



COMPARATIVE STUDY BETWEEN WHITACRE & QUINCKE'S NEEDLE IN SPINAL ANAESTHESIA FOR POST LUMBAR PUNCTURE HEADACHE INCIDENCE

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ABSTRACT **Background:** Spinal Anaesthesia is widely used as a safe anaesthetic technique for abdominal and lower limb surgeries for elective as well as emergency operative procedures. Post Dural Puncture Headache (PDPH) is well recognised complication of subarachnoid block. This study was designed to find out the incidence of Post dural puncture headache in patients of age group 20-50 years posted for lower abdominal and lower limb surgeries using 25G Quincke and 25G Whitacre spinal needle. **Materials And Methods:** A prospective, randomised, single(patient) blind, interventional study was conducted, over , 50 patients of ASA I,II and III of age group 20- 50 years posted for lower abdominal and lower limb surgeries in Government Civil hospital, Ahmedabad assessed for post spinal puncture headache from March 2022 to August 2022. Study population was divided into 2 groups: GROUP A - Patients who received spinal anesthesia with 25G Quincke needle GROUP B - Patients who received spinal anesthesia with 25G Whitacre needle. Data analysis. Logistic regression will be done for multivariate analysis. P-Value less than 0.05 will be considered as significant. **Results:** General characteristics of the subjects included age, gender, ASA grade between 2 groups show no statistically significant difference. no significant difference with baseline or intra operative or post operative vital parameters. Though there are reduction in number of patient affected with PDPH in whitacre needle group but no statistical significance between Whitacre and Quincke needle use. **Conclusion:** As per our study whitacre should prefer for spinal anaesthesia to prevent post dural puncture headache.

KEYWORDS : Quincke spinal needle , Whitacre spinal needle, Post dural puncture headache.

INTRODUCTION

Spinal Anaesthesia is widely used as a safe anaesthetic technique for abdominal and lower limb surgeries for elective as well as emergency operative procedures. Post Dural Puncture Headache (PDPH) is well recognised complication of subarachnoid block.

PDPH occurs following subarachnoid block because of arachnoid and dural puncture and it significantly affects patients postoperative well being.

The incidence of PDPH by intentional dural puncture with widely used quincke's needle is 0.1 to 36% but it is 3.1 to 14% by pencil point needles such as 25G Whitcare spinal needle.

The presence of predisposing factors such as female, young patients, low BMI, inexperience performers, pregnancy and multiple attempts increases the incidence of headache. Identification of factors which predisposes to headache is important to minimize this complication.¹ PDPH is post spinal sequel of spinal anaesthesia which should not be taken lightly since it can produce postoperative morbidity. In majority the problem will settle spontaneously but in some the headache will last for months and years.

Therapies which are offered for treatment of PDPH is not always arisen by the application of logic & reasoning. It is always important to consider other causes of headache before application of alternative therapies for PDPH.

MATERIALS AND METHODS

A randomised controlled trial was conducted in patients undergoing elective surgical procedures in patients of age group 20-50 years posted for lower abdominal and lower limb surgeries using 25G Quincke and 25G Whitacre spinal needle in operation theater of BJ Medical college, Ahmedabad in March 2022 to August 2022.

50 subjects appropriate to inclusion criteria were divided into two groups:
GROUP A - Patients who received spinal anesthesia with 25G Quincke needle.

GROUP B - Patients who received spinal anesthesia with 25G Whitacre needle.

All patients who meet the inclusion criteria given informed consent. Patients who agreed to participate in single blind (patient blind) study were further randomized either to in group A or group B. In the operating room the patient mounted a monitor of blood pressure, pulse, ECG and SpO₂. I.V. line inserted.

Back of patient cleaned with povidine and spirit and draped with sterile towel. All procedures performed in single attempt with all aseptic and antiseptic precaution.

Spinal anaesthesia was performed using midline approach at L2-L3 or L3-L4 using one of the above needles with 25 gauge and 0.5 % of 2-3ml Bupivacaine was injected and patient turned to supine position.

Level of sensory blockade and changes in parameters like heart rate and BP will be recorded. Solution of Ringer Lactate, colloid and blood transfused according to loss. Complication like nausea, vomiting, bradycardia and respiratory depression were managed symptomatically. All patients are advised to bed rest for 24 hours.

Patients were interviewed day 1,2,3,4 and 5 and were questioned regarding type of headache, its severity, location, character, duration, position, associated symptoms like nausea, vomiting, auditory and ocular symptoms, neck stiffness, shoulder pain and fever if present. Any aggravating and relieving factor if present.

RESULTS

The characteristics of the study subjects were shown in Table 1 is based on age, sex, ASA grades, indication of A group and B group. With all of p value > 0.05 meaning there were no significantly difference between the two groups significantly so it were worth to compared

Demographic Variable	Group A (mean)	Group B (mean)	P value
Age (in years)			
18-60	35.12	34.56	0.8322
Sex			0.8596
Male	20	20	
Female	5	5	
ASA grades			0.494
2	17	15	
3	5	7	
Indication			0.22
Lowerlimb surgery	60	24	
Lower abdominal surgery	40	76	

HEMODYNAMIC PARAMETER			
	Group A	Group B	P Value
Heart Rate (per min)	84.32	84.16	0.9557
SBP (mmhg)	124.70	124.65	0.98
DBP (mmhg)	77.43	77.33	0.95

Group A mean heart rate is 84.32 per minute while that for Group B is 84.16 per minute considered to be statistically not significant since p > 0.05 as per unpaired t test.

Group A mean SBP is 124.70 mmHg while that for Group B is 124.65 mmHg considered to be statistically not significant as p value is >0.05 according to unpaired t test.

Group A mean DBP is 77.43 mmHg while that for Group B is 77.33 mmHg considered to be statistically not significant as p value is >0.05 according to unpaired t test.

Type of Needle used	Postdural Puncture Headache	
	Present	Absent
Quincke needle	5	20
Whitacre needle	2	23
P value	0.2214	

Out of 5 patient in Group A patient with headache on POD 1 are 2 (40%) and POD 2 are 3 (60%) and out of 2 patient with PDPH same relation will be 50% in each POD 1 and POD 2. And p value for same is 0.256 which is more than 0.05 so not significant.

Out of 5 patients having headache in group A (quincke's group) 3 patients (60%) having mild headache, 1 patient having (20%) moderate headache and 1 patient having (20%) severe headache. Out of 2 patient having headache in group B, 1 patient (50%) having mild and 1 patient(50%) having moderate headache.

Out of 5 patient having headache 3 patient (60%) required NSAID and 2 patient (40%) not required any treatment in group A where as in group B out of 2 patient having headache none of them required any treatment.

DISCUSSION

Spinal Anaesthesia is considered now as a superior choice in the regional anaesthesia. Spinal anaesthesia like other techniques is also associated with complications along with advantages.

Post-dural spinal headache(PDPH) is one of the complication of this.⁶ Incidence of PDPH depends upon number of variables such as age, sex, size, type & orientation of needle and attempt for spinal anaesthesia.¹¹ The frequency of PDPH ranges from 0% to 20% in our study and we divided our study into 2 groups (A & B). In the two groups, the recorded values were tabulated for Age, Gender, Height, Heart rate, Systolic blood pressure, Diastolic blood pressure, ASA grading, patients having post operative headache, Day of onset of headache, severity of headache, treatment required for headache.⁷

Age And Gender :

In our study, we included age group of patients between 20 to 50 yrs. Both the groups were comparable for age. The mean \pm SD of Age (Years) in the Group: A group was 35.12 \pm 9.14. The mean \pm SD of Age (Years) in the Group: B group was 34.56 \pm 9.45. There was no significant difference between the groups in terms of Age (Years) (p = 0.83).⁸

HAEMODYNAMIC PARAMETERS

In spinal anaesthesia chances of bradycardia with high spinal or total spinal and tachycardia during postoperative pain and headache. The association between two groups for baseline heart rate distribution was considered to be not statistically significant since p = 0.95.⁵

The association between two groups for baseline respiratory rate distribution is considered to be not statistically significant since p = 0.62.

The association between two groups for baseline SBP and DBP distribution are considered to be not statistically significant since p >0.05.³

POSTDURAL PUNCTURE HEADACHE

In our study 7 patients out of 50 (14%) developed headache. Among this 5 (20%) patients belonged to quincke group and 2 (8%) belonged to whitacre group.⁹ Large spinal needles will produce bigger defects in dura so chance of dural puncture headache is more in comparison with smaller needles which produce small dural defects & less incidence of headache.

In our study we also kept gauge size same 25 G For 25G Quincke, incidence ranges from 3-25 percent while it is 0- 14.5 percent for Whitacre needle of the same size. The reported results in the two groups were comparable with our study i.e. 20% for 25G Quincke Babcock needle and 8% for 25G Whitacre needle.¹

Usually PDPH onset occur between post operative day 1 to 3 and it may last up to 5 to 14 days as per different studies but in our study maximum duration of PDPH was 6 days. PDPH may sometime associated with symptoms such as nausea, vomiting, auditory and visual hallucination, hemodynamic changes which gradually relieved along with headache by simple measures.

In our study out of 5 patients(20%) in Group A 3 had mild, 1 had moderate and 1 had severe headache whereas in Group B out of 2 patients(8%) 1 had mild and 1 had moderate headache. In our study no severity specific significance between 2 groups.

Treatment options for Post dural puncture headache includes simple measures such as adequate hydration, NSAIDS to complex procedures as epidural blood patch. We advised 24 hours of bed rest to every patient. In our study NSAID's ,hydration & adequate rest relieved headache in patients. Current noninvasive treatments, including bed rest, fluids, analgesics, caffeine, and sumatriptan. Epidural blood patch remains the invasive treatment of choice. Surgical closure of the dural tear remains an option of last resort.²

CONCLUSION

In our study 7 patients out of 50(14%) developed headache. Among this 5(20%) belong to Quincke group and 2(8%) belong to Whitacre group.

we kept same 25G , There are chances of PDPH 3-25% with Quincke needle, while 0-14% for Whitacre of same size. Although in our study there is no statistically significant difference in both groups.

While age, gender, weight, indication of surgery, ASA grade, type of surgery, these factors have no statistically significant difference in occurrence of PDPH.

Post dural puncture headache treated with non pharmacological and supportive measures in most cases and only 3 patients (42%) required pharmacological treatment.

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