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Modified epidural needle applicator for nasal Sphenopalatine ganglion nerve block

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Introduction

Excruciating headache can follow the administration of spinal anesthesia. Typically, it worsens with sitting upright, improves with reclining and is accompanied by neck stiffness, tinnitus, photophobia or nausea. Transnasal sphenopalatine ganglion block has been traditionally used to treat chronic conditions such as migraine, cluster headache, trigeminal neuralgia, and atypical facial pain. Sphenopalatine ganglion block for the treatment of postdural puncture headache (PDPH) has been reported to be safe and effective (1-3).

Various commercial devices are available for performing this block. Innovations like a syringe based device using a microcatheter for local anaesthetic spray has been described (4). We present our experience in performing sphenopalatine nerve block using a Tuohy epidural needle with modification.

Materials and methods

Usually, this block is performed by keeping the patient in the supine position and inserting an applicator in the nose with a cotton swab soaked with 2-4% lignocaine (5). The applicator is inserted parallel to the floor of the nose until resistance is encountered. A curve at the tip of the applicator helps reach the desired location. The swab rests in contact with the pterygopalatine fossa superior to the middle turbinate and is removed after 5-10 minutes. The swab may have to be applied repeatedly after soaking in lignocaine. The same process is repeated in the other nostril. The local anaesthetic penetrates the ganglion facilitated by the connective tissue and mucous membrane (5).

In the modified assembly used by us, a standard 18G tuohy needle replaces the applicator for this purpose. We cut an end portion of cotton bud and attach this to the curved part of the Tuohy epidural needle (Fig. 1). We attach a one ml tuberculin syringe to the Tuohy needle which is

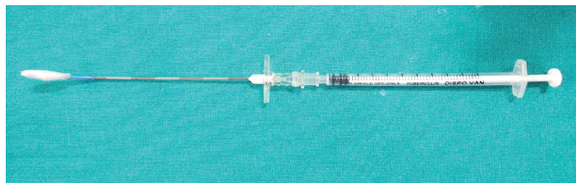

Fig. 1. — Modified Epidural needle with cotton bud applicator.

lightweight, for the instillation of local anaesthetics. This assembly is used for performing the block after soaking the bud in 2% lignocaine and loading the Tuohy needle and the tuberculin syringe with the local anaesthetic. The assembly is left in situ for 10 minutes and 0.5 ml local anaesthetic is injected via the tuberculin syringe every three minutes to allow optimum soakage of the cotton bud.

When the clinical diagnosis of PDPH is established, the process is explained to the patients and written informed consent is obtained. Any pathology that may influence the block such as ulceration, sores or polyps in the nose is looked for. Pain score is noted on the Visual Analog Scale (VAS) and accompanying symptoms like photophobia, dizziness, nausea or vomiting are also recorded. The patients are placed supine with their head extended. This is facilitated by placement of a pillow underneath the shoulders. Routine monitoring is instituted and baseline values are noted. After the procedure, VAS scores at 30 min, 1 h, 2 h and 24 h are obtained. Upon discharge, patients are instructed to visit our pain clinic if symptoms reappear.

Results

In the last two months, we have managed six adult patients with PDPH following spinal

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anaesthesia for orthopaedic procedures or lower segment caesarean section. All were performed in the sitting position with a 25 G Quincke needle.

Out of the six patients included in this series, 4 were males and 2 females. The mean age was 34 ± 7 years and body weight 58 ± 4 kg. Four of these patients reported the onset of pain on the second and two on the third postoperative day. Two of these patients complained of associated nausea or vomiting and one complained of photophobia. The median VAS recorded was 8.

Four patients reported complete relief (VAS 0 or 1) and were advised paracetamol orally if pain reappeared. They remained symptom free after 24 hours and did not require further intervention. In two patients, the procedure had to be repeated after 1 h (VAS 5). However, there was no pain relief even after a repeat administration. They were prescribed oral paracetamol 1 g 6 hourly and were asked to take plenty of fluids orally. Their symptoms resolved after three days.

Discussion

The sphenopalatine ganglion is an extracranial neural structure located in the pterygopalatine fossa that has both sympathetic and parasympathetic components as well as somatic sensory roots. It can be accessed through either a transcutaneous or trans-nasal approach. The trans-nasal approach is a low risk technique that is easily performed and could potentially be beneficial in the treatment of PDPH. The usefulness of this technique has been established in the management of different types of headaches (4, 6, 7).

The etiology of PDPH involves both stretch on sensory fibres due to downward shift of the brain and reflex cerebral vasodilation. Following dural puncture, there may be a continuous loss of cerebrospinal fluid. In such a situation, the intracranial volume is restored by compensatory vasodilatation. This follows the Monro-Kellie doctrine that proposes that if the volume of one constituent reduces, the volume of another constituent increases to maintain an equilibrium in the intracranial space. This uncontrolled vasodilatation is responsible for the PDPH (5).

Sphenopalatine ganglion block works by blocking the parasympathetic flow to the cerebral vasculature through this ganglion which allows the cerebral vessels to return to a normal diameter and thus relieve the headache. However, it might alleviate the “vasodilation” symptoms but not the “stretch” symptoms.

The success rate was approximately 66% by this method. Cohen et al reported a success rate of 69% in a series of 32 obstetric patients with PDPH (1) whereas 11 out of 13 patients were relieved in an earlier series published by them (2). Another series including 11 patients using 10% lignocaine spray for sphenopalatine ganglion block for PDPH reported a success rate of 72% (8).

This assembly is prepared easily using the resources available in the operation room making it cost effective. It avoids the invasive procedure of an epidural blood patch for treating PDPH thus reducing risk of complications and cost. The markings on the Tuohy needle help in assessing the depth and may be used as a guide in cases requiring repeated blocks. The inbuilt curve on the tip of the Tuohy needle facilitates the proper placement of the swab.

Just like any other method of sphenopalatine ganglion block, this technique is not suitable for patients with known allergy to lignocaine or any pathology in the nose that contraindicates the use of lignocaine. Potential complications with this technique include bleeding due to mucosal injury and transient discomfort or hoarseness. Due care should be taken to avoid injury by using excessive force during insertion of the device into the nostrils. There is also a need to evaluate this assembly in a larger patient population.

Conclusion

We have been using this device uneventfully in the management of PDPH. The device is advantageous for its simplicity, safety and ease of insertion during drug instillation. This device provides an easily available alternative in treatment of PDPH and we suggest it be offered as first line treatment of this condition..

References

1. Cohen S., Ramos D., Grubb W., Mellender S., Mohiuddin A. and Chiricolo A. 2014. Sphenopalatine ganglion block: a safer alternative to epidural blood patch for postdural puncture headache. Reg. Anesth. Pain Med. 39 :563
2. Cohen S., Sakr A., Katyal S. and Chopra D. 2009. Sphenopalatine ganglion block for postdural puncture headache. Anaesthesia.64 : 570-579
3. Kent S. and Mehaffy G. Transnasal sphenopalatine ganglion block for the treatment of postdural puncture headache in obstetric patients. 2016. J. Clin. Anesth. 34 : 194-196.
4. Schaffer J.T., Hunter B.R., Bal K.M. and Weaver C.S. 2015. Noninvasive sphenopalatine ganglion block for acute headache in the emergency department: a randomized placebocontrolled trial. Ann. Emerg. Med. 65 : 503-510.

5. Nair A.S. and Rayani B.K. 2017. Sphenopalatine ganglion block for relieving postdural puncture headache: technique and mechanism of action of block with a narrative review of efficacy. Korean J. Pain.30 : 93-97.
6. Kent S. and Mehaffy G. 2015. Transnasal sphenopalatine ganglion block for the treatment of postdural puncture headache in the ED. Am. J. Emerg. Med.33 : 1714.
7. Cardoso J.M., Sa M., Graca R., Reis H., Almeida L., Pinheiro C. and Machado D. 2017. Sphenopalatine ganglion block for postdural puncture headache in ambulatory setting. Braz. J. Anesthesiol.67 : 311-313
8. Dubey P. and Dubey P.K. 2018. Intranasal lignocaine spray for sphenopalatine ganglion block for postdural puncture headache. Saudi J. Anaesth. 12 : 364-365