

Post dural puncture headache in ceasarean sections A study with 25 gauze quincke needle

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Abstract

At present there is no clear consensus among anaesthesiologists that how to best prevent postdural puncture headache from occurring after accidental dural puncture. We studied 151 patients aged 20- 35 years scheduled for caesarean section for post dural puncture headache profile using 25 G spinal needle to assess incidence and severity of this complication. Onset and location were recorded and the patients were followed up for one week. Severity was graded as mild, moderate, severe and very severe. 21 (14%) patients complained of PDPH; 7 reported it as mild, 10 moderate, 3 as severe and 1 as very severe. We recommend further studies, multicentre trials to find best preventive measure and studies with higher gauge needles as the incidence of PDPH is still high.

Keywords: *Caesarean section, postdural puncture headache, lumbar puncture.*

Introduction

Postdural puncture headache (PDPH) can occur as a result of diagnostic lumbar puncture, spinal anaesthesia, and accidental dural puncture during epidural anaesthesia. PDPH has the potential to cause significant morbidity in the obstetric patient. PDPH is a well known complication of spinal anaesthesia especially in younger patients.^[1] Although it may be transient, mild PDPH may persist for hours or many weeks and can be severely incapacitating. It appears within 1 – 2 days of dural puncture and may last for several weeks. Two most important factors influencing the frequency and severity of PDPH are the patient's age and the size of the dural perforation.^[2]

The parturient is at particular risk of PDPH because of her sex and young age.^[1] Post dural puncture headache is due to loss of CSF through the dural hole.

The CSF leakage, compensatory dilation 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. The present study was done to evaluate the PDPH profile in parturients undergoing caesarean section using 25 gauge spinal needles.

Material and Methods

This study was conducted in the department of Anaesthesiology and Critical Care, Sher-I-Kashmir Institute of Medical Sciences, Srinagar, Kashmir (J&K). Total 151 female subjects of ASA-I and ASA-II ranging from ages of 20 - 35 years who underwent elective/ emergency caesarean section under spinal anaesthesia were enrolled in this study. All patients were enrolled and mentally capable of adhering to the protocol and providing the relevant study information for whole study period. All patients were informed about the procedure of the study and written consent was obtained from them.

Exclusion criteria

- Any contraindication to spinal anaesthesia

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- History of allergic rhinitis, otolaryngological problems.
- H/O ophthalmic, neurological problems and chronic headache.

In the operating room, I/V line was established. All patients were preloaded with 500ml of crystalloid fluid prior to spinal anaesthesia. Monitoring of ECG (rate and rhythm), NIBP, and pulse oximetry was recorded. All procedures were performed in sitting position by same anaesthesiologist. Then under strict aseptic and antiseptic precautions with 25 G Quincke needle a midline dural punctures was done and 0.5% bupivacaine (sensoricaine heavy solution) 2.5 – 3 ml 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 anaesthesia were not taken as PDPH. In our study those patients who have post operation headache which fulfils the key features of PDPH are taken into consideration.

Criteria of PDPH were:

- Occurred after mobilization
- Aggravated by erect or sitting posture and coughing, sneezing or straining.
- Relieved by lying flat
- Mostly localized in occipital, frontal or generalized

Severity of headache was assessed on 1 – 4 scale:

1. Mild headache which permitted long periods of sitting/ erect posture and no other symptoms.
2. Moderate headache which made it difficult for the patient to stay upright for more than half an hour occasionally accompanied by nausea, vomiting auditory and ocular symptoms.
3. Intense headache immediately upon getting up from bed, alleviated while lying horizontal in bed often accompanied by nausea, vomiting, ocular and auditory symptoms.
4. Headache that occurred even while lying horizontal in bed and greatly aggravated immediately upon standing up, eating is impossible because of nausea and vomiting.

Post dural puncture headache when present was treated with bed rest, 500 cc of 5% dextrose as an additional fluid, and inj. Diclofenac 75 mg I/M. A follow up of the post operation cases were done on a daily basis upto a period of 7 days.

Results

We studied 151 women having ASA of I and II, aged 20-35yrs, undergo elective/emergency caesarean section under spinal anaesthesia with 25G Quincke needle. Demographic data of patients are shown in table 1

Table 1: Demographic Data

	Pts without PDPH n=130	Pts with PDPH n=21
Age(yrs) mean±SD	27.8± 6.6	28.9 ± 5.6
Wt(kg) mean±SD	58.7±7.3	61.1 ± 7.1
Physical status ASA 1 ASA2	82 (63%) 48 (37%)	15(71.5) 6 (28.5)

P value: Not significant

Table 2: Incidence of headache

Headache	Frequency	Percent
NO	130	86%
YES	21	14%
TOTAL	151	100%

Twenty one out of 151 pts develop PDPH (incidence of 14%) as shown in table 2.

PDPH was observed as mild in 7, moderate in 10, severe in 3 and very severe in 1 patient

Table 3: Severity of headache

Grade of headache	Number of patients
Mild	7
Moderate	10
Severe	3
Very severe	1

Table 4: Onset of headache

Post operative day	Number of patients having headache n=151
1 st day	8
2 nd day	6
3 rd day	3
4 th day	3
5 th day	1
6 th day	0

Day of onset of PDPH is given in table 4. We compared change in blood pressure, height, age and wt of pts in relations to PDPH and results obtained are shown in table 5

Table 5: Relation of height and blood Pressure with Headache

Headache		N	Mean	Std. Deviation
HT(in cms)	NO	130	152.82	6.093
	YES	21	154.48	5.144
Diastolic BP	NO	130	79.43	3.515
	YES	21	79.90	2.931
Systolic BP	NO	130	119.82	6.472
	YES	21	119.43	5.591

P Value: Non Significant

Table 6: Location of headache

Location	Number of patients
Generalized	10
Fronto occipital	7
Occipital	4

Discussion

General anaesthesia for Caesarean Section is associated with an increased risk of maternal mortality. It is therefore a popular practice to use regional anaesthesia wherever possible. It is simple to institute, rapid in its effect and produce excellent operating condition. Post dural puncture headache is a complication that should not be treated lightly. There is the potential for considerable morbidity due to postdural puncture headache and there are reports of PDPH symptoms lasting for months or years^[3], untreated PDPH leading to subdural haematoma^[4], and even death from bilateral subdural haematomas.^[5] Therefore anaesthesiologists are advised to prevent PDPH by optimizing the controllable factors like spinal needle size as well as shape while conducting spinal anaesthesia.^[6] PDPH is the most common complication of spinal anaesthesia. It generally agreed that leakage of CSF from the puncture site in dura result in dilatation and traction on pain sensitive intracranial structures when the patient assumes the sitting posture. Obstetric patients are at high risk of PDPH, being female and under 40 years of age.^[7] Indeed, the highest incidence of PDPH is in the parturient and may partly explain the higher incidence of PDPH in females as a whole. Diagnosis of post dural puncture headache depends upon its association with body position; the pain is aggravated by sitting or standing and relieved or decreased by lying down flat. Among the prophylactic measures tried to reduce the incidence of PDPH, use of bed rest, the prone versus supine position, extra hydration and prophylactic blood patch have failed to reduce the incidence of PDPH. The most effective way to reduce the incidence of PDPH is the use of small bore needles for administering spinal anaesthesia.

Past studies have mainly concentrated on the needle size and there are few controlled studies that compare two different sizes of spinal needles in young patients. Reported frequency of PDPH ranges from 4% to 40% when 25G Quincke spinal needle is used in young females.^[8,9] Ross et al^[10] reported PDPH in 9% of patients.

In our study of 151 patients using 25G quincke needle 21(14%) pts complained of headache. 7 patients experienced mild headache where as ten patients had moderate headache which made it difficult for these patients to stand upright for more than ½ an hr . severe headache was observed in 3 patients and only one patient complained of very severe headache .

Headache was more on the 1st post operative day and gradually decreased on the subsequent days with 8 patients (5.2%) reporting on 1st day , 6(4%) on 2nd day, 3 (2%) on 3rd day, 3(2%) on 4th day and 1(.7%) on 5th day complained of PDPH .

In a study by Viitanen et al^[11] grading of PDPH was mild in 4% , moderate in 3 % and severe in 1% and over results are similar.

In a study Jan Mohammad Shaikh^[12] the onset and frequency of headache was 6(3.5%) on 1st post op. Day and 5(3%) , 2(1.2%) and 1(.6%) on 2nd, 3rd, and 4th day respectively, These finding were similar to our study. The severity of headache in the study of Jan Mohammad Shaikh^[12] was mild in 5 (3%) moderate 7 (4.1%) and severe in 2 (1.2%) patients this is too is in congruence to our study .

Of the 21 pts who reported PDPH, the location was reported to the generalized in 10 patients, fronto occipital in 7 and occipital in 4 patients.

In our study we recorded the hemodynamic parameters to asses any relation between change of BP and headache but no significant observation was seen. with the systolic BP having a mean value of 19.43 ± 5.59 mmHg and diastolic BP having a mean of 79.9 ± 2.9 mmHg in the patients having PDPH where as the mean systolic BP was 119.8 ± 6.4 mmHg and diastolic BP was 79.4 ± 3.5 mmHg in the patients with no PDPH.

We observed a relationship between mean height of patients and PDPH with patients having a mean height of 154.48 cms experience PDPH and patients with mean height of 152.8 cms experience no PDPH.

We observed relationship between mean age and mean wt of patients with PDPH the patients who experienced PDPH had mean age and weight as 28.9 ± 5.6 and 61.1 ± 7.1 respectively where as mean age and weight of patients who did not experience PDPH was 27.8 ± 6.6 and 58.7 ± 7.3 .

Conclusion

Over all we conclude that PDPH is observed in a significant number of patients where spinal anaesthesia for caesarean section is given using 25G Quincke needle. We recommend further study on higher gauge needles.

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