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ORIGINAL ARTICLE

USE OF BLOOD PATCH FOR MANAGEMENT OF POST-DURAL PUNCTURE HEADACHE IN A PEDIATRIC PATIENT

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ABSTRACT

Neuroaxial anesthetic techniques are widespread in patients of all age groups for the most diverse types of surgeries. It is an extremely efficient technique for analgesia, as is the case with the epidural. Bearing in mind that correct execution and knowledge of possible complications minimize errors, but do not eliminate them. Post-dural puncture headache (PDPH) is a complication of dural perforation, in which, in the case of epidural, it is a puncture accident. Although it is more common in young women, it also affects other patients, including the pediatric population. In this article, we report the case of a child who presented with PDPH and evolved with satisfactory clinical improvement after being submitted to the blood patch.

KEYWORDS: ANESTHESIA, EPIDURAL; CEREBROSPINAL FLUID; POST-DURAL PUNCTURE HEADACHE

INTRODUCTION

Post-dural puncture headache (PDPH) is a complication that can occur, on average, between 24 and 48 hours after accidental perforation of the dura mater. Its pathophysiology is based on the loss of cerebrospinal fluid (CSF) through the dural orifice, resulting in intracranial hypotension. It is characterized by pain, usually in the occipital region, intense, of a positional nature, worsened in orthostasis, and may be associated with neck stiffness, photophobia, nausea or auditory symptoms.[1]

The most common risk factors include female gender, obstetric patients, larger needles, multiple punctures, low body mass index, and age between 18 and 50 years. Although post-puncture headaches in children do not occur frequently, an increase in epidural anesthesia has been observed in this population, which may imply an increasing number of these postoperative complications. [2,3]

Conservative therapy is recommended for 48 hours, however, if the headache is considered persistent or of moderate to severe intensity, the epidural blood patch (EBP) is one of the most effective methods for pain remission. However, it is not a routine procedure because it is an invasive approach and is not without complications. It is an aseptic epidural injection, with the patient in a sitting position, with approximately 20 mL of autologous blood, preferably in the same intervertebral space as the initial puncture, and then the least possible effort is recommended in the first 24 hours after the procedure. [1,4]

The aim of this study is to report a case of PDPH, in a 3-year-old child, submitted to a video laparoscopic pyeloplasty, which received BP as treatment.

CASE REPORT

Male patient, 3 years old, 18 kg, with stenosis of the pyeloureteral junction, submitted to videolaparoscopy pyeloplasty. Monitoring with non-invasive blood pressure, pulse oximetry, cardioscopy and level of consciousness, venoclysis and inhalational anesthetic induction with sevoflurane and intravenous with sufentanil and rocuronium were performed. This was followed with orotracheal intubation and coupling to controlled mechanical ventilation. Positioning in lateral decubitus and epidural performed at T10 - T11 level, using the Doglioti technique, with a Tuohy needle, 18 G, injecting 10 ml of 0.2% ropivacaine. The procedure was uneventful and the patient woke up without pain and was discharged the day after the surgery.

He returned, with admission to the emergency department, one day after discharge, with occipital headache, photophobia, irritability, nausea and an episode of vomiting. Hospitalization and pharmacological treatment with dipyrone, dexamethasone and ondansetron for 24 hours were performed, however, without improvement of the clinical picture. Therefore, the technique of applying the BP was chosen for the management of PDPH. [6] mL of autologous blood was collected through peripheral puncture in the upper limb (figure 1) and then the procedure was performed at the T10-T11 level (figure 2), the same anatomical topography in which epidural puncture was performed

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for the surgical procedure mentioned above, both under complete attire and rigorous antisepsis.

Figure 1. Peripheral venous access puncture for collecting blood to be used as a buffer on the patient.

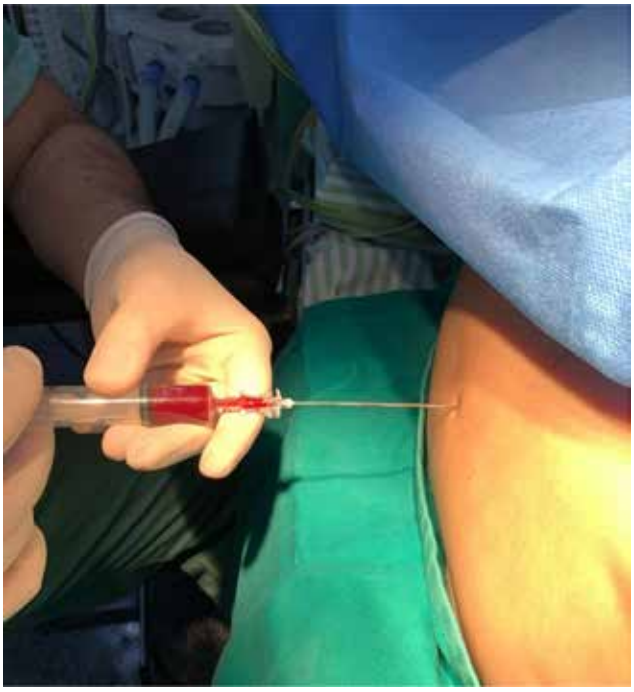

Figure 2. Application of the blood patch using a Tuohy 18G needle with puncture at the T10-T11 level with the patient in a sitting position.

After two hours of the procedure, the patient showed improvement in all signs and symptoms presented at admission, remained uneventful during hospitalization and was discharged the following day, showing an excellent general condition.

DISCUSSION

In the present study, epidural BP resulted in immediate improvement of all signs and symptoms presented by the patient, being clearly superior, even, to the pharmacological treatment of post-dural puncture complications.

The BP is a recurrent therapeutic option in the treatment of PDPH in adults, however the clinical reports of this procedure that predict its effectiveness in the child population remain insufficient. In view of the positive descriptions published so far, it is observed that the resolution of symptoms, in addition to offering diagnostic support, illustrates that this procedure can be useful in the treatment of both populations.[5] The side effects and long-term sequelae in children also are not fully understood, however, experience with adults suggests that they have a minimal incidence when discussing risk versus benefit. There was a divergence in the incidence of complications in terms of age and height variations, which may be a consequence of variations in hydrostatic pressure according to each situation.[6,7]

In our work, the volume of BP applied was 6 mL, corresponding to a very close target of 0.2-0.3 mg.kg-1 as described by Ylonen and Kokki8; as for Roy et al. there was a good clinical response of PDPH in the administration of BP with a volume of 10 mL in a 7-year-old child[9]; and in the work by Silva et al. [8] mL were applied to a 10-year-old girl weighing 26 kg, also obtaining a good therapeutic response10. There are reports of even smaller volumes than what was administered to our patient, however a standardized dosage needs further studies.

In addition to the injected volume of autologous blood, in the treatment for PDPH, there are other considerations such as the insertion level for performing the BP and individual characteristics of each patient according to preexisting risk factors. However, in children, it is noteworthy that these risks are lower because they physiologically have lower CSF pressure and also low hydrostatic pressure in the lumbar region compared to an adult, when they assume an upright position, thus presenting a low incidence of PDPH .[11,12]

CONCLUSION

Epidural BP resulted in immediate improvement of all signs and symptoms presented by the patient, and should be considered as an alternative for the approach to PDPH.

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