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ORIGINAL ARTICLE

INCIDENCE OF POSTDURAL PUNCTURE HEADACHE: A STUDY WITH 25G QUINCKE NEEDLE IN PATIENTS UNDERGOING CAESEREAN SECTION UNDER SPINAL ANAESTHESIA

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ABSTRACT: Spinal anesthesia is the most commonly performed anesthesia technique in patients undergoing cesarean sections. Postdural puncture headache (PDPH) is one of the common complications following spinal anesthesia more so in in obstetric patients. It is preventable complication, hence the study is undertaken to know the incidence of PDPH in patients undergoing cesarean sections.100 patients belonging to ASA grade I & II, age group ranging from 20-40 years who are subjected to LSCS considered for the study. Patients with acute or chronic headache, otolaryngeal, ophthalmic and neurological problems are excluded from this study. Study is conducted in District hospital attached to Belgaum Institute of Medical Sciences. 0.5% Bupivacaine hydrochloride is injected at L3-L4 level using 25G Quincke needle. In the postoperative period only 3% of cases developed PDPH.2 patients had mild headache and one patient developed moderate headache with vomiting, which was managed by analgesic oral paracetamol, antiemetic ondansetron and fluids.

KEYWORDS: Spinal anesthesia, LSCS, Postdural Puncture headache (PDPH), 25Gauge Quincke needle.

INTRODUCTION: 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 days[1].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.

One of the most important sequelae or unwanted effects of spinal anesthesia is headache. It appears within 1-2 days of dural puncture and may last for several weeks[2]. Every patient does not develop postdural puncture headache (PDPH) after dural puncture. In the 1950s, the generally accepted theory for development of PDPH was leakage of cerebrospinal fluid (CSF) through the hole in the dura.

The CSF leakage, compensatory dilatation of cerebral veins, increased brain volume and downward brain sagging with traction of pain sensitive structures within the cranium secondary to loss of CSF has been explained as the cause of PDPH in spinal anaesthesia[3].Spinal needles with a pencil point tip and those of finer gauge are known to be associated with a lower incidence of PDPH.[4]

In a comparative study[5] of the 25 gauge whitacre with 25 and 26 guage Quincke needles for the production of PDPH at National Defense Center at Taipei, it was found that the incidence of PDPH

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was 1.06%with 25 G Whitacre which was of no significant difference from that of 25 and 26 G Quincke needles 3.65 and 2.06% respectively).

Although the difference was not statistically significant, it was concluded that the 25 gauge Whitcare spinal needle caused a lower incidence and less severity of PDPH than the 25 and 26 gauges Quincke needles.[4] The present study was done with the aims and objective of studying the incidence of PDPH in centers where due to lack of infrastructure, the anesthetist depends largely on the subarachnoid block to carry out surgical operations.

MATERIAL AND METHODS: In this study 100 subjects of ASA grade I and II ranging from 20 to 40 years who underwent lower segment caesarean section under spinal anesthesia in the District Hospital attached to Belgaum Institute Of Medical Sciences, Belgaum were taken into consideration. The anesthetic checkup was done prior to the operation date and the 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.

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. Under thorough aseptic precautions spinal anesthesia was given using 25G Quincke needle using midline approach. Injection of 0.5% bupivacaine (sensorcaine-Heavy solution) 1.8ml was then injected in the space between the third and fourth lumbar vertebrae.

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 consideation[6].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.

A follow up of the patients were done of a daily basis up to a period of 7 days post operatively.

OBSEVATIONS: The incidence of PDPH was found to be only 3% of the 100 cases studied. Out of the 3 cases, 2 cases had mild headache, which appeared by the 1st day and disappeared by the 2nd day following administration of mild analgesic such as paracetamol orally.

Only one case had moderate headache with nausea and vomiting from the 1st post-operative day. In this case also, the PDPH and the associated symptoms disappeared by the 3rd day after treating the patient with mild analgesic and antiemetic (Ondansetron) (Tables 1 & 2).

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Type of Headache	Pt. who developed PDPH (N=3)	Headache severity scale before therapy
Mild	1st	1
	2nd	1
Moderate	1st	2
Severe	x	0

Table 1: Showing severity of Headache before Therapy

Type of Headache	Pt. who developed PDPH (N=3)	Headache severity scale before therapy	
		Immediately	Day 1 2 3 4 5 6 7
Mild	1st	1	1 0 0 0 0 0 0
	2nd	1	1 0 0 0 0 0 0
Moderate	1st	2	1 0 0 0 0 0 0
Severe	x	0	0 0 0 0 0 0 0

Table 2: Showing severity of Headache after Therapy

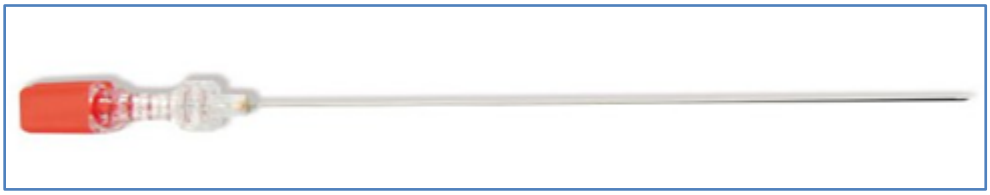

Figure 1 : 25 G Spinal Quincke needle with external diameter 0.53mm

DISCUSSION:

The incidence of PDPH is related to:
Gender (Females >>Males).
Pregnancy.
Age (Decreased incidence with increasing age).
Needle size and Design.
Technique of needle insertion.
Previous history of PDPH.

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.

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 Whitacreneedles[8].

In an in vitro study[9] 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.

The Whitacre needles produced coarse lesions with significant destructions in the dural fibers, while Quincke needles produced 'U' shaped lesions (flap) mimicking a lid of a can. Thus the Whitacre needles produced a more traumatic opening with severe destruction of the collagen fibers, thereby, leading to inflammatory reaction at the site. This inflammatory reaction may produce significant edema, which may act as a plug limiting the leakage of CSF.

Some workers [10] also found that the number of insufficient block, PDPH, headache and multiple skin punctures were higher in 25 G Quincke spinal needles in patients under 50 years of age. Interestingly, some believe that the use of a very thin needle is of proven efficiency to prevent PDPH.

In spite of all these facts mentioned above, satisfactory results i.e., a minimal incidence of PDPH (3% of the total number of cases) was obtained with 25G Quincke needle in the present study. Moreover, the administration of mild analgesics gave very effective results in these cases, though some workers consider that a combination of aspirin and diazepam along with bed rest and plenty of fluids is an effective, inexpensive, first line treatment of PDPH.

It is concluded that PDPH is the commonest aftermath of spinal anesthesia. Administration of anesthetics by 25G needle is found to be effective in the prevention of PDPH in this part of the country. Even if PDPH develops in some of the cases, it can be easily managed by mild analgesics and antiemetic.

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