

Stellate Ganglion Catheter for Refractory Ventricular Electrical Storm in a Patient on Extracorporeal Membrane Oxygenation Support

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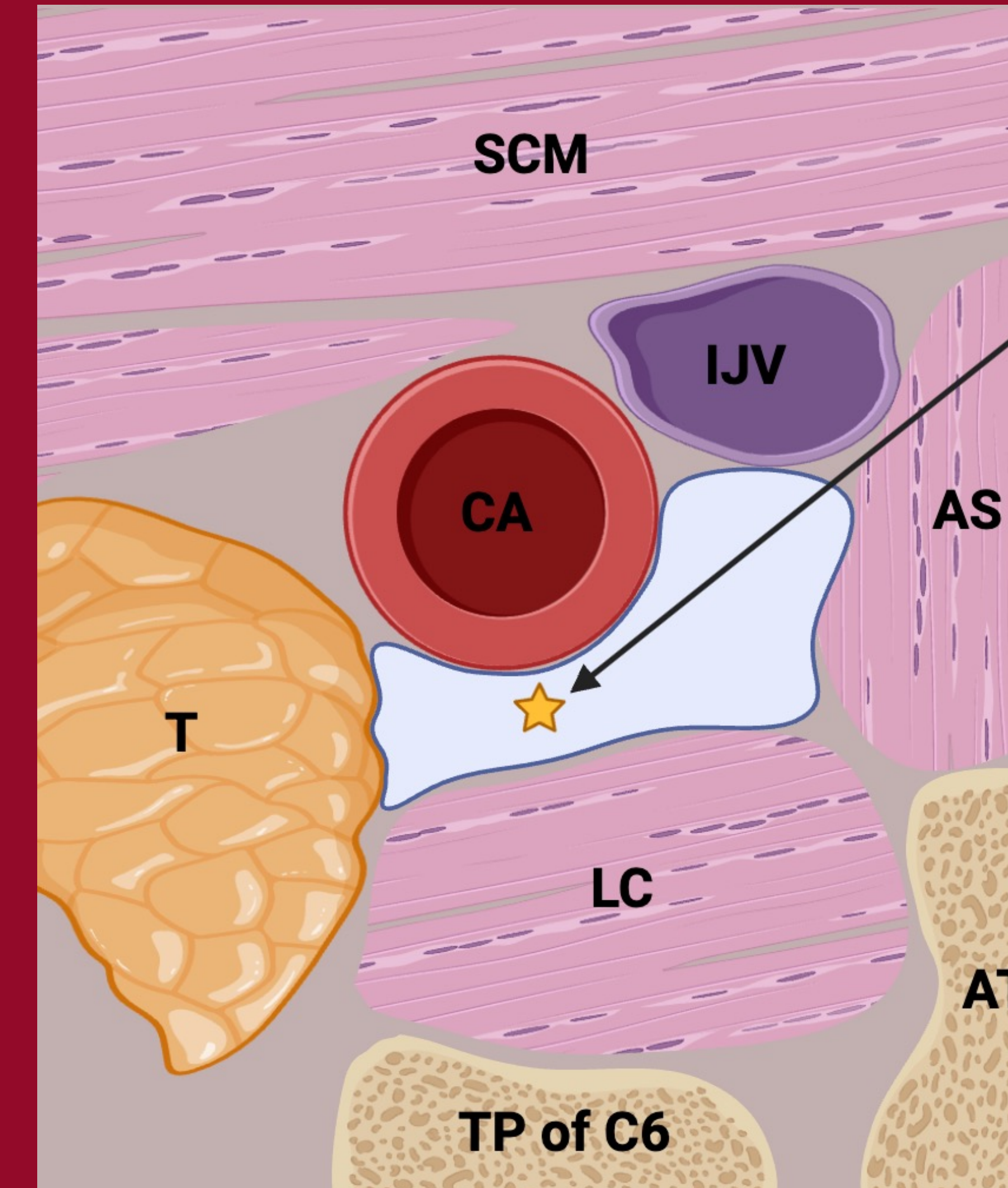
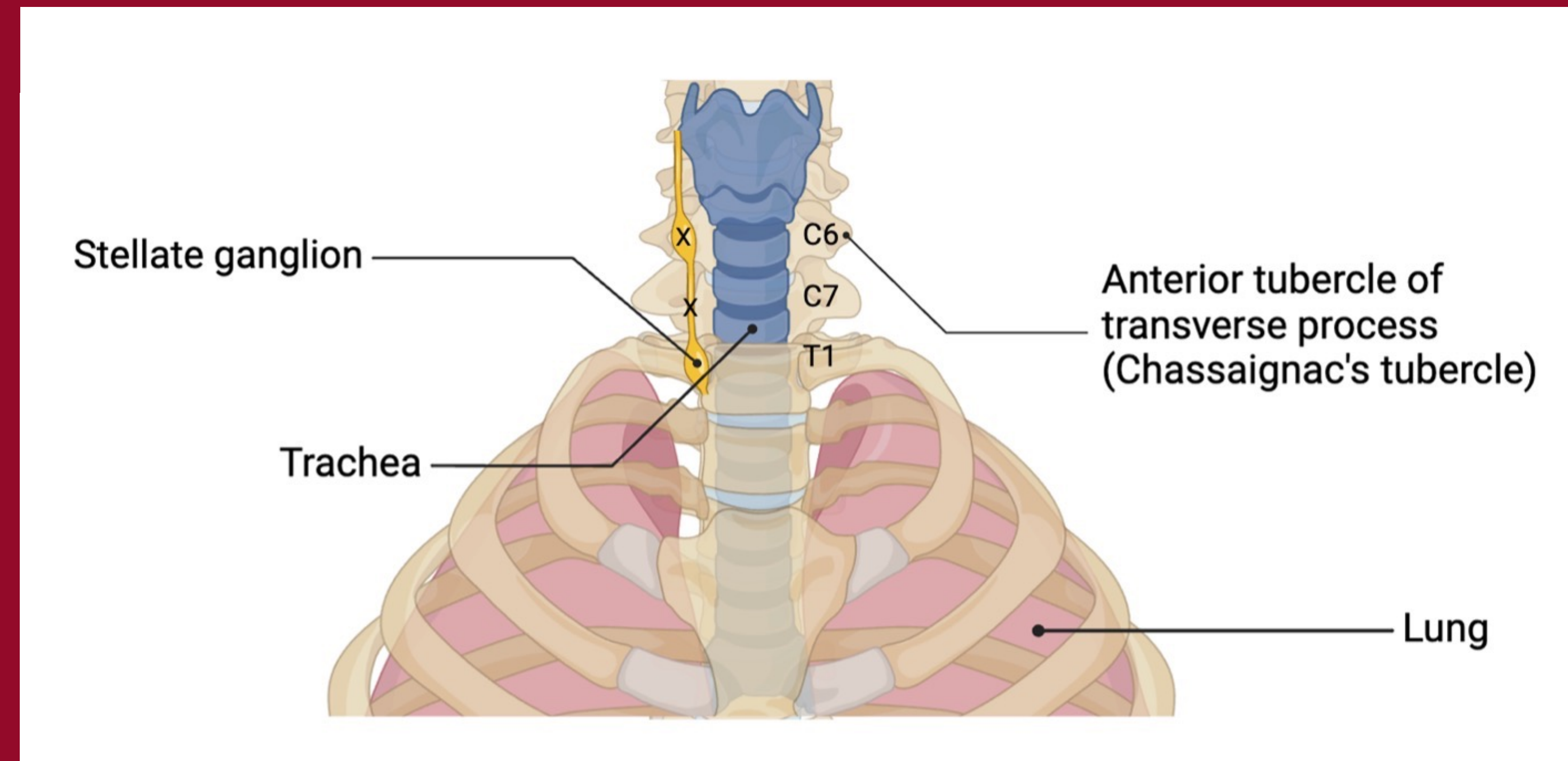
Background

- Ventricular electrical storm, defined as three or more episodes of sustained electrical instability (ventricular tachycardia/fibrillation) resulting from excess sympathetic activation, is challenging to manage, especially when refractory to conventional pharmacological intervention.^{1,2}
- The efficacy of stellate ganglion blockade in reducing episodes of ventricular electrical storm and defibrillations required has been demonstrated in several case reports and multicenter studies.^{3,4}

Case Presentation

- A 76-year-old female with a history of coronary artery disease with in-stent thrombosis of the left main coronary artery was found to have arrest secondary to numerous episodes of polymorphic ventricular tachycardia during revascularization in the cardiac catheterization laboratory necessitating cannulization for Veno-Arterial Extracorporeal Membrane Oxygenation (ECMO).
- Despite successful balloon angioplasty, ECMO support, and pharmacologic management with amiodarone, lidocaine, and procainamide infusions, the patient remained in refractory ventricular tachycardia with electrical storm.
- The anesthesia acute pain service was consulted for possible intervention.

Anatomical Landmarks for Stellate Ganglion Catheter



Discussion

- We demonstrate the successful implementation of stellate ganglion blockade for a patient with refractory ventricular electrical storm on ECMO support as a bridge to robot-assisted sympathectomy and ventricular tachycardia ablation.
- Prior to performing stellate ganglion blockade, multidisciplinary discussions are necessary between the critical care and cardiology teams to determine definitive management and best assess risks and benefits.⁵
- Additional challenges when performing blockade for patients, particularly those on ECMO, include anticoagulation status and feasibility of catheter placement as a bridge to definitive therapy.

Anesthetic Intervention

- After a discussion of the risks and benefits of a regional anesthetic technique, the patient's family consented to a stellate ganglion block.
- Initially, a single-shot block of the left stellate ganglion was performed with 10mL of 0.25% ropivacaine and resultant sympathectomy. Given the efficacy of stellate ganglion blockade, the patient was taken for a left robotic-assisted sympathectomy T1-T4 with cardiothoracic surgery with removal of a segment of the left sympathetic chain.
- Despite this, electrical storm persisted, and a right-sided stellate ganglion catheter was then placed with an infusion of 0.2% ropivacaine at 5mL/hr with suppression of ectopy. 24 hours later, the patient was taken for ablation in the electrophysiology laboratory with improvement and subsequent decannulation from ECMO.

Conclusions

The placement of a stellate ganglion catheter for refractory ventricular electrical storm can be performed as a bridge to definitive management.

References

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