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USG Guided Stellate Ganglion Block For Orofacial Cancer Pain Management: A Case Report

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Abstract
Background: *Cancer pain is one of the most debilitating pain. With advanced treatments cancer patients live longer, but their quality of life is poor due to uncontrollable pain. Oral cancer causes intense pain at the primary site and significantly impairs speech, swallowing, and masticatory functions. Oral cancer pain is usually refractory to opiods and conventional pharmacotherapy. In such cases sympathetic blockade helps in relieving pain. We report A cases of cancer related orofacial pain which have successful pain relief with USG guided stellate ganglion block. patients was pain free for 3 months post block. Thus USG guided stellate ganglion block can be considered as palliative treatment of orofacial pain due to cancer.*
Case presentation: *52 year male present with unresectabe carcinoma of right buccal mucosa present with right sided facial pain.Pain increases with talking, chewing, allodynia and hyperalgesia was present. severe pain with NRS score was 8/10, not responding to conventional pharmacological therapy.So decided to give USG guided right sided stellate ganglion block. Immediately five minute after the block pain reduced with NRS score 4/10.Patient discharged home 24 hours after the procedure.*
Conclusion: *SGB can be used in successfully decreasing the pain scores in cancer related orofacial pain and improving the quality of life in these patients. block effect usually last for around 6 months and can be repeated again if required.*
Keywords: *cancer, orofacial pain, stellate ganglion block, sympathetic ganglia, USG-ultrasonography, NRS-numeric rating scale.*

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I. Introduction

Head and neck cancer (HNC) is the seventh most common disease worldwide, killing 325,000 people each year.[1,2]. Oral cancer causes intense pain at the primary site and significantly impairs speech, swallowing, and masticatory functions. This had significant impact on individuals mental health leading to depression and poor quality of life. Due to multiple mechanism of pain generators and complex regional anatomy of the area multimodal approach to treating oral cancer pain is required.First line therapy is usually opiods with NSAIDs but due to severity of pain these drugs are usually insufficient in treating cancer related pain .Also dose of the drugs required is also high which may lead to toxicity necessitating target oriented interventional pain management.Cancer pain is said to have a sympathetic component. Sympathetic inhibition of the stellate and sphenopalatine ganglia is largely used to manage pain caused by head and neck cancer in the temporomandibular joint region, upper limb, and orofacial regions. Since the sympathetic nervous system is involved in the pain pathway, Stellate ganglion block (SGB), being a sympatholytic block, may be a viable therapy for treating HNC-related pain.[2]

II. Case Report

52 year male with unresectable carcinoma of right buccal mucosa had progressive right sided facial pain with NRS -8/10 .He underwent palliative chemotherapy and radiotherapy 3 session .The pain was continuous dull aching,increases on eating and talking, allodynia and hyeralgesia was present. Patient non responding to conventional pharmacological therapy.Patient was on tab pregabalin 75mg with duoloxetin 20mg at night and tab buprenorphine 0.2 mg three times day but still patient having pain ,so decided to perform USG guided right sided stellate ganglion block.

Written informed consent was taken,all routine blood investigation like CBC,PT-INR,RFT,LFT ECG,chest Xray was done which were normal.On the day of the procedure, after confirming nil by mouth status, the patient was taken inside the operation theater (OT) and placed in supine position on the OT table and regular monitors (electrocardiogram, noninvasive blood pressure, and SpO2) were attached on the left hand. Intravenous cannula secured. Pre procedure antibiotic given according to our institutional protocol.With the help of

temperature monitoring probe, temperature of both hands at the wrist was recorded before the block and repeated 5 min after block. The patient was placed in supine position with a slight head tilt on the left side and neck extended. Under all aseptic precaution painting and drapping done. Then, a linear probe was placed over the right side of the neck at the level of the cricoid cartilage, and the transverse process of the C6 vertebra along with the longus colli muscle was identified. USG probe moved little caudally, C7 vertebra, carotid artery, and longus colli muscle identified. Stellate ganglion was located with the ultrasound guidance with a linear probe of 13-5 MHz. The block was performed with in line technique. Target was decided anterior to longus colli muscle. After deciding the target site, under USG guidance, a 22G 1½ inch hypodermic needle attached to a 10-cm extension line was inserted at the site after local anesthetic injection of 1% lignocaine 1cc. Under continuous usg guidance inj dexamethasone 8mg with inj loxicard 1% 4ml given after negative aspiration of blood and air.Development of Horner's syndrome and a temperature difference (>1.5°C) in the upper limbs confirmed successful delivery of the block.

Patient was monitored in post -procedural suit for 30 minutes for any hematoma, respiratory or neurological complications, hoarsness of voice,dysphagia,followed by 24 -hours observation period in ward.A follow-up chest X-ray confirmed the absence of pneumothorax.He was discharged the following day in stable condition.

A follow-up visits was conducted at 1 week,1 month , 3 month and 6 month. patient reported progressive pain relief with NRS scores dropping to 4/10 immediately 5 min after the block and the end of 3 month NRS score was 3/10.No adverse events were reported during follow up period.

III. Discussion

The stellate ganglion, also known as the cervicothoracic ganglion, is the fusion of the inferior cervical and first thoracic sympathetic ganglion. It is anatomically anterior to the neck of the first rib and seventh cervical vertebral body. It is a relatively large ganglion, measuring 2.5 cm in length, 1 cm in width, and 0.5 cm in thickness[3]. The theory for the potential mechanism of cancer pain has been investigated in multiple studies. It is suggested that cancer-related oral pain is likely caused by stimulation of Ad and C fibers by mediators from cancer cells. These include a variety of mediators, including prostaglandins, bradykinin, chemokines, and other factors[4]. According to a study conducted by Cardona-Guarache *et al.*, cancer mass size has no link with pain, and the mechanism of pain is primarily related to perineural infiltration and nociceptive hypersensitivity[5]. Hence even small mass can sometimes cause pain out of proportion.It is observed that cancer pain has a sympathetic component hence sympathetic blockade can be used to decrease pain in such patients. Stellate ganglion block is a sympatholytic block hence it increases the blood flow in its area of innervation and thus helps in decreasing vascular edema.Horners syndrome post block indicates successful block.

The use of ultrasound to perform this block has been found to be more effective and safer than the landmark and fluroscopy guided technique because of the prevention of drug deposition in closely located blood vessels such as the carotid artery, vertebral artery, and inferior thyroid vessels. Ultrasound technique also avoids needle injury to the esophagus when performed on the left side. Incidence of hoarseness, which is caused by blockade of the vagus nerve in the carotid sheath or of recurrent laryngeal nerve, which lies medial to the carotid sheath, is also decreased as one can visualize the needle tip position.[6] Phrenic nerve injury is infrequent, as it lies lateral to the location of the stellate ganglion.

IV. Conclusion

SGB can be used in successfully decreasing the pain scores in cancer related orofacial pain and improving the quality of life in these patients.Block effect usually last for around 6 months and can be repeated again if required.

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