EFFECT OF PRE OPERATIVE ANXIETY ON SPINAL ANESTHESIA INDUCED HYPOTENSION IN OBSTETRIC PATIENTS

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ABSTRACT

Objective: To determine the effect of pre-operative anxiety and post-spinal hypotension in patients undergoing caesarean section.

Study Design: Cross sectional comparative study.

Place and Duration of Study: It was conducted at anaesthesia department AK CMH Rawalakot, over a period of 05 months, from 16th Sept, 2013 to 15th Feb, 2014.

Materials and Methods: One hundred patients were included in the study, using non-probability convenience sampling technique for selection. Direct assessments of preoperative anxiety was done on verbal analogue scale (VAS 0–10) anxiety score. Patients were then placed in two groups: A and B, depending on VAS score; those with scores 0-5, were placed in Group A, and those with scores between 6-10, were placed in Group B. Patients were preloaded with 10 ml/kg of crystalloid. Baseline Mean Arterial pressure (MAP) was noted by measuring blood pressure thrice, and mean was taken for MAP. Spinal Anesthesia was administered using 0.75% Bupivacaine. Five readings were then taken for blood pressure, 03 minutes apart. Lowest of these was noted down. Hypotension was defined as 20 % drop in MAP from baseline.

Results: Out of 100 patients, 56 were placed in group A and 44 were placed in group B. Out of the 56 patients in group A, 07 (12.5%) patients developed hypotension. Out of the 44 patients in group B, 14 (31.82%) patients developed hypotension. Difference between the two groups was statistically significant (p=0.019).

Conclusion: Pre-operative anxiety is significantly associated with post spinal hypotension in obstetric patients undergoing cesarean section.

Keywords: Caesarean section, Hypotension, Spinal Anesthesia, Verbal analogue Score.

INTRODUCTION

Spinal Anesthesia is one of the most popular methods of anesthesia used in caesarean section. It is well known for the hypotension it causes. If not treated, it can have fatal consequences for mother as well as neonate.

Many methods are used to prevent it, and these include preloading, using vasopressor agents and physical methods like left uterine displacement or using leg bindings or compression stockings. However, frequency of hypotension is very high, around 80%, in caesarean sections despite preloading and lateral uterine shifting.

Spinal anesthesia induced hypotension is multifactorial, including volume status of the patient, dose of anesthetic agent used, position of the patient, etc. But the mechanism involves sympathetic blockade resulting in vasodilation. This gives a clue that those having elevated sympathetic activation, should be more prone to spinal anesthesia induced hypotension and anxiety is one of the reasons for higher sympathetic tone.

The rationale of this study was to find effect of preoperative anxiety on hypotension induced by spinal anesthesia, in patients presenting for cesarean section. This study can help us in prevention of hypotension in patients undergoing spinal anesthesia, with higher pre operative anxiety. Thus it can be a step forward in developing new and beneficial treatment protocols best suited for our patients.
MATERIAL AND METHODS
This cross sectional comparative study was conducted at operation theatre at Department of Anaesthesia AK CMH Rawalakot from 16th Sept, 2013 to 15th Feb, 2014. Patients having American Society of Anaesthesiology (ASA) status I and II, age between 20 to 40 years, full term pregnancy; were included in the study. Patients with cardiovascular, pulmonary, renal or liver disease; and with positive history of hypertension; were excluded from the study. A total of 100 patients were included in the study through non-probability convenience sampling. Written informed consent was taken from all the patients who were included in the study. After placing the patients in supine position with a pelvic wedge for uterine tilt, MAP was recorded by taking the average of three independent mean MAP values, taken three minutes apart with the help of non invasive blood pressure monitor. Direct assessments of preoperative anxiety were done on verbal analogue scale (VAS) (0 – 10) anxiety score. The patients were divided into two groups depending on their pre-operative anxiety. Group A were those with VAS anxiety score of 0-5; while group B consisted of those with VAS anxiety score of 6-10. Out of 100 patients selected, 56 were placed in group A and 44 were placed in group B. The patients were preloaded with 10ml/kg body weight of lactated ringers solution. Spinal anaesthesia was administered at L3-L4 disc space, 2ml of 0.75% bupivacaine was given after aseptic spinal tap. The patients were again placed in the supine position with right pelvic wedge and oxygen was administered at 3 liters/minute via face mask. Five readings of MAP with the help of non invasive blood pressure monitor were recorded every three minutes apart. The lowest mean arterial pressure reading was noted. All the data was entered into the patient performa. The number of patients developing more than 20% drop in their mean arterial pressure in each group was noted.

Data Analysis Procedure
IBM SPSS Version 20 was used to analyze the data. Mean and standard deviation were calculated for age. Frequencies and percentages were calculated for hypotension. Chi Square test was used for comparison of hypotension between groups. A p-value < 0.05 was considered as significant.

RESULTS
A total of 100 patients were included in the study, with 56 patients assigned to Group A (low VAS) and 44 to Group B (High VAS). Mean age of Group A was 27.5 ± 4.69, whereas that of Group B was 28.40 ± 3.83 (p=0.337). Hypotension was present in 07 out of 56 patients of Group A, and 14 Patients out of Group B with significant difference (p value=0.019) (Details in table-1).

Table-1: Comparison of hypotension between groups (n =100).

<table>
<thead>
<tr>
<th>Hypotension</th>
<th>Group-A (VAS≤5) (n = 56)</th>
<th>Group-B (VAS≥6) (n = 44)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No.</td>
<td>%</td>
</tr>
<tr>
<td>Present</td>
<td>07</td>
<td>12.5</td>
</tr>
<tr>
<td>Absent</td>
<td>49</td>
<td>87.5</td>
</tr>
<tr>
<td>p value</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

DISCUSSION
Spinal Anaesthesia has been preferred over general anesthesia for caesarean section6. It is preferred even over epidural anesthesia7. But Spinal anaesthesia is not free from side effects, rather studies showed that hypotension may occur and statistics showed that it happens in around 80% patients8.

Mainly pharmacological measures are used to treat it. Ephedrine and phenylephrine, being the commonest of the medicines used9.
However, prevention of hypotension has been the center of focus to avoid the complications associated with it. Many modalities have been used to prevent it. Some studies focused on use of crystalloid or colloid preloading\(^\text{10,11}\), others trying co-loading to prevent it. Prophylactic use of pharmacological measures was tested as well, like giving ephedrine or phenylephrine\(^\text{12}\), or combining them with crystalloid preloading\(^\text{13}\).

One of the factors which most often get neglected is pre-operative anxiety level of the patient. Anxiety is one of the causes of sympathetic stimulation and studies showed that it affects heart rate variability\(^\text{14}\). Rather studies have been conducted to predict changes in blood pressure by measuring heart rate variability, which is representative of autonomic control\(^\text{15,16}\).

Huang et al\(^\text{15}\) concluded that heart rate variability was a sensitive method to predict hemodynamic instability in those who were not having cardiovascular autonomic neuropathy apparently. But the study was performed in general anesthesia.

Knuttgen et al\(^\text{16}\) tested heart rate variability as a tool to identify those at risk in patients having diabetes. They also found a significant relationship between heart rate variability and hypotension.

Hanss et al\(^\text{17}\) used heart rate variability in spinal anesthesia, and concluded that changes in heart rate variability reflected sympatholysis. In other study, Hanss et al\(^\text{18}\) found that heart rate variability can predict hypotension in patients undergoing caesarean section under spinal anesthesia.

Same was the case for Chamchad et al\(^\text{19}\) who found that heart rate variability can be used to predict risk of hypotension in patients undergoing caesarean section under spinal anesthesia.

Since heart rate variability predicts sympathetic activity, and anxiety also results in sympathetic overactivity based on this hypothesis, Orbach Zinger et al\(^\text{20}\) conducted a study and took pre-operative anxiety level as predictor to hypotension in caesarean section under spinal anesthesia. They, however, used different parameters to find out anxiety, in addition to verbal analogue score and found that there was significant effect of pre-operative anxiety on hypotension.

Our study was similar to this study, and we also found that there was a significant effect. Seven patients out of 56 patients, who had VAS score of less than 5, developed hypotension; whereas 14 out of 44 patients, who had VAS score of 6 or more, developed hypotension. \(p\) value was 0.019, and so is an evidence of significant relation.

**CONCLUSION**

We conclude that pre-operative anxiety has significant effect on post spinal hypotension. Therefore, the role of anxiety alleviation in patients undergoing caesarean section needs to get more attention.

**CONFLICT OF INTEREST**

This study has no conflict of interest to declare by any author.

**REFERENCES**

Effect Of Pre Operative Anxiety on Spinal Anesthesia


