

EVALUATION OF SPHENO-PALATINE BLOCK FOR THE TREATMENT OF POST-DURAL PUNCTURE HEADACHE FOLLOWING SPINAL ANAESTHESIA: A RANDOMIZED STUDY**¹Dr. Anjali Kochhar, ^{2*}Dr. Samiksha Khanooja, ³Dr. Irshad Yousuf, ⁴Dr. Kharat Mohammed Bhat and ⁵Dr. Mudassir Bhat**¹MBBS, MD, Professor, Department of Anaesthesiology, HIMSR, Jamia Hamdard.²MBBS, MD, Assistant Professor, Department of Anaesthesiology, HIMSR, Jamia Hamdard.³MBBS, DNB, Assistant Professor, Department of Anaesthesiology, HIMSR, Jamia Hamdard.⁴MBBS, MD, Professor, HOD, Department of Anaesthesiology, HIMSR, Jamia Hamdard.⁵MBBS, Junior Resident, Department of Anaesthesiology, HIMSR, Jamia Hamdard.***Corresponding Author: Dr. Samiksha Khanooja**

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ABSTRACT

Background: PDPH(post dural puncture headache) is one of the most distressing complication of dural puncture. Various modalities of treatment include conservative management and epidural blood patch. Newer modalities like sphenopalatine block are being studied for its treatment. **Objectives:** To compare the effects of combined sphenopalatine block and conservative treatment with conservative treatment alone in the management of post-dural puncture headache. **Method:** A randomized study was done by dividing patients into two groups having 12 patients in each group. VAS score at different time intervals, associated symptoms and readiness to discharge were studied. **Results:** VAS scores were significantly lower in the group receiving sphenopalatine block along with conservative management compared to conservative treatment alone. This group patients had more readiness to get discharged after 72 hrs. **Conclusion:** Sphenopalatine block is an effective method of treating PDPH with good success rate as compared to conservative treatment.

KEYWORDS: post dural puncture headache, sphenopalatine block, dural puncture, VAS score, spinal anaesthesia.**INTRODUCTION**

One of the most exhausting complication of spinal anaesthesia or inadvertent dural puncture is PDPH(post dural puncture headache).^[1,2] Dural puncture can lead to excessive leakage of CSF, which can in turn lead to intracranial hypotension and demonstrable reduction in CSF volume. Vis a vis Monro Kellie doctrine^[3,4], (which states that the sum of volumes of brain, CSF and intracranial blood is constant), the loss of CSF will produce compensatory venodilatation to increase the blood volume which is the cause of post dural puncture headache. It has significant effect on postoperative well being of the patient.

Treatment of PDPH is challenging for both physicians well as the patient. The most effective method of treatment i.e epidural blood patch is invasive and involves dural puncture. Due to the hesitancy of repeat puncture and side effects like possible development of back pain, lumbar vertebral syndrome, meningitis etc many of the patients refuse this treatment and go for conservative methods^[5], which of date are not so

successful in relieving pain and associated symptoms of PDPH.

Use of non invasive measures which include use of sphenopalatine block and occipital nerve block^[6,7] have been reported. Sphenopalatine block has been found to be successful in case series and reports but randomized studies are not available till date.

Hence we aim to study sphenopalatine block as one of the methods for treatment of PDPH, by using it in conjugation with conservative treatment.

Objective of the study: To compare the effects of combined sphenopalatine block and conservative treatment with conservative treatment alone in the management of post-dural puncture headache.

MATERIAL AND METHODS

This randomized study was conducted over a period of one year (May 2016 to April 2017), in the department of Anaesthesiology, Hamdard Institute of Medical sciences and research and associated HAH Hospital, Delhi.

After ethical approval and written informed consent of the patients, all adult non obstretic patients referred to pain clinic with complaints of headache and associated symptoms following spinal anaesthesia (suggestive of post-dural puncture headache) were enrolled.

Details of the anaesthetic record (indication of surgery, type of needle used, post-operative events) were recorded along with presenting symptoms (headache, neck stiffness, nausea, vomiting, dizziness, tinnitus, hypacusia).

Patients developing post dural puncture headache following accidental dural puncture with Tuohy's needle, obstetric patients and patients having past history of headache were excluded.

Patients were randomly divided into two groups

Group C- Received conservative treatment (Bed rest, fluid therapy, Tablet Diclofenac 75mg BD P/O and tablet paracetamol with caffeine, 2 tablets TDS P/O).

Group S-Received Sphenopalatine block along with conservative treatment (Bed rest, fluid therapy,Tablet Diclofenac 50mg BD P/O and tablet paracetamol with caffeine, 2 tablets, TDS P/O).

Transnasal route for sphenopalatine block was chosen. Patient was put in supine position with neck extended (achieved by pillow under the shoulders). Block was achieved by inserting long cotton tipped applicator soaked in local anaesthetic 4% lignocaine solution in the nostril parallel to the floor of the nose until resistance is encountered. The swab was positioned at posterior pharyngeal wall superior to middle turbinate. It was retained there for 5-10 minutes. The procedure was similarly repeated in the other nostril.^[8]

Block was repeated every 24 hours till complete relief was achieved. VAS score for headache was recorded before initiating treatment,30 minutes after initiating treatment, at 4, 24, 48 and 72 hours.

Drug therapy was titrated to the effects and patients with VAS <4, Diclofenac tablet was stopped, VAS<3, doses (paracetamol with caffeine) were reduces to BD, at VAS levels <2, all drugs were stopped.

Readiness to discharge was seen at 72 hours. Patients with minimal symptoms and requiring paracetamol with caffeine BD, were discharged with medical advice. Follow up was done in the pain clinic at one week.

RESULTS

A total of twenty four patients were enrolled. Fifteen (62.5 %) were females and nine (37.5%) were male, with no statistical difference of gender distribution between the groups (p value >0.1). Mean age was found to be 30.25 in group C and 30.08 in Group S (p value=0 .961).

Spinal needle used was 25 G, Quincke's needle in all the cases. The demographic details of our patients are given in Table1.

Table 1: Demographic profile (p value is non significant in all).

	Mean	Mean
Group	Group C	Group S
Age(Years)	30.25	30.08
Height(cm)	155.32	153.28
Weight(kg)	66.12	65.86
BMI(kg/m2)	27.4	28.0

The time of onset of headache after giving spinal anaesthesia (dural puncture) was noted. Onset time was found to be 29.51 hrs in Group C and 28.33 hrs In group S (p value=0.8227).Other characteristics of the headache were found to be similar in both the groups (p value>0.05). Associated symptoms were present in all the patients(Table 2).

Table 2: Onset time and other characteristics of the headache Out of 12 patients who were administered sphenopalatine block along with conservative management, relief of symptoms occurred immediately after the block in nine patients(75%). Three (25%) of the patients required repeat block, with one (8.3%) patient requiring block once in a day for 3 days.

Parameters	Group C	Group S
Onset time(hrs)	29.5	28.3
Associated symptoms	Incidence (%)	Incidence (%)
Neck stiffness	33.33	25.00
Tinnitus	41.6	33.33
Photophobia	16.66	33.33
Hypacusia	08.41	08.34
Total	100%	100%

VAS scores recorded at baseline were similar in both the groups with p value (0.9146) insignificant. VAS score were significantly lower in Group S at 0.5,4,24,48 and 72 hrs with p value 0.001,<0.001,0.001,0.0002 and <0.0001 respectively. Whereas VAS scores were comparable at follow up (1 week) (Figure 1).

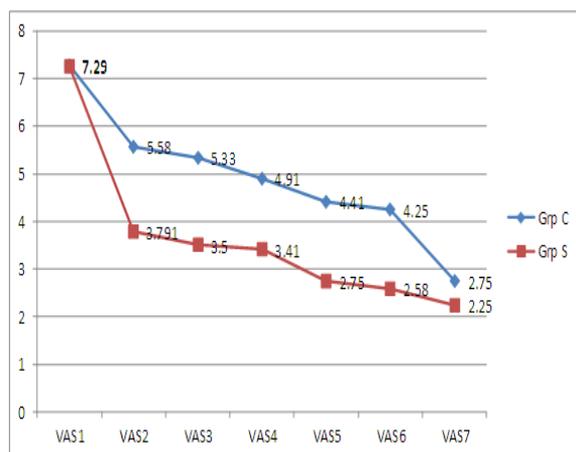


Figure 1: Comparative VAS Scores (Statistical significant difference seen at VAS 2-VAS6)

Follow up at one week show all patients having complete relief in group S, where as in Group C, one of the patient had persistent mild symptoms.

91.66% patients were ready for discharge at 72 hours in Group S, where as only 66.6% of patients were ready for discharge at 72 hrs hours. (Figure2).

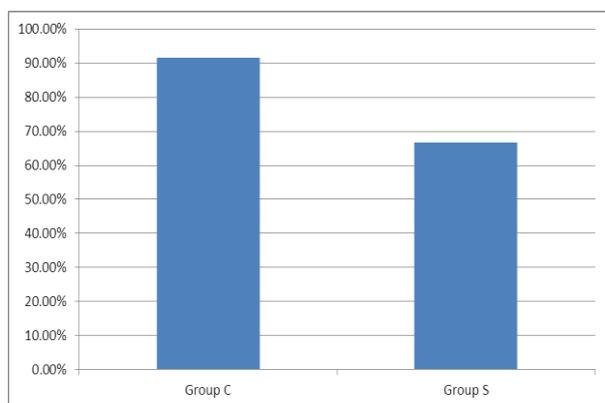


Figure 2. Readiness to discharge (p value <0.05).

No side effects were observed in any of the patients studied.

DISCUSSION

Management of PDPH has always been challenging for anaesthesiologists, as it not only increases the misery of the patient but also the length and overall cost of treatment in the hospital.

The conservative management consists of bed rest, NSAIDs, caffeine and weak opioid analgesics. Recent studies on use of oral gabapentinoids (Gabapentin and pregabalin) and theophylline show variable effectiveness.^[9,10,11]

A recently published Cochrane review says that although few studies show some evidence for few drugs like caffeine, theophylline, hydrocortisone and gabapentin,

there is lack of evidence for the use of other conservative treatments in treating PDPH.^[12]

Sprigge et al^[13] reported that bed rest and mild analgesics do not provide pain relief for more than 14% of patients suffering from PDPH.

Similar results were seen in our study, where we observed higher VAS score in patients who received conservative treatment alone.

The loss of CSF pressure and volume can cause downward traction on the pain sensitive intracranial veins, meninges and intracranial nerves. Traction on the upper cervical nerves, C1, C2 and C3 causes pain in neck and shoulders. Traction on the sixth cranial nerve causes visual symptoms. The bimodal theory also suggests resultant vasodilation of the meningeal vessels due to the lowered CSF pressure. Treatment strategies should target the parasympathetic mediated vasodilation by postganglionic parasympathetic and block of somatic sensory supply.^[14,15]

This explains the emerging use of sphenopalatine block in treatment of post dural headache, as it blocks the parasympathetic mediated vasodilation.^[15]

However, the current evidence for highlighting the efficacy of SPG block for relieving PDPH is limited. Case studies have been done in patients who had tension headaches, low backaches, and neck pain.

Cohen et al^[16,17], first reported its use in an obstetric patient in year 2000 and later reported 13 cases of successful treatment of PDPH with the use of sphenopalatine block in 2009.

Results of our study show patient with sphenopalatine block had immediate relief with significant reduction VAS levels and single block relieved headache in 75% of the patients.

The most effective treatment for PDPH is EBP in which autologous blood is injected in epidural space. But it is an invasive method and has many side effects like back pain, transient bradycardia, lumbar vertebral syndrome. Rarer ones being meningitis, arachnoiditis, radicular pain etc.

Patel et al^[18] had done a retrospective study comparing SPG and EBP in 72 patients. At the end of 1 hr SPG patients had good pain relief compared to EBP patients, after 24 hours no significant difference was observed. Moreover more complications were observed in EBP group.

In our study, we compared sphenopalatine block with conservative treatment to conservative management used alone, the VAS scores showed significant difference from 30 minutes onwards till 72 hours.

After receiving sphenopalatine block, majority of the patients (91.66%) were ready for discharge at 72 hours where as in conservative treatment group only 66.6% of patients could be discharged at 72 hours with medical advice. None of the patients developed any side effects.

Kent and Mehaffey^[19] confirmed the efficacy of SPG block in by performing SPG block in emergency room. All patients had good pain relief and hence, the need of EBP was avoided.

Authors concluded that sphenopalantine block can be offered as first line of treatment.

Our study clearly indicates the efficacy of SPG block over conservative management alone. Though many more studies will be required to establish its role in the management of PDPH.

Limitation of our study include not comparing sphenopalatine block with the epidural blood patch technique. This was based on our previous observation that our patients often do not opt for epidural blood patch and rather prefer conservative methods.

Furthur studies can be done to compare sphenopalantine block with EBP, sphenopalantine block being minimally invasive in nature can be offered as first line of treatment and the undesired side effects that happen with EBP can be avoided.

CONCLUSION

Sphenopalatine block is an effective method of treating PDPH with good success rate as compared to conservative treatment.

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