ORIGINAL ARTICLE

Comparison of Postdural Puncture Headache in Median and Paramedian Approach under Spinal Anesthesia in Cesarean Section

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ABSTRACT

Background: Post dural puncture headache (PDPH) is a known complication of spinal anesthesia due to constant spillage of cerebrospinal fluid from the dural puncture site. Spinal anesthesia can be performed by two approaches i.e., midline & paramedian. The results regarding incidence of PDPH with these approaches are debatable.
Aim: To compare the frequency of PDPH with spinal anesthesia using midline & paramedian approach in patients of cesarean section.
Methodology: This was a randomized controlled trial conducted at department of Anesthesia & ICU, Lahore General Hospital. 100 cases were included through Non-Probability, Purposive Sampling. Patients were randomly divided into two groups. One group received sub-arachnoid block via midline and other group received sub-arachnoid block via paramedian approach. After surgical procedure the patients were admitted in department of gynecology & obstetrics and followed for PDPH for 1st 2nd& 3rd post-operative days.
Results: Out of 100 patients 6 patients developed PDPH; 2 were from Group A & 4 were from Group B. P value was 0.0678.
Conclusion: PDPH was more frequent with paramedian approach when compared to midline approach.
Keywords: Postdural puncture headache, median, paramedian approach, spinal anesthesia

INTRODUCTION

These days Cesarean Section are preferred to be performed under regional anesthesia rather general anesthesia mainly due to risk of failed endotracheal intubation and risk of aspiration in Parturient. Spinal Anesthesia is most commonly used technique in regional anesthesia[1,2,3].

Postdural puncture headache is a common complication associated with spinal anesthesia due to persistent leak of CSF from the puncture site and results in meningeal stretch. Its onset is 48 hrs post spinal block, and may last from 2-3 days or even up to two weeks. Its incidence is seen mostly in young Females, pregnancy, age group (20- 40 yrs) & history of previous Headache[4,5,6].

There are two approaches mostly used for spinal anesthesia .Midline approach involves passage of needle via supraspinous, interspinous & ligamentum flavum & Para-median approach avoids supraspinous & interspinous ligaments and pierce the ligamentum flavum directly. The incidence of PDPH is 4% with para-median approach & 28% with median approach on 3rd post-op day in females underwent cesarean section. But in latest study conducted in Iran, the incidence of PDPH between both groups were not significant[8,9].

Rationale of this study is to compare the PDPH incidence with spinal anesthesia using Midline & Para-median approach in patients of cesarean section. Literature is evident that para-median is better than median approach .In para-median approach as there are less chances of developing PDPH, we want to conduct this study to reduce the frequency of this problem to achieve more patient satisfaction. The objective of the was to compare the frequency of PDPH with spinal anesthesia using Midline & Para-median approach in patients of cesarean section.

Presence of PDPH was assessed on 1st, 2nd& 3rd Post-operative day by Visual Numerical Analogue Scale. Score of "0" was considered as absence of PDPH while score of "1 – 10" was considered as presence of PDPH. There is less frequency of PDPH with para median approach of spinal anesthesia compared to median approach in patients of cesarean section

MATERIAL & METHODS

This randomized Control Trial was conducted in the Department of Anesthesia & ICU, Lahore General Hospital. Out of total 100 patients; 50 allocated to

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median group and 50 to paramedian group, it was calculated with 80% power of test and 1% level of significance. Non-probability, purposive sampling technique was used.

Inclusion Criteria:

1. ASA 1 & 2 patients undergoing Cesarean Section under spinal anesthesia
2. Age 20 – 40 years
3. Weight 50 – 100 Kg
4. Surgery Duration 0.5 – 1.5 hours.

Exclusion Criteria:

1. Anticipated difficulty with placing the block (Any spinal abnormality on examination or history of Backache)
2. Patients giving H/O receiving psychiatric drugs
3. Patients giving history of recurrent headache of any origin
4. Patients who had experienced PDPH on a previous occasion.

Data Collection Procedure: After acceptance from hospital ethical committee, 100 patients fulfilling the inclusion criteria were included in study. They were randomly divided into two groups by lottery method after informed consent. In Group A patients were given spinal anesthesia via Midline approach & in Group B through the Paramedian approach. Demographic data including name, age, gestational age, parity & weight were recorded on a pre-designed Performa. In preoperative room, 18 G branula was passed and 10 ml/kg of normal saline started intravenously before start of operation. Pre-operative heart rate and blood pressure were recorded. On arrival in operating room, vital sign monitor was applied. The blocks were performed by a trained anesthetist. After cleaning the area of appropriate space with aseptic solution, lumbar spine was identified under full aseptic measures. Local anesthesia with 2% Lignocaine was injected in skin at L_{4-5} or L_{3-4}. Sub-arachnoid space was identified by free flow of CSF through the 25G spinal needle and 1.5ml of 0.75% Bupivacaine was injected through it. The patient then lied down in the supine position with a wedge under her right hip to avoid aortocaval compression. The level of the block was confirmed by alcohol swab before start of caesarean section. The immediate complication like hypotension was managed according to protocol.

Patients were shifted to the obstetric ward where they were followed for incidence of PDPH. The patients were interviewed and observed for headache using VAS till 3rd Post-op day & labeled according to operational definition. If PDPH confirmed then treated by departmental protocol, all the observations were recorded on a Performa.

Data Analysis Procedure: Data collected and was analyzed through SPSS version 10. The quantitative variables like age, gestational age, weight & Visual Analogue Scale (VAS) score were calculated as mean & standard deviation. The qualitative variables like parity and presence of post-dural puncture headache were qualitatively analyzed in percentage frequency. The frequency of PDPH was compared among both groups by using Chi-square test. P-value < 0.05 was considered as significant.

RESULTS

In this study 100 patients fulfilling the criteria were included. The mean ages of patients noted were 26±4 years with minimal age of 22 and maximum age of 35 years. In group A, mean age of patients were 25.62±4.64 years with 18 & 35 years minimum and maximum ages respectively (Table 1).

The mean gestational age of the patients was 38.29±1.60 weeks with minimum & maximum gestational age of 36 & 44 weeks respectively. In group A, the mean gestational age was noted as 38.12±1.53 weeks with 36 & 41 weeks minimum and maximum gestational age respectively. In group B, the mean gestational age was noted as 38.46±1.67 weeks with 36 & 44 weeks with minimum and maximum gestational age respectively (Table 2).

Among the 100 patients the mean weight of the patients were noted as 54.94±9.54kg with minimum & maximum weight of 45 & 50kg respectively. The mean weight of the group A patients was noted as 51±2.85kg with 45 & 60kg minimum and maximum weights respectively. Similarly in group B the mean weight of the patients was noted as 58.88 11.93kg with 45 & 80kg minimum and maximum weights respectively (Table 3).

Out of 100 patients, PDPH was observed only in 6% post-operatively while 94% patients did not report about PDPH during Post-Op hospital stay (Fig.1).

Total 6(6%) patients presented with PDPH out of which 2(4%) were from group A and 4 (8%) patients were from group B whereas PDPH was absent in 94 (94%) patients in which 48(96%) patients belonged to group A and 46(92%) patients belonged to group B. Statistically there is insignificant difference between the study groups i.e., Pvalue=0.0678 (Table 4).

Table 1: Descriptive statistics of age (years) of the patients

Age (years)	Group A	Group B	Total
N	50	50	100
Mean	25.62	26.54	26.08
SD	4.64	4.24	4.45
Minimum	18	20	18
Maximum	35	35	35
Range	17	15	17

Table 2: Descriptive statistics of gestational age (weeks) of the patient

Gestational age (weeks)	Group A	Group B	Total
N	50	50	100
Mean	38.12	38.46	38.29
SD	1.53	1.67	1.60
Minimum	36	36	36
Maximum	41	44	44
Range	5	8	8

Fig. 1: Distribution of postduralpuncture headache

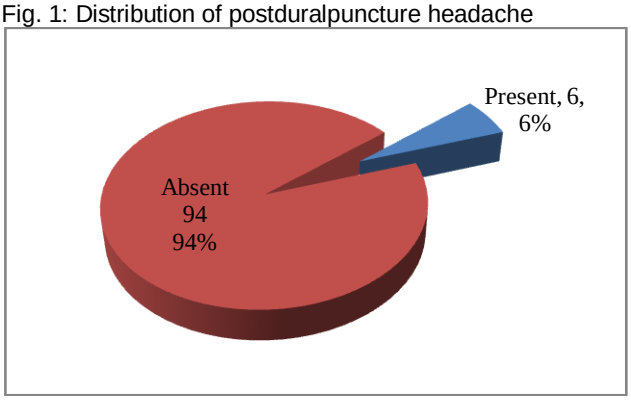

Table 3: Descriptive statistics of weight (kg) of the patient

Weight (Kg)	Group A	Group B	Total
N	50	50	100
Mean	51.00	58.88	54.94
SD	2.85	11.93	9.54
Minimum	45	45	45
Maximum	60	80	80
Range	15	35	35

Table 4: Comparison of postdural puncture headache between Study Group

PDPH	Group A	Group B	Total
Present	2(4%)	4(8%)	6(6%)
Absent	48(96%)	46(92%)	94(94%)
Total	50(100%)	50(100%)	100(100%)

Chi-square= 0.709/p-value= 0.67 (Insignificant)

DISCUSSION

In our trial, we included 100 patients who undergoing LSCS. The Mean age of the patients was 26±4 years. All of them presented at term with mean Gestational Age 38.27±2.95 weeks. Patients were then evaluated & diagnosed for PDPH. Out of 100 patients, only 6(6%) reported to have PDPH during 1st three post op days after LSCS. It has been reported that in obstetric population, PDPH is one of the common complications after spinal anesthesia. Its incidence in obstetrics practice is 0.18–3.6%. In teaching centers its incidence should be less than 1%[11].

In our observation the frequency of PDPH was more with paramedian approach during hospital stay at day 1, 2 & 3 when compared with midline approach. Out of total of total of hundred patients only (6%) patients presented with PDPH. 2 of these (4%) fall in median group and 4 of them (8%) fall in paramedian group. Statistically there is not much difference among the study groups i.e., p-value=0.068. Results of a study match with results of our study. The authors reported a significantly higher rate of PDPH with paramedian approach (12%) than with the median approach (8.8%) in relatively older patients, while no significant difference was observed in younger patients[12].

Another study also reported that typical PDPH was seen in 7/75 (9.3%) patients in Median group versus 8/75 in Paramedian group. There result showed no remarkable differences between the two groups (P=0.875). Another randomized double blind clinical trial 125 patients scheduled for elective C-Section received spinal anesthesia with median &paramedian approach. Headache was evaluated for three days following surgery. The incidence of headache was 9.8% in paramedian group as compared to 9.4% in median group (p>0.05). The authors concluded that the use of paramedian approach in pregnant women who have difficulty in positioning is acceptable and without increasing risk of headache and hemodynamic changes[13,14].

In another randomized control trial there were controversial results. The study reported that only 4% in paramedian group had PDPH as compared to 28% in Median Group. The difference is not only clinically significant but also statistically so (p=<0.05). Although incidence of PDPH is clearly demonstrated to be lower with paramedian approach as compared to the midline approach[8].

Another study involving relatively old population has shown either no difference or higher incidence of PDPH with paramedian approach[12].

CONCLUSION

The incidence of PDPH was found more frequent with Paramedian approach when compared to Median approach.

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