Ultrasound-Guided Stellate Ganglion Block with Liposome Bupivacaine for Malignant Ventricular Arrhythmia: A Case Report

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INTRODUCTION

Ventricular Fibrillation storm is a difficult disorder to treat. It is characterized by recurrent episodes of ventricular fibrillation in a 24 hour period and can occur in patients with ventricular assist devices, ICDs, and patients on ECMO. Treatment for this has been surgical interruption of the autonomic nervous system, epidurals, paravertebrals, and stellate ganglion blocks.^{1,2} Liposome bupivacaine (a long acting local anesthetic shown to provide up to 72 hours of analgesia) has been used in stellate ganglion blocks for treatment of refractory headaches and complex regional pain syndrome but not yet for treatment of electrical storm.^{3,4}

Case Report

Background: A 39 year old female presented to the hospital in ventricular fibrillation (vfib) arrest secondary to a right coronary artery (RCA) dissection. Her RCA and left main coronary artery were stented but the patient had recurrent vfib and required placement of VA ECMO. 5 days later she had an expanding hematoma, requiring conversion to transaxillary balloon pump. This clotted 3 days later and a subclavian balloon pump was placed. 4 days later she had recurrent vfib arrest requiring CPR. 23 days after her first arrest she had another vfib arrest again requiring CPR and massive blood pressure support. She continued to have small episodes of vfib 2-3 times a day despite high dose antiarrhythmic medications over the next ten days which prompted a consult to the acute pain service for a sympathetic block.

Case Report

Procedure: Due to the patient's unstable nature, high dose anticoagulation, and inability to sit up or roll side to side it was determined that a stellate ganglion block was preferred over both a paravertebral or epidural injection. The patient was positioned supine and a 13-6 MHz Sonosite high frequency probe was placed in a transverse orientation over the left neck at the level of the 6th cervical vertebrae. We identified the groove between the longus colli muscle and longus capitis muscle (posterior and lateral to the carotid artery). The sympathetic trunk (stellate ganglion) lies at this junction. A 50 mm 22 gauge needle (SonoPlex, Pajunk) was advanced lateral to medial in plane until the tip of the needle reached the junction of the longus colli and longus capitis muscle. Then after negative aspiration 5 mL of 0.5% bupivacaine was injected followed by 5 mL of 1.3% liposome bupivacaine.

RESULTS

In the rest of the patients hospital stay she did not have any additional episodes of vfib storm. She did have intermittent premature ventricular contractions but none of them had any influence on her hemodynamics. She was discharged to a transitional care unit 20 days after the stellate block.

Conclusion

This medically challenging case illustrates the possibility of using an ultrasound guided left stellate ganglion block with liposome bupivacaine to provide an extended duration of sympathectomy in patients in electrical storm.

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