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A COMPARATIVE STUDY OF INCIDENCE OF POSTDURAL PUNCTURE HEADACHE WITH 27G WHITACRE AND 27G QUINCKE NEEDLES AFTER CAESAREAN SECTION UNDER SPINAL ANAESTHESIA : A STUDY AT TERTIARY CARE CENTRE.

Anaesthesiology

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ABSTRACT

Aim: To compare incidence of PDPH after spinal anaesthesia in parturients undergoing Caesarean section. **Settings and Design:** Hospital-based and observational prospective study. **Methods and Material:** 200 study parturients aged 20-40 years were taken in the study. 27 G Whitacre needle was used in Group 1(100 parturients) and 27 G Quincke needle was used in Group 2(100 parturients) for giving spinal anaesthesia. Visual analogue scale (VAS) was used to compare severity of headache. **Statistical Analysis:** SPSS version 20 software was used for analysis. **Results:** 7 parturients in Group 2 and 3 parturients in Group 1 developed PDPH, respectively. Preoperative parameters were statistically insignificant between both Groups. Headache was started on post-operative day 2 in both groups parturients but frequency was more in Group 2. Headache subsided by 5th post-operative day in Group 2 and 4th post-operative day in Group 1. **Conclusions:** Incidence of PDPH was more in Group 2 as compared to Group 1 at all time periods during follow-up in postoperative periods.

KEYWORDS

Caesarean section, post-dural puncture headache, spinal anaesthesia.

INTRODUCTION

Spinal anaesthesia is most common type of neuraxial anesthesia given for Caesarean section. Post-dural puncture headache (PDPH) is a known complication of spinal anaesthesia which is comparatively more common in parturients. The first public demonstration of a successful spinal blockade occurred in Kiel, Germany, in August 1898, [1] On that day, the surgeon, August Bier, performed the first of a series of subarachnoid blocks for leg or pelvic operations. The patient developed headache and vomiting as complications of spinal anaesthesia. PDPH is typically orthostatic in nature, presenting as a positional and dull aching or throbbing headache, with or without auditory and/or visual symptoms. Risks factors for PDPH include female sex and young age, history of previous PDPH, bearing down during the second stage of labor, and the neuraxial technique itself. The International Headache Society, the criteria for PDPH[2] include 'a headache that develops less than seven days after a spinal puncture, occurs or worsens less than fifteen minutes after assuming the upright position, and improves less than thirty minutes in the recumbent position with at least one of the following (neck stiffness, tinnitus, hypacusia, photophobia, and nausea). The headache should disappear with fourteen days after a spinal puncture; if it persists, it is called a CSF fistula headache'.

High incidence of PDPH (5-30%) after Caesarean section under spinal anaesthesia was likely attributable to the use of wide bore cutting needles. Nowadays the use of fine gauze pencil-point needles (Whitacre needles) has produced a great reduction in the incidence of PDPH.[3] The incidence is 40% with a 22G needle, 25% with a 25G needle,2-12% with a 26G Quincke needle and <2% with 29G needle.[4]

MATERIAL AND METHODS

This was an observational prospective study conducted at the Department of Anaesthesiology, S. S. Hospital, IMS, BHU over a period from December 2019 to January 2021, after securing due approval from the Institutional Ethics Committee. Informed written consent was sought from each parturient in their vernacular language and the type of anaesthesia was explained to them.

Parturients selected were those who were admitted to the for elective Caesarean section and were enrolled as per the inclusion criteria i.e. age group 20-40 years and ASA II physical status.

Statistical Analysis

The data obtained from the study was subjected to statistical analysis using SPSS version 20.0. For categorical data Chi-square test was done and for continuous data student's t-test and ANOVA was performed.

RESULTS

The present study was carried out on 200 parturients, out of which 100 parturients was given spinal anaesthesia with 27G Whitacre needle and other 100 parturients was given spinal anaesthesia with 27G Quincke needle.

Women in both groups were similar with regard to age, ASA grade and hematological parameters.

We observed and compared the incidence of fresh onset headache postoperatively and incidence of pain using VAS score between two study groups. We observed the incidence of headache was higher in group II as compared to group I which was statistically significant.

Table 1: Visual Analogue Scale (VAS) Score

VAS Score	Group I		Group II		Statistical analysis	
	Mean	SD	Mean	SD	t-test	p-value
	0.16	0.91806	0.36	1.33727	1.991	0.002

DISCUSSION

Spinal anaesthesia in obstetrics is very common for Caesarean section due to its advantages. It is simple to perform, economical, indirectly it increases feto-maternal bonding, and provides post-operative analgesia. It also avoids the maternal and fetal risks associated with General anaesthesia. Some of the complications associated with spinal anaesthesia like hypotension, nausea-vomiting, urinary retention is avoidable and manageable.

PDPH was defined as a headache in the fronto-occipital area increasing with standing and decreasing by lying flat, and severity was defined as mild, moderate and severe with correlation to Visual Analogue Scale (VAS) 0-10; 0 = no headache, 1-3 = mild headache, 4-7 moderate headache, >7 = severe headache.

Large spinal needles will clearly produce large dural perforations where the likelihood of a dural puncture headache is high. The Quincke type is the standard needle with a medium cutting bevel and the orifice at the needle tip (Fig. 2). The Whitacre needle (Fig. 1) has a diamond shaped tip and is atraumatic.

Images of spinal needle tip design. 1. Note the diamond tip of the 27G Whitacre Style Pencil Point design, 2. Cutting tip of Quincke type needle.

Fig.1.

Fig.2.

PDPH has a lot of causes for occurrence of transient cranial nerve palsy, almost all cranial nerves have been implicated, usually the nerves involved are 3rd, 4th, 5th, 6th, 7thand 8th cranial nerves. The incidence of PDPH varied among spinal needles and ranged from 1.5% to 11% [5], Whitacre and Sprotte needles have lower PDPH incidence as compared to Quincke needles.

Clinical and laboratory[6] studies have confirmed that pencil-point needles produce fewer post-dural puncture headaches than medium bevel cutting needles. The diagnosis of post-dural puncture headache is frequently clear from the history of dural puncture and the presence of a severe postural headache. However, it is important to consider alternative diagnoses.

Table 2 Differential Diagnosis Of Post-dural Puncture Headache

1. Viral, chemical or bacterial meningitis,
2. Intracranial haemorrhage
3. Cerebral venous thrombosis
4. Intracranial tumour
5. Non-specific headache
6. Pituitary apoplexy
7. Cerebral infarction
8. Uncal herniation
9. Sinus headache
10. Migraine
11. Pre-eclampsia

CONCLUSION

As spinal anaesthesia is the most commonly performed procedure for Caesarean section, every single effort should be made to minimize the incidence of complications. Performing spinal anaesthesia with 27 G pencil-tip Whitacre needles should be routine practice as it decreases the incidence of PDPH significantly.

Limitations

Our study was hospital-based study with small sample size.

Conflict of Interest

No conflict of interest to declare.

REFERENCES

1. Bier A: Versuche uber Cocainisirung des Ruckenmarkes. (Experiments on the cocainization of the spinal cord) Deutsche Zeitschrift fur Chirurgie 1899; 51:361-9.
2. The International Classification of Headache Disorders 2003, 2nd ed, Cephalgia, 2004;24:1-160.
3. Barker P. Headache after dural puncture. Anaesthesia, 1989 Aug; 44(8): 696-7.
4. Flaatten H et al. Postdural puncture headache. A comparison between 26- and 29-gauge needles in young patients. Anaesthesia. 1989 Feb;44(2):147-9.
5. Cruickshank RH, Hopkinson JM. Fluid flow through dural puncture sites. An in vitro comparison of needle point types. Anaesthesia 1989; 44: 415-8.
6. Choi P T et al. PDPH is a common complication of neuraxial blockade in parturients: a meta-analysis of obstetrical studies. Can J Anaesth. 2003;50(5):460-9.