



Incidence of Postdural Puncture Headache

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Abstract

Background: Due to limited study in our region the present study was conducted with the aims of study the incidence of PDPH with 25 and 26 gauges needles.

Methods: In the hospital based prospective study of 100 subjects of ASA grade I and II ranging from 18 to 45 years who underwent lower segment caesarean section under spinal anesthesia were taken into consideration.

Results: In present study, incidence of PDPH in 25 gauge needles was 2.85% and in 26 gauge needles was 3.33%.

Conclusion: Post dural puncture headache is directly related to the size of the spinal needle used. The study concluded that the incidence of post dural puncture headache can be reduced to minimum with the use of small sized needles

Keywords: Spinal anesthesia, LSCS, Postdural Puncture headache (PDPH), 25-Gauge needle, 26-Gauge needle

Introduction

The history of anesthesiology is a rich mosaic of interwoven events around the world that have created and defined the specialty. From the days of the ancient Greeks and Romans, to the modern operating rooms, the care of the patients remain challenging. With the introduction of general anesthesia in 1846 to the development of regional techniques, anesthesia has been an evolving specialty. Later in 1898, Karl August Bier was first to describe PDPH when he injected 10 – 15 mg cocaine into sub arachnoid space of himself and his assistant, and attributed this headache to excessive loss of cerebro spinal fluid. The incidence of PDPH is high in obstetric population because of their young age, sex and wide spread use of central neuroaxial blocks. PDPH is the third most common cause for litigation in Western countries. Despite obvious advantages of regional over general anesthesia for obstetrics, regional techniques was not popularized.¹

Spinal anesthesia also called spinal analgesia or subarachnoid block is a form of regional anesthesia and

a kind of neuraxial block involving injection of opioids, local anesthetics or other permissive drug into the subarachnoid space.²

It has a very rapid onset and provides a dense neural block which can produce highly effective pain relief for a wide variety of indications and may decrease patient morbidity after major surgery, moreover, failures are very infrequent³

Postdural Puncture headache(PDPH) remains the most frequent complication of central neuraxial blockade. It can occur following uncomplicated spinal anesthesia as well as accidental dural puncture in epidural anesthesia. The International headache society has defined PDPH as a bilateral headache that develops within 7 days after lumbar puncture and disappears within 14 days⁴.The headache worsens within 30 minutes of assuming the upright position and disappears or improves within 30minutes of resuming recumbent position. PDPH is associated with any one of the symptoms like neck stiffness, nausea, vomiting, tinnitus, photophobia, decreased hearing.

Material and Methods

Type of study: Hospital based prospective

Inclusion criteria: ASA grade I and II ranging from 18 to 45 years who underwent lower segment caesarean section under spinal anesthesia.

Exclusion criteria: Patient who had history of allergic rhinitis, ophthalmic or neurological problems along with otolaryngological problems and those with history of acute-chronic headache were excluded from the study.

In the hospital based prospective study 100 subjects of ASA grade I and II ranging from 18 to 45 years who underwent lower segment caesarean section under spinal anesthesia were taken into consideration. These patients were given pre operatively i.e., about 30

minutes prior to operation, injection atropine 0.6 mg.IM and intravenous line using 18G IV cannula was established and Ringer lactate solution started.

All post-operative headaches of patients who had undergone operation under spinal analgesia were not taken as PDPH. In this study only those patients who have post-operative headaches which fulfills the key features of PDPH were taken into consideration

By using a standardized headache severity scale, the presence and absence of the headache was assessed.

Clinical presentation of PDPH: Severity

0 – No headache.

1- Mild PDPH (VAS score 1-3) slight restriction of daily activities. Patient is not bedridden and no associated symptoms.

2 - Moderate PDPH (VAS score 4-7) significant restriction of daily activities. Patient is bedridden part of the day. Associated symptoms may or may not be present.

3 - Severe PDPH (VAS score 8-10) incapacitating headache, impossible to sit up. Associated symptoms were always present.

Data analysis

Data was recorded on a Performa. The data analysis was computer based; SPSS-22 was used for analysis. For categoric variables chi-square test will be used. For continuous variables independent samples's *t*-test was used. *p*-value <0.05 was considered as significant.

Results

Table 1: Age Wise Distribution

Mean age in Yrs	24.2±3.21 Yrs
ASA grade I:II	86:14

In present study mean age was 24.2±3.21 Yrs. ASA grade I : II ratio was 86 :14.

Table 2: Incidence of PDPH

PDPH	No of patients	Percentage
Present	3	3.00
Absent	97	97.00
Total	100	100.00

In present study, incidence of PDPH was 3.00%.

Table 3: Severity of PDPH

PDPH	No of patients	Percentage
Mild	3	3.00
Moderate	0	0.00
Severe	0	0.00
Total	3	100.00

In our study all cases of PDPH were mild in nature.

Table 4: Association between PDPH and size of needle

PDPH	No of patients	Incidence of PDPH
25 Gauge	70	2(2.85%)
26 Gauge	30	1(3.33%)
Total	100	3(3.00%)

In present study, incidence of PDPH in 25 gauge needles was 2.85% and in 26 gauge needles was 3.33%.

Discussion

A PDPH is usually a self-limiting process. If left untreated 75% of them will resolve within the first week and 88% will have resolved by 6 weeks. The incidence of PDPH after the use of a standard spinal needle (Quincke) is dependent on the size of the needle. In young female patient's incidence of PDPH is approximately 15% when using 25 G needles and 5% when using 26 G needle. A PDPH is usually a self-limiting process. If left untreated 75% of them will resolve within the first week and 88% will have resolved by 6 weeks. The incidence of PDPH after the use of a standard spinal needle (Quincke) is dependent on the size of the needle. In young female patient's

incidence of PDPH is approximately 15% when using 25 G needles and 5% when using 26 G needle. A significant reduction in PDPH from 6.3% to 2.5% is seen if using 27 G needle instead of 26 G needle in obstetric patients. Many workers have studied the development of PDPH following spinal anesthesia by using different needles.⁵

In a study at Magee-Women's Hospital at Pittsburgh, the incidences of PDPH following administration of spinal anesthesia in obstetrics cases using five different needles namely, 26G Atrucan, 25G Quincke, 24G Gertie Marx (GM), 24G Sprotte and 25G Whitacre were 5%, 8.7%, 4%, 2.8% and 3.1% respectively of the 1002 cases studied. The use of 25G Quincke had a higher incidence of PDPH than the Sprotte or Whitacreneedles⁶.

In an in vitro study⁷ of dural lesions produced by 25G Quincke and Whitacre needles, it was found that the area of the dural lesions produced by 25G Quincke needles 15 minutes after they have been withdrawn was 0.023 mm in the external aspect (epidural surface) and 0.034 mm in the internal aspect (arachnoid surface), whereas the areas of lesions produced by 25G Whitacre were 0.026 mm and 0.030 mm in the external and internal surfaces respectively

Conclusion

Post dural puncture headache is directly related to the size of the spinal needle used. The study concluded that the incidence of post dural puncture headache can be reduced to minimum with the use of small sized needles

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