Successful Pharmacologic Ablation of VT Storm Following Stellate Ganglion Catheter Placement at the C5 Level

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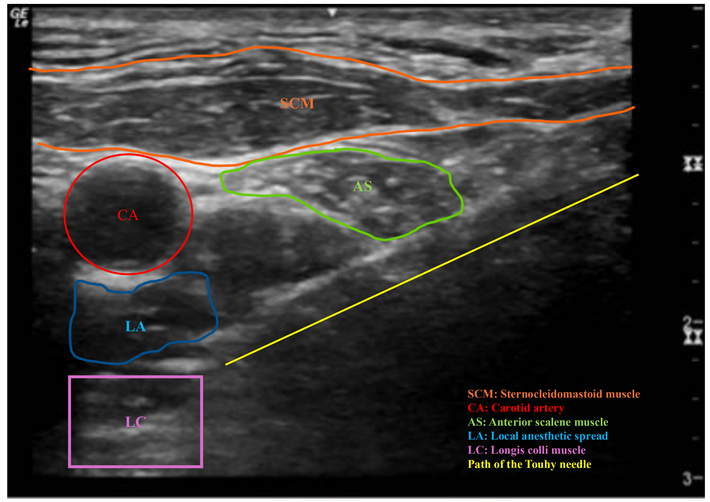
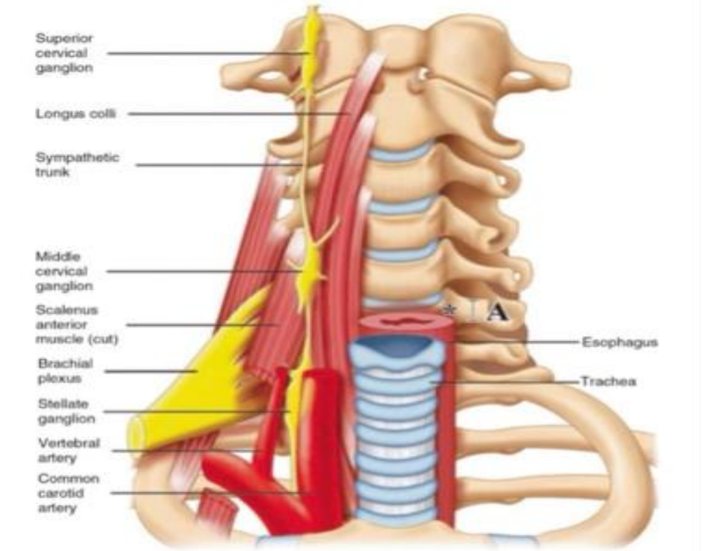
Introduction

This case describes a novel approach to the stellate ganglion nerve block. The current clinical practice guidelines recommend performing the nerve block at the C6 vertebral level. This abstract identifies a case where the anatomical landmarks of C6 and C7 were not identifiable. Hence, the stellate ganglion block and catheter were completed at the level of C5, leading to pharmacologic ablation of ventricular tachycardia (VT) in an intubated patient awaiting cardiac transplantation.

Materials & Methods

As this case report contains no patient-identifiable information, it was exempt from institutional review board requirements per institutional policy. Patient-informed consent was obtained for submission of a case report. A left-sided stellate ganglion block was performed under ultrasound guidance using a 22G × 80mm needle. Following procedural time-out, skin was prepared with chlorhexidine, and 1% lidocaine was administered for local anesthesia. A GE Logiq E R7 ultrasound with a linear L4–12T-RS transducer was used. After inadequate visualization at the C6/C7 levels, the C5 vertebra was identified. The needle was advanced past the C5 transverse process anterior tubercle, and 8mL of 0.25% bupivacaine with epinephrine was injected anterior to the longus colli muscle, superficial to the prevertebral fascia. Catheter placement occurred separately at the C5 level using a 17G Tuohy needle. 0.2% ropivacaine infusion at 6mL/hour was initiated, with a maximum rate of 10mL/hour, consistent with published literature supporting clinical efficacy.





Results

Anatomical landmarks at the recommended level were not appreciable, likely related to an elevated BMI and restricted positioning (ex. central catheters, ETT, etc). Block and catheter placement were performed on separate encounters, ensuring viable clinical effect. Initial block placement led to resolution of symptoms for 24 hours, with no appreciable VT induced by movement or endotracheal tube suctioning. IV Lidocaine and amiodarone infusions were continued per ICU protocol. Resurgence of VT occurred after 24hrs of electrical silence, prompting acute pain service re-engagement for catheter placement. Understanding the risk associated with an additional procedure, successful pharmacologic ablation of VT would eliminate the only barrier to extubation. Stellate ganglion nerve catheter placement was performed, and local anesthetic infusion stated above was initiated. IV Lidocaine infusion was discontinued for risk of local anesthetic toxicity. Amiodarone infusion was continued by the ICU team for clinical support. 24 hours after catheter placement, VT burden was reduced but not resolved. The infusion was increased to 10 mL/hr with complete resolution of VT burden. Amiodarone infusion was weaned, and the patient was extubated 27 hours after catheter placement without complication. The patient remained extubated and arrhythmia-free with the stellate ganglion infusion until cardiac transplantation nine days later.

Discussion

Current guidelines recommend stellate ganglion blockade at the C6 vertebral level; however, the relevant anatomical relationships persist at C5. Hence, blockade at the C5 level was performed safely using identifiable landmarks but required higher infusion rates, likely due to increased distance from the stellate ganglion. This case suggests that C5 stellate ganglion blockade maybe a feasible alternative when C6/C7 landmarks are not visualized, though further investigation is needed to define dosing, safety, and reproducibility.

References

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