

Zygomaticotemporal nerve and auriculotemporal nerve block: a vicious cycle breaker for cluster headache pain

Swathi Mallikarjuna¹, Priyanka Gupta², Ashutosh Tiwari³, Mritunjai Kumar⁴

¹ Assistant Professor, Department of Anesthesiology, KMC, Manipal, Manipal Academy of Higher Educations, Karnataka, India.

² Additional Professor, Department of Anaesthesiology and Critical Care, All India Institute of Medical Sciences, Rishikesh

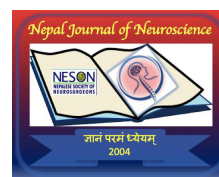
³ Associate Professor, Neurology, AIIMS Gorakhpur, U.P., India.

⁴ Associate Professor, Neurology, AIIMS Rishikesh, Dehradun, U.K., India.

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Abstract

Nerve blocks are the reasonable choice for cluster headache and other nerve associated pain. Blocks used in cluster headache included in literature are Occipital nerve block and Sphenopalatine ganglion block. To our knowledge, the effectiveness of zygomaticotemporal nerve and auriculotemporal nerve block with bupivacaine for the treatment of cluster headache has not been reported. Here we present a case report of 74-year-old male with cluster headache nonresponsive to oxygen therapy, subcutaneous sumatriptan, zolmitriptan spray and other medications. Patient got relieved by the zygomaticotemporal nerve and auriculotemporal nerve block and started responding to the same acute pain management.

Keywords: Cluster headache, TAC, zygomaticotemporal nerve, auriculotemporal nerve, bupivacaine, nerve block

Introduction

Trigeminal autonomic cephalgia [TAC] is a disorder characterized by pain in the distribution of first division of trigeminal nerve and presence of autonomic cranial features on the same side.¹ Cluster headache, though rare is the most common of TAC and is often difficult to treat. There are various nerve blocks which is proven effective in cluster headache such as Sphenopalatine ganglion block with alcohol or radiofrequency ablation² and suboccipital nerve block with steroids.³ Here, we report a case treated with zygomaticotemporal nerve block and auriculotemporal nerve block with local anaesthetics which has become nonresponsive to almost all previously working acute therapies.

Case presentation

A 74-year old male, chronic smoker with no other comorbidities presented with severe headache present unilaterally in left side orbito-fronto-temporal region, severe [pain assessed by Numeric rating scale (NRS) 10/10], bursting in nature. Cluster period had evolved over time and had become four months a year, compared to one month a year 35 years back. He was undiagnosed till June 2022, and was being treated with painkillers. He responded to steroids, and was maintained on verapamil prophylaxis till September 2023, when he developed cluster of headache episodes which responded initially to zolmitriptan nasal spray. But, over few days, the patient became nonresponsive to acute therapies including zolmitriptan, injectable subcutaneous sumatriptan, oxygen therapy, injectable painkillers, and non-steroidal anti-inflammatory drugs [NSAID's]. He was started and kept on verapamil, valproate, and topiramate sequentially. Now, the headache duration is increased, very severe in intensity with more frequent episodes per day [around 8 to 10 episodes], associated with ipsilateral lacrimation, eye congestion and nasal congestion, and patient was not able to do his daily activities. As there was no relief with the multiple acute medications and high flow oxygen therapy, the patient was planned to give zygomaticotemporal nerve and auriculotemporal nerve block with bupivacaine 0.25% by landmark technique on left side as a modality for acute pain relief. Pain severity was assessed by Numeric Rating Scale [NRS]. Before block, the patient had NRS score of 9 to 10, and after the block, pain was reduced immediately with NRS score of 1. Bupivacaine 0.25%, 3 ml was injected just above the zygomatic arch, lateral to the supraorbital margin, 1 ml deep and another 2 ml along the trajectory to block zygomaticotemporal nerve, and 3 ml was injected in front of tragus, posterior to superficial temporal artery to block auriculotemporal nerve. To our surprise, patient was pain free from block and there was

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Address for correspondence:

Ashutosh Tiwari

Associate Professor, Department of Neurology, All India Institute of Medical Sciences, Rishikesh

Email: ashutiwari19@gmail.com

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no further episode for almost 24 hours. Thereafter, episodes were of low intensity [NRS of 4] and short duration of 10-15 minutes, relieved with high flow oxygen therapy which were not responding previously before the block. The patient then started responding to acute medications and discharged after 3 days of symptom free. The patient was on verapamil prophylaxis and on follow up, patient had one episode after 1 week, responded to oxygen therapy. Later, there were no episodes till date.

Discussion

Cluster headache is a rare condition with a preponderance to males in the ratio of 2.5-3.5:1.⁴ The pain in cluster headache is severe, intense, sharp, and burning. Due to the severe nature of headache, it is often called as Suicidal Headaches.⁵ It is diagnosed by International Classification of Headache Disorders diagnostic criteria. The treatment options available are Oxygen, triptans, octreotide and noninvasive vagal nerve stimulator for acute attacks. Verapamil prophylaxis, Galcanezumab, Deep Brain stimulation for prevention of the attacks. For rapid relief of the attacks, bridging therapy in the form of steroids, sphenopalatine ganglion block, suboccipital nerve block with steroids deemed successful.⁶ MIPSI (minimally invasive pain and spine interventions) such as Greater occipital nerve block with local anaesthetics is an established bridging therapy, which provides relief in cluster headache pain.⁷ The Zygomaticotemporal nerve block and auriculotemporal nerve block are used for the treatment of headaches.^{8,9} Due to the predominant orbito-fronto-temporal location of the pain, zygomaticotemporal nerve and auriculotemporal nerves are chosen. Zygomaticotemporal nerve and auriculotemporal nerve are branches of the maxillary and mandibular divisions of the trigeminal nerve which provides sensory supply predominantly over lateral side of forehead and temporal region, hence blocking these nerves with local anaesthetics provided temporary relief in cluster headache of this patient. Neurostimulation of occipital nerve and sphenopalatine ganglion are other modalities for cluster headache pain relief.¹⁰ In our case, we tried multiple medications and oxygen therapy for the treatment of acute attacks, but the pain was not relieved, and the frequency and severity of pain persisted. Giving bedside zygomaticotemporal nerve and auriculotemporal nerve block as shown in figure 1, provided immediate relief to the patient within 5 minutes. Though it was a temporary relief, but the block of these two nerves helped us break the cycle of oxygen and drug resistant pain of cluster headache and reduced the frequency and severity.

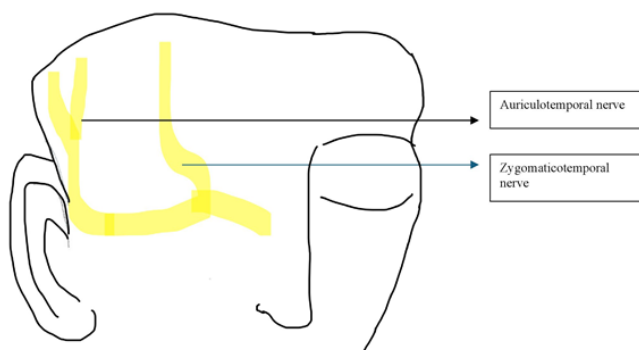


Figure 1 : A schematic diagram showing auriculotemporal and zygomaticotemporal nerve

Conclusion

Zygomaticotemporal nerve and auriculotemporal nerve blocks might be effective for the pain relief and can be used as an alternative to bridging therapy in Cluster headache and further large prospective studies needed for the validation of therapy.

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