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Headache in post dural puncture using various sizes of spinal needles

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Abstract

Post-Dural puncture headache (PDPH) is one of the most common complications encountered by physicians following spinal anesthesia or lumbar puncture.

This study was done for evaluating the incidence of PDPH following spinal anesthesia in the south Indian population using various gauges of Quinckes spinal needle.

Keywords: Headache, dural, meninges, spinal needle

Introduction

Postural headaches following interventions that disrupt meningeal integrity are most commonly labeled post-Dural puncture headaches (PDPHs). This terminology has been officially adopted in the International Classification of Headache disorders [1, 2]. However, use of the word post Dural has been criticized as confusing and probably inaccurate, resulting in the proposal of an alternate term, meningeal puncture headache (MPH), which readers may increasingly encounter. It is also important to acknowledge that references to "Dural puncture" throughout the medical literature actually describe puncture of the Dura-arachnoid and are more correctly termed and thought of as "meningeal puncture"

Post-Dural puncture headache (PDPH) is one of the most common complications encountered by physicians following spinal anesthesia or lumbar puncture [3-7].

This study was done for evaluating the incidence of PDPH following spinal anesthesia in the south Indian population using various gauges of Quinckes spinal needle.

Although epidural options are limited, especially with catheter techniques, the risk of PDPH following ADP can be reduced by using the smallest feasible epidural needles. Simply decreasing the size of epidural needles from 16 to 18 gauge has been reported to reduce the incidence of PDPH from 88% to 64%. [8]

The issue of air versus liquid for identification of the epidural space with the loss-of-resistance technique has long been a source of controversy. Each method has acknowledged advantages and disadvantages, but neither has been shown convincingly to result in a lower risk of ADP. In this case, operator preference and experience would be expected to strongly influence performance, and the overriding significance of this factor is illustrated in fewer instances of ADP noted when the medium is chosen at the anesthesiologist's discretion.

Bevel orientation for epidural needle insertion remains a matter of debate. Norris *et al.* found the incidence of moderate-to-severe PDPH after ADP was only 24% when the needle bevel was oriented parallel to the long axis of the spine (compared to 70% with perpendicular insertion). This resulted in fewer therapeutic EBPs administered to patients in the parallel group ($p < .05$). However, this technique necessitates a controversial 90° rotation of the needle for catheter placement [9].

Aims and Objectives

Post Dural Puncture Headache Using Various Sizes of Spinal Needles.

Materials and Methods

The study was conducted in Department of Anesthesiology, Kanachur Institute of Medical Sciences, Mangalore from Feb 2018 to Jan 2019. A total of 100 patients who were planned to undergo surgery under spinal anesthesia, and satisfying the inclusion criteria were enrolled

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into the study. A written informed consent was taken from all the patients. The inclusion criteria was defined as American Society of Anesthesiologists Physical Status I and II, age between 25 and 75 years who are planned to undergo surgeries under spinal anesthesia. Patients with previous history of PDPH, migraine, history of a chronic headache, with contraindications for spinal anesthesia, multiple punctures for spinal anesthesia, failed spinal anesthesia, poor follow-up, and patient refusal to give consent were excluded from the study.

The study subjects were randomly divided into three groups, Group I, II, and III each consisting 50 patients. All patients were uniformly preloaded with intravenous ringer lactate 10 ml/kg and positioned in sitting position for lumbar puncture. Under all aseptic precautions, a lumbar puncture was made in the L3-L4 interspace using Quinckes spinal needle of size 23 gauge, 25 gauge, and 26 gauge, respectively, in patients belonging to Group I, Group II, and Group III. In all the study, subjects uniformly 0.5 ml of cerebrospinal fluid (CSF) was allowed to spill out before injecting the local anesthetic.

Patients complaining of the headache and satisfying the criteria for PDPH as laid out by International Society of Headache were diagnosed to have PDPH and treated accordingly. Moreover, the severity of headache was assessed using Cocker's scale.

Result

Table 1: Age Distribution

	Group 1	Group 2	Group 3
Age	46.98	47.98	43.92
Standard Deviation	4.94	4.84	9.87

Table 2: Incidence of PDPH

Group	Incidence
Group 1	29
Group 2	12
Group 3	04

Table 3: Test for Significance

Frequency	P Value	significance
29	0.479	Not Significant
12	0.128	Not Significant
04	0.0011	Significant

Discussion

Regional analgesia was first introduced in clinical practice by the German surgeon Karl August Bier (1898), who injected cocaine into subarachnoid space of seven patients, himself and his assistant, Hildebrandt^[1]. Then, it became widely practiced to provide anesthesia, especially for surgery below umbilicus. Regional anesthesia (spinal, epidural or combined spinal and epidural) became the first line of choice in obstetric surgery. Its preference is because of its advantages over general anesthesia. These advantages include: easy technique, rapid onset, simple performance, requirement of minimum equipments and monitors, little effects on blood biochemistry, optimum levels of arterial blood gases, conscious patients during surgery and maintenance of airway patency, less post-operative care and provide good analgesia^[2]. Unfortunately regional anesthesia has some complications that may be severe enough to annoy

the patient, surgeon and/or the anesthetist. Post-Dural Puncture Headache (PDPH) has remained a well-recognized complication. PDPH does not occur in all patients who received lumbar puncture for diagnostic or anaesthetic reasons and is found to be more common after Caesarean Section (CS) in young parturients^[3, 4]. For many years ago less refined and thicker spinal needles were being used and the incidence of PDPH was high^[4, 6]. But within the last three decades more refined and thinner needles of 25-31G have been used more often and the incidence of PDPH is reduced to be 0-5%^[7]. Although it may be transient, mild PDPH may persist for hours or many weeks and can be severely incapacitating^[2]. Previous studies have reported a reduced incidence of headache in young patients with the use of a 29G needle, with the incidence varying between 0% and 2%^[7].

The present study was undertaken to compare the use of 23G, 25G and 26G Quinckes point needles in three groups under spinal anesthesia with regard to the frequency and severity of PDPH and the difficulty in performing spinal anesthesia.

Conclusion

In the present study for PDPH using three different gauge Quinckes spinal needles, the incidence was found to be minimum with 25 G needle.

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