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CASE REPORTS

Self-applied sphenopalatine ganglion block for postdural puncture headache: four case reports

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PALAVRAS-CHAVE
Bloqueio gânglio esfenopalatino;
Cefaleia pós-punção dural;
Tampão sanguíneo peridural;
Manejo de dor;
Lidocaína

Abstract

Background and objectives: The Sphenopalatine Ganglion Block (SGB) is an effective, low-risk treatment option for Postdural Puncture Headache (PDPH) refractory to conservative management.

Case report: This report presents four complex cases of patients with headache related to low cerebrospinal fluid pressure. Three of them were successfully treated with the application of local anesthetic topical drops through the nasal cavity.

Conclusion: The novel approach described in this report has minimal risks of discomfort or injury to the nasal mucosa. It is quick to apply and can be administered by the patient himself.

Bloqueio do gânglio esfenopalatino autoaplicado para cefaléia pós-punção dural: relato de quatro casos

Resumo

Justificativae objetivos: O Bloqueio do Gânglio Esfenopalatino (BGEP) é opção de tratamento efetivo associado a baixo risco para Cefaleia Pós-Punção Dural (CPPD) refratária às medidas conservadoras.

Relato de caso: Este relato apresenta quatro pacientes com alta complexidade que apresentaram cefaleia relacionada à baixa pressão do líquido cefaloraquidiano. Três pacientes foram tratados com sucesso pela instilação de gotas de anestésico local tópico na cavidade nasal.

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Conclusões: A nova abordagem descrita neste relato apresenta riscos mínimos de desconforto ou lesão à mucosa nasal. A aplicação é rápida e pode ser administrada pelo próprio paciente.

Introduction

According to the international classification of headache disorders, Postdural Puncture Headache (PDPH) is a secondary headache attributed to non-vascular intracranial disorders related to low Cerebrospinal Fluid (CSF) pressure.[1]

Even though regional anesthesia techniques have been evolving with a diversity of peripheral nerve catheter treatment, an epidural procedure is sometimes required. Also, spinal anesthesia remains a prevalent practice for most orthopedic and obstetric surgeries. Consequently, the headache related to neuraxial techniques is a constant complaint in pain management centers.

In this report, we present the successful treatment of three patients with PDPH by using topical local anesthetic blocks applied by the patient himself (easier than the classic technique). To the best of our knowledge, this is the first description of this method. All patients gave written permission to publish this case report and consented for images.

Case reports

Case 1

A 33-year-old woman diagnosed with epilepsy and Systemic Lupus Erythematosus (SLE) presented a spontaneous headache and vision loss.

The neurologist described bradycardia, hemifacial paresthesia, urinary incontinence, and loss of strength in her right leg with hyperreflexia and unstable gait. She was admitted to the hospital to complete studies, and a lumbar puncture was performed as part of the diagnostic workup. Her medication regimen at the time of admission consisted of Prednisone 5 mg TID and Plaquinol 400 mg daily (since the diagnosis of SLE, 11 years ago). Initial laboratory results included a leukocyte count at 12,750 per μl, platelet count 164,000 per μl, INR = 2.02, PT = 21.3 sec, and a PTT = 36.9 sec. According to evoked potentials and magnetic resonance imaging, optic neuritis associated with anterochiasmatic mielinoplastic disorder was diagnosed, secondary to SLE with immunohematologic compromise.

On the second day of the lumbar puncture, the patient presented a fronto-occipital headache worsening within the upright position and associated with nausea, dizziness, and vomiting. Paracetamol, diclofenac, and even morphine were administrated with inadequate response. The Numerical Rating Scale (NRS) reported was 6/10 lying in the supine position and 9/10 in the upright position. A topical Sphenopalatine Ganglion Block (SGB) was offered to the patient, but we decided to avoid cotton tip applicators given the patientś risk of coagulopathy. A dropper bottle was filled with 2% plain lidocaine, and the patient was asked to apply 1 mL (20 drops) in each nostril while in the sniffing position and wait 10-15 minutes before repeating the procedure two more times (Figure 1). The first application was performed by the patient and witnessed by the instructor. If the headache was not sufficiently relieved, she could repeat the procedure up to a total of three times a day by herself. Ten minutes after the first application, her pain relief was immediate and complete, resulting in an NRS of 0/10 when lying and standing, and improvement in nausea and dizziness. The patient reported no side effects. No changes in spastic gait and hemifacial paresthesia were reported. The next day the analgesia was enough to avoid Epidural Blood Patch (EBP), analgesics were suspended, and a second block was unnecessary. She completed her treatment with mycophenolate, methylprednisolone, and five apheresis sessions.

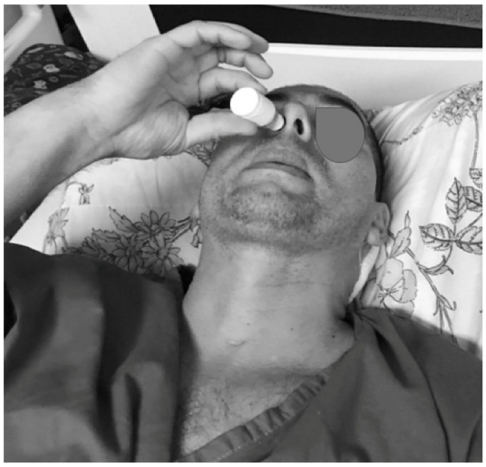

Figure 1 Lidocaine application by the patient.

Case 2

A 37-year-old man diagnosed with ependymomas located at the posterior fossa and various spinal levels was treated with resection and chemotherapy. A control magnetic resonance imaging demonstrated a nodular lesion located at the atlantoaxial level and pontocerebellar angle, in the vicinity of the VII cranial nerve. A new resection was performed guided by evoked potentials. A month later, the patient developed a symptomatic cerebrospinal fluid fistula associated with meningitis. His medication regimen at the time of admission did not include any analgesics. The

patient was admitted to the hospital to complete antibiotics and pain management. Meningitis resolved, but the fistula was still causing a significant headache. Despite treatment with acetaminophen, diclofenac, and morphine, the patient rated his pain as 9/10 in the NRS when standing and 6/10 when lying down. A simplified version of an SGB was discussed and accepted by the patient in an attempt to reduce pain.

In the same manner, like Case 1, a dropper bottle was filled with lidocaine 2%, and the self-application technique was explained to the patient. He applied 1 mL (20 drops) of lidocaine in each nostril and waited 10-15 minutes in sniffing position before repeating the procedure two more times. Ten minutes later, the patient reported an NRS of 2/10 lying and 4/10 standing. The analgesic effect lasted for 12 hours, after which the patient repeated the procedure by himself obtaining the same relief. The second day the patient repeated the procedure with the same result. Opioids and acetaminophen were discontinued receiving only one dose of metamizole per day. Two months later, the patient was assessed again, the fistula had reabsorbed, and the headache completely disappeared.

Case 3

A 56-year-old woman diagnosed with hypertension, diabetes and a right adnexal mass was admitted to the operating room. Her medication regimen at the time of admission did not include any analgesics. As part of the postoperative multimodal pain management, she received an epidural catheter, but the anesthesiologist reported a dural puncture. Forty-four hours later, the patient complained of headaches, described as NRS of 5/10 lying supine position, and 9/10 upright position, even with intravenous nonsteroidal anti-inflammatory drugs. No nausea, visual, or hearing problems were reported.

An EBP and the lidocaine nasal drops method were offered to the patient, and she chose the second option. Twenty-four hours later, after three applications, the patient reported a NRS of 2/10 lying and 8/10 standing. The analgesia was not enough to obtain adequate pain relief, so she received an EBP, and ten minutes later, she reported adequate and persistent pain relief.

Case 4

A 59-year-old woman diagnosed with coxarthrosis was admitted to the operating room for hip arthroplasty. Her medication regimen at the time of admission included diclofenac and paracetamol. The anesthesiologist reported a dural puncture while placing an epidural catheter. Twenty-four hours later, the patient reported headache described as NRS of 5/10 lying in supine position and 9/10 in the upright position, even with intravenous nonsteroidal anti-inflammatory drugs. She also reported a slight hearing decrease.

She chose the described novel approach over the EBP. In the same manner, a noninvasive SGB was applied. Twenty minutes later, the patient reported relief, but dynamic pain was still going on, so the block was repeated two more times (for a total of three times). Three hours later, the patient reported a NRS of 0 for rest and dynamic pain, so no further analgesics were needed. The patient was discharged the next day, reporting the same effect one week later.

Discussion

The use of EBP in treating PDPH can be costly and time consuming compared to treatment approaches like the transnasal SGB. EBP is also associated with risks secondary to the creation of an epidural hematoma, arachnoiditis, repeated dural punctures, back pain, cerebral venous sinus thrombosis, seizures, infection, and local pain.[2,3] Some patients are not allowed to use their blood because of pathological or religious issues, such as multiple sclerosis and Jehovah's witnesses. In patients with multiple sclerosis, the recommendation is to inject slowly and under somatosensory evoked potentials monitorization due to the risk of impaired conduction of impulses in affected axons due to the increase in pressure.[4,5] In Jehovah's witnesses, complex venous or arterial-to-epidural closed-circuits have been described.[6] To avoid this invasive, dangerous, and costly approach, the topical SGB has shown effectiveness similar to EBP with a quicker onset of headache relief and fewer complications.[7]

The mechanism for the SGB to relieve headache is well described. When this ganglion is activated, it causes cerebral vasodilation via the release of acetylcholine, nitric oxide, and vasoactive intestinal peptide into dural blood vessels. Once parasympathetic activity is blocked, the cerebral vasodilatation is inhibited, causing an analgesic effect.[7]

Although SGB is a minimally invasive procedure, sedation is sometimes required to introduce cotton-tipped applicators through the nasal cavity, as this can be uncomfortable.[8] There is a 1 to 1.5 mm-thick layer of connective tissue and the mucous membrane surrounding the ganglion, so lidocaine enters well by topical application.[9] The SGB is easy to apply and has been reported as a treatment for patients presenting to the emergency department with severe headaches.[10] The advantage of our approach is that (compared to the cotton-tipped application), it has minimal risks of discomfort or injury to the nasal mucosa. It is quick to apply and could be administered by the patient himself in an ambulatory setting or at home, besides the advantages of avoiding an EBP.

We found no studies reporting this approach. A recent study[11] using regional techniques for the treatment of PDPH reported a statistically significant improvement in the NRS after blocks, but do not entirely eliminate the need for EBP. This agrees with our findings in which the technique was effective in 3 of 4 cases, and no adverse events were reported. Imaging studies were not done to rule out anatomical variations of the pterygopalatine fossa.

The present cases suggest the usefulness and efficacy of a noninvasive technique in complex patients with low CSF pressure headache. Further studies are needed to confirm the spread and effectiveness of the lidocaine drops and to clarify the optimal dose, concentration, and treatment interval. We consider this is a feasible, easy, and safe analgesic approach that can be used as a treatment option. This

technique should be evaluated in clinical trials to further validate it as a treatment option.

Patient consent

A consent form was obtained from the patient for the publication of this report.

Conflicts of interest

The authors declare they do not have any conflicts of interest relevant to this present manuscript. None of the above have received benefits such as employment, consultancies, stock ownership, honoraria, paid expert testimony, patent applications, travel grants that suppose a conflict of interested in the present manuscript. This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

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