in the T1 vertebral body (Figure).
- Diagnosis:** Patient was immediately sent to the emergency department and was admitted to the hospital. He underwent C4-T3 posterior spinal instrumented fusion with biopsy revealing 20% involvement of plasma cells, yielding a diagnosis of myeloma.

Table. Multimodal pain medications that the patient failed prior to diagnosis of Myeloma.

Drug	Dose
Flexeril	5 mg nightly
Norco	5/325 mg TID PRN
Acetaminophen	1 g TID PRN
Gabapentin	300 mg TID
Robaxin	500 mg TID
Tramadol	50 mg TID
Ketorolac	10 mg QID PRN
Oxycodone	5 mg TID PRN
Lidocaine transdermal patches	5% patch
Topical Lidocaine	4% TID PRN

mg: milligram, g: gram, TID: three times a day, QID: four times a day, PRN: pro re nata.



Figure. 3.2 cm Lytic Lesion of T1 Vertebral Body on Thoracic Computed Tomography.

Discussion (Continued)

- This patient's continued severe pain unresponsive to opioids and interventional management raised suspicion for neoplastic disease.
- 80-90% of patients with MM present with spine and rib pain.⁴
- The observed lytic lesion at T1 could explain this patient's upper thoracic pain, but its relationship to the patients lower thoracic radiating pain is unclear.
- Additional imaging with superior sensitivity could potentially reveal additional lesions.⁷
- Regardless of the relationship between this patient's pain and imaging findings, incidental lesions are common and occur in 15-30% of all diagnostic imaging,⁸ presenting a challenge to ordering physicians who must initiate further workup and treatment.

Conclusion

- Suspected intercostal neuralgia refractory to multiple pain medications and interventions should prompt clinicians to consider possible neoplastic causes of pain.

References

- Michels TC, Petersen KE. Multiple Myeloma: Diagnosis and Treatment. Am Fam Physician. 2017;95(6):373-383.
- Chawla G, Dutt N, Deokar K, Meena VK. Chest pain without a clue-ultrasound to rescue occult multiple myeloma: A case report. World J Radiol. 2019;11(12):144-148. doi:10.4329/wjr.v11.i12.144
- Vijhalwar R, Song K, Shrestha R, et al. Patient-reported symptoms and diagnostic journey in Multiple Myeloma. Front Oncol. 2023;13:1282569. doi:10.3389/fonc.2023.1282569
- Lasocki A, Gaillard F, Harrison SJ. Multiple myeloma of the spine. Neuroradiol J. 2017;30(3):259-268. doi:10.1177/1971400917699426
- Kobayashi H, Shinoda Y, Ohki T, Kawano H. Intercostal neuralgia as a symptom of an osteoblastoma in thoracic spine. BMJ Case Rep. 2015;2015:bcr2015210720. doi:10.1136/bcr-2015-210720
- Abd-Elsayed A, Lee S, Jackson M. Radiofrequency Ablation for Treating Resistant Intercostal Neuralgia. Ochsner J. 2018;18(1):91-93.
- Regelink JC, Minnema MC, Terpos E, et al. Comparison of modern and conventional imaging techniques in establishing multiple myeloma-related bone disease: a systematic review. Br J Haematol. 2013;162(1):50-61. doi:10.1111/bjh.12346
- Lumbreras B, Donat L, Hernández-Aguado I. Incidental findings in imaging diagnostic tests: a systematic review. Br J Radiol. 2010;83(988):276-289. doi:10.1259/bjr/98067945

Discussion

- Intercostal neuralgia is defined as pain along the distribution of affected intercostal nerves that is often neuropathic in character and associated with hyperalgesia.
- Potential etiologies include herpes zoster infection, diabetic polyneuropathy, vertebral facet joint osteoarthritis, autoinflammatory disease, and metastatic tumors.⁵
- Treatment options include pharmacologic management, nerve blocks, and RFA for cases refractory to conservative management.⁶