

Introduction

- The HeartMate 3 (HM3) is a new generation left ventricular assist device (LVAD).
- Direct mechanical nerve irritation can lead to intercostal neuralgia.
- We report a case of intercostal neuralgia secondary to HM3 insertion that was successfully treated with a chemical neurolytic intercostal nerve block.

Case Description

- 59 y.o. M with PMHx including combined ischemic and non-ischemic cardiomyopathy (EF 20%), cardiac arrest 2/2 STEMI status post HeartMate 3, polysubstance use disorder (cocaine, alcohol, cannabis, tobacco) presented to the Emergency Department with uncontrolled acute on chronic left sided chest wall pain.
- Pain described as a sharp pinpoint focus under the left 7th rib in the mid-clavicular line.
- Cardiac surgery determined most likely cause to be from pump housing impingement on the 7th intercostal nerve (Figure 1). No surgical intervention was recommended.
- A trial T7-8 intercostal nerve block was performed using 0.5% bupivacaine (Figure 2), and patient experienced immediate complete cessation of pain which lasted three weeks.
- A chemical neurolytic block was performed using 6mL 70% ethyl alcohol. Patient had 100% relief for two months.
- A repeat chemical neurolytic block was performed and provided 100% relief for an additional two months.

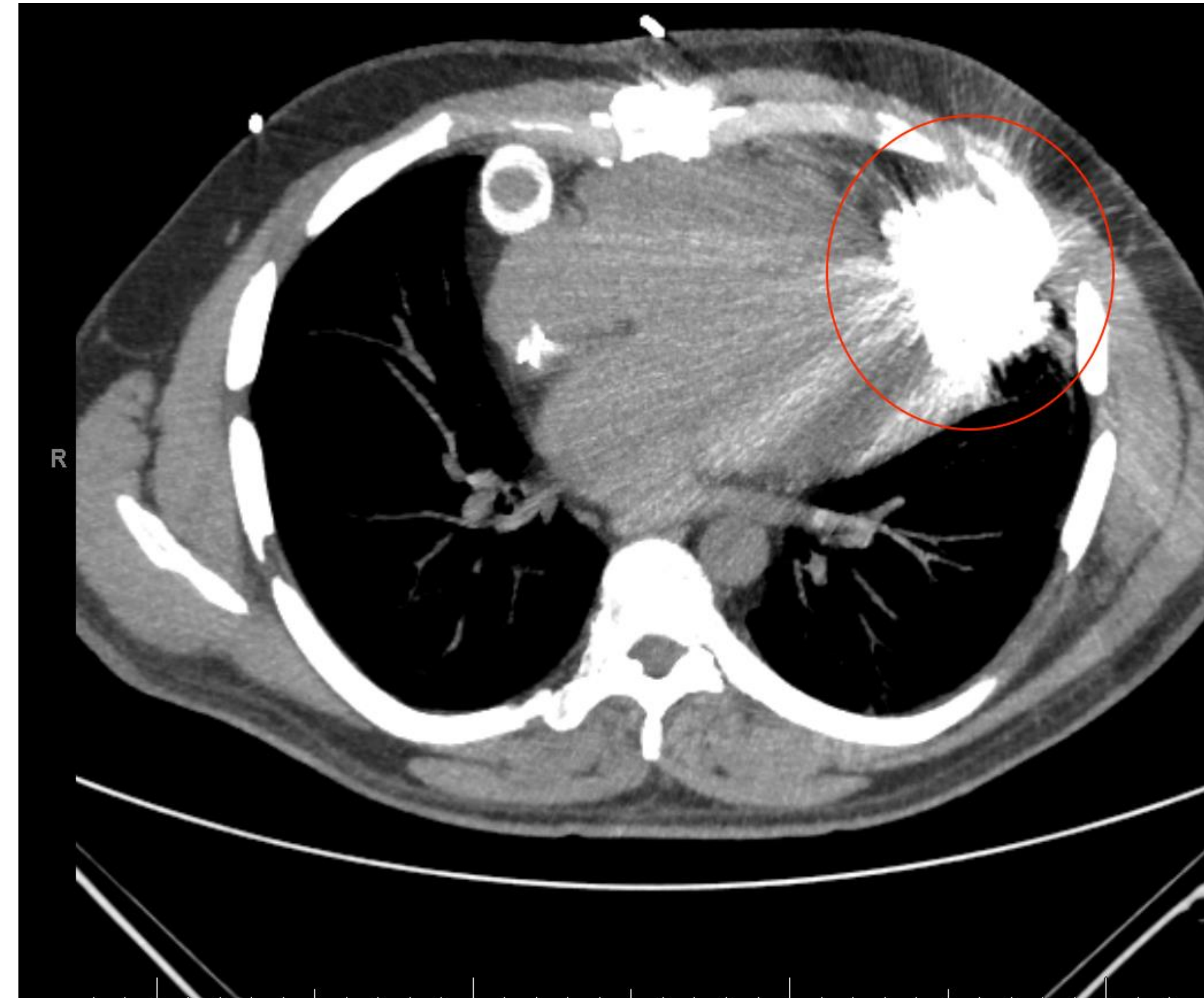


Figure 1. HM3 pump housing (red circle) in direct contact with thoracic wall

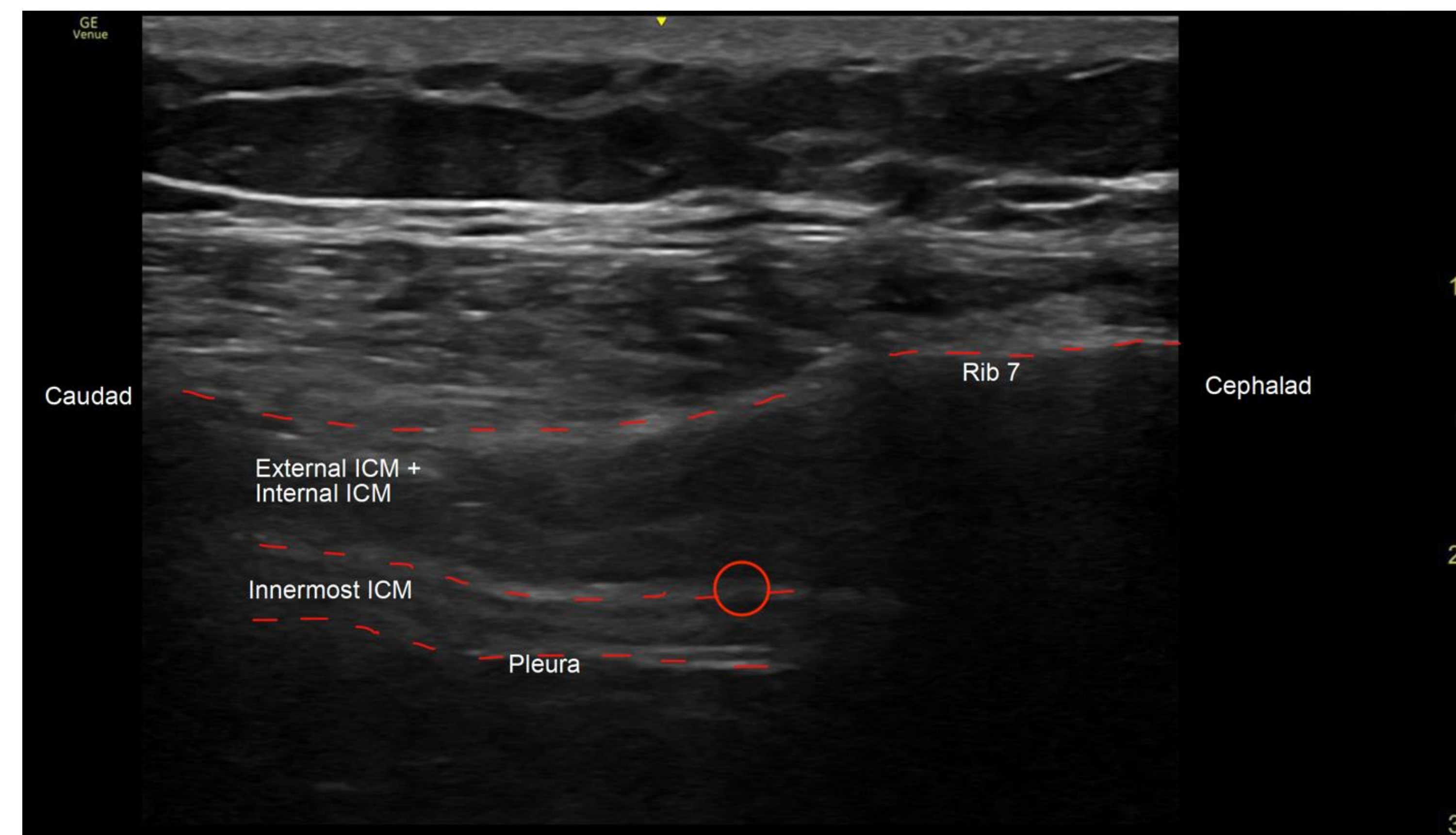


Figure 2. Sonogram of left 7th intercostal space. Deposition of local anesthetic at red circle.

Discussion

- HM3 is implanted entirely within the thoracic cavity
- Intercostal neuralgia is an umbrella term encompassing multiple distinct pathologies that ultimately result in neuropathic type pain in the dermatomal distribution of an intercostal nerve.¹
- Neuropathic in origin
- Etiologies:
 - post-thoracotomy pain syndrome, post-herpetic neuralgia, nerve impingement or mechanical irritation (rib fractures, chest tubes), breast surgery, neuroma formation, cancer, infection.²
- Treatment:
 - Gabapentinoids (mainstay), serotonin-noradrenaline reuptake inhibitors, and tricyclic antidepressants.³
 - Chemical neurolytic blocks, cryoablations, radiofrequency ablations, and intercostal nerve resection.^{3,4}
- Intercostal nerve block
 - Injectate is placed between the innermost intercostal muscle and the internal intercostal muscle adjacent to the neurovascular bundle

References

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