International Journal of Current Advanced Research
ISSN: O: 2319-6475, ISSN: P: 2319-6505, Impact Factor: 6.614
Available Online at www.journalijcar.org
Volume 9; Issue 02 (D); February 2020; Page No.21336-21337
DOI: http://dx.doi.org/10.24327/ijcar.2020.21337.4190

Research Article

STELLATE GANGLION BLOCK - A NOVEL THERAPEUTIC MODALITY FOR PATIENTS WITH REFRACTORY ANGINA PECTORIS

Vissnukumar V and Subhathra Radha KVN

Department of Emergency Medicine, Sri Chandra Sekara Hospital, Hosur

A R T I C L E I N F O

Article History:
Received 6th November, 2019
Received in revised form 15th December, 2019
Accepted 12th January, 2020
Published online 28th February, 2020

Key words:

Angina pectoris, stellate ganglion, pulsed radio frequency ablation

A B S T R A C T

Coronary artery disease is found to be the most common cause of death globally, despite advances in treatment and prevention, almost 50000 patients progress to refractory angina pectoris every year. Treating such conditions will improve quality of patients life and decrease burden on health care system. We describe a patient with refractory angina symptom, who underwent a successful stellate ganglion block followed by pulsed radio frequency ablation for symptom control for a longer duration.

INTRODUCTION

Coronary artery disease (CAD) is forecast to be the most common cause of death globally, including India, by 2020. Despite advances in prevention and treatment of CAD and its sequelae, roughly 50,000 Indians progress to refractory angina pectoris (AP) per year.[1] Henry *et al*[2] found that almost 70% of these patients live more than 9 years. Refractory AP impairs quality of life, limits physical abilities, and imparts severe burden on health care systems. We describe a patient who presented to the emergency department (ED) with refractory AP, without viable revascularization options, underwent a successful stellate ganglion block for symptom control.

Case report

A 72-year-old man presented to ED with clinical features suggestive of angina pectoris. He had a previous history of coronary artery disease, myocardial infarction, congestive heart failure, chronic obstructive pulmonary disease, hypertension, hyperlipidemia, type II diabetes mellitus, obesity, tobacco abuse (30 pack years), prior coronary artery bypass grafting at the age 60, two coronary stents, and automatic implantable cardioverter-defibrillator placement. He was receiving maximal inpatient medical therapy for persistent pain associated active left-sided AP without relief. The acute pain management service was consulted for management of the patient's refractory AP. The patient was evaluated and planned for left sided stellate ganglion block. Risks and benefits of procedural interventions were discussed, following which consent was obtained.

Corresponding author:* **Vissnukumar V
Department of Emergency Medicine, Sri Chandra Sekara Hospital, Hosur

Before intervention, ASA standard monitors were attached (NIBP, pulse oximeter, ECG and HR). An ultrasound-guided stellate ganglion block was performed with the patient in a 45-degree semi-Fowler's position. The patient's head was extended and turned to the right side. The patient was monitored and sedated with 2 mg of midazolam intravenously. Using a sterile technique, the C6 level was identified with ultrasound guidance, and a 22-gauge spinal needle was inserted toward the left Chassaignac's tubercle. After the needle contacted the tubercle, it was redirected inferomedially toward the body of C6. The needle was then withdrawn 2 mm to keep the tip within the prevertebral fascia. After negative aspiration, 8 mL of 0.25% bupivacaine with 2ml (8mg of dexamethasone) was injected with intermittent negative aspirations. Concurrent use of ultrasound during the procedure confirmed the bupivacaine spread in the desired location. Post procedure, the patient had increased left upper-extremity temperature compared to right by subjective palpation with decreased post procedural heart rate (95 to 72 beats per minute) and blood pressure (132/91 to 107/70 mm Hg). The patient tolerated the procedure well without any complications.

The patient experienced significant relief within 10 minutes of the block with reported 1 out of 10 pain on the visual analog scale (VAS) and was discharged asymptomatic from the hospital on post procedure day 2. He reported near complete resolution of chest pain for 3 days. On post procedure day 7, the patient presented to the hospital emergency department for mild chest pain with a VAS score of 5. We performed stellate ganglion pulsed radiofrequency (PRF) ablation; his previous medications were continued, along with that Tablet. Morphine 5mg every 4 hourly was added, with this drug regimen the

patient was comfortable. We had planned to assess duration of pain relief and tolerance of side effects on an outpatient basis. There was near complete resolution of chest pain when the patient visited us two weeks post procedure, however long term duration of pain relief could not be assessed as the patient had died from his known co morbidities, prior to his follow-up appointment.

DISCUSSION

The heart lacks somatic sensory innervations but contains a large number of visceral sensory fibers. The sympathetic autonomic nervous system relays angina signals from the ischemic myocardium to the central nervous system.[3] Myocardial ischemia is associated with the release of known excitatory substances to sympathetic nerve endings such as adenosine and bradykinin.[4] Certain forms of angina may be nonischemic, sympathetically mediated pain. Sympathetic blockade such as a stellate ganglion block aims to disrupt these neural pathways.[5] We speculate that in this patient with chronic refractory angina, a significant component of his pain is due to a lowered threshold to afferent activation, which is sympathetically maintained. The prolonged pain relieving effects of a short acting local anaesthetic might be explained through a general down regulation of this hypersensitive pathway.

There is lack of information, documenting the natural history of refractory angina; although patients with this diagnosis had been considered high risk for early mortality.[1] The concept of treating angina with sympathectomy was first proposed by Francois Frank in 1899. Thomas Jonnesco performed the first surgical cervical sympathectomy for angina in 1916. Various surgical sympathectomy procedures were utilized in subsequent decades, but these procedures were often associated with significant complications, including pneumothorax, hemothorax, disabling hyperhidrosis, and neuropathic pain.[3]

Recent application of ultrasound technology has enhanced the ability to visualize critical anatomic features and ensure the safety of stellate ganglion block.[6] Although this blockade can be performed with anatomic landmarks, the use of imaging modalities such as ultrasound guidance likely improves the safety of this block by verifying proper anatomic placement of the needle and avoidance of inadvertent injury to significant underlying structures.

Local anesthetic infiltration around the stellate ganglion, with angina relief outlasting the duration of action of the local anesthetic, was earlier reported.[3] Left stellate ganglion blockade became a popular treatment option for angina in subsequent years. However, no significant clinical studies were undertaken, to establish the efficacy of pulsed radiofrequency application and the practice likely fell to the wayside due to advancements in revascularization.

There is an improved mortality over time in patients with refractory AP, with 1-year and 9-year survival of 96.1% and 71.6%, respectively.[7] This distinct and growing group of medically refractory patients calls for investigation into optimal or safe alternative therapies for refractory AP. These therapies include stellate ganglion blockade. However, high-quality, large-scale studies are still lacking and demands its necessity.

References

1. Yusuf S, Reddy S, Ounpuu S, *et al.* Global burden of cardiovascular disease. Part II. Variations in cardiovascular disease by specific ethnic groups and geographic regions and prevention strategies. Circulation 2001;104:2855–64.
2. McKeigue PM, Sevak L. Coronary heart disease in South Asian communities. London: Health Education Authority, 1994.
3. Moore R, Groves D, Hammond C, Leach A, Chester MR. Temporary sympathectomy in the treatment of chronic refractory angina. J Pain Symptom Manage. 2005; 30:183–191. doi: 10.1016/j.jpainsymman. 2005.02.016. PMID: 16125034.
4. Crea F, Pupita G, Galassi AR, *et al*. Role of adenosine in pathogenesis of angina pain. Circulation. 1990;81:164–172. doi:10.1161/01.CIR.81.1.164. PMID:2297824.
5. Khan M, Ahmed I. Role of stellate ganglion block in post CABG sympathetically mediated chest pain. J Pak Med Assoc. 2007;57:470–472. PMID:18072645.
6. Warman P, Nicholls B. Ultrasound-guided nerve blocks: efficacy and safety. Best Pract Res Clin Anaesthesiol. 2009;23:313–326. doi:10.1016/j. bpa.2009.02.004. PMID:19862890.
7. Henry TD, Satran D, Hodges JS, *et al*. Long-term survival in patients with refractory angina. Eur Heart J. 2013;34:2683–2688. doi:10.1093/ eurheartj/eht165. PMID:23671156.

How to cite this article:

Vissnukumar V and Subhathra Radha KVN (2020) 'Stellate Ganglion Block - A Novel Therapeutic Modality For Patients With Refractory Angina Pectoris', *International Journal of Current Advanced Research,* 09(02), pp. 21336-21337. DOI: http://dx.doi.org/10.24327/ijcar.2020. 21337.4190

****