



COMPARISON OF TREATMENT OF HYPOTENSION IN CAESERIAN SECTION UNDER SPINAL ANAESTHESIA WITH IV BOLUSES OF PHENYLEPHRINE AND NOREPINEPHRINE IN A TERTIARY CARE CENTRE IN CENTRAL KERALA

Anaesthesiology

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ABSTRACT

Background: Hypotension following spinal anesthesia for caesarean section need prompt treatment. Phenylephrine is routinely used but there is chances of maternal bradycardia norepinephrine is a better choice over phenylephrine in managing hypotension **Methodology:** 60 patients undergoing caesarean section under spinal anaesthesia were studied by dividing into two groups. 30 patients who received phenylephrine 50 micrograms iv bolus for treatment of hypotension were compared with 30 patients who received norepinephrine 4 micrograms iv bolus. Number of boluses, maternal and fetal outcomes were compared. **Results:** Number of boluses of norepinephrine were less compared to phenylephrine. Fetal and maternal outcome was also better with norepinephrine **Conclusion:** Norepinephrine intermittent iv boluses is more effective in treatment of hypotension following spinal anaesthesia for caesarean section compared to phenylephrine

KEYWORDS

Spinal anaesthesia, hypotension, norepinephrine, phenylephrine

INTRODUCTION

Lumbar subarachnoid block is achieved by blocking lumbar spinal nerve roots with local anaesthetic agents. Being a regional anaesthetic technique it is preferred over general anesthesia in Caesarean section to avoid complications associated with general anesthesia. The most common and serious complication of spinal anaesthesia is hypotension. It should be promptly treated with adequate volume of intravenous fluids and vasopressors to avoid detrimental maternal and neonatal effects. Phenylephrine is the standard drug to treat hypotension in spinal anaesthesia for Caesarean section as it cause less fetal acidosis compared to ephedrine. But it cause reduction in heart rate and cardiac output which is detrimental to both mother and fetus. Norepinephrine is suggested to treat hypotension in spinal anaesthesia for Caesarean section as it cause lesser reduction in heart rate and cardiac output. It is a potent vasopressor with beta adrenergic property

Objectives

Primary objective was to compare the efficacy of IV boluses of Phenylephrine and Norepinephrine for treatment of hypotension following spinal anaesthesia in Caesarean Section. Secondary objective was to compare maternal bradycardia, tachycardia, hypertension, nausea, vomiting, dizziness and fetal outcome like neonatal APGAR scores after treating spinal hypotension with phenylephrine and norepinephrine

Methods

60 patients undergoing Lower segment Caesarean Section under spinal anaesthesia who satisfy inclusion criteria were studied. Brief clinical history and routine investigations was noted. Patients were randomly divided into two groups P and N. Pulse rate, systolic, diastolic and mean arterial pressure was recorded and taken as base line values. Patient was then positioned in lateral decubitus position, under strict asepsis, L3-L4 space identified and after local anaesthesia 1.8 ml 0.5% hyperbaric bupivacaine was given. Patient was then positioned for surgery and wedge will be kept. Mean arterial pressure (MAP), systolic and diastolic blood pressure, heart rate was recorded every 3 min in the first 10 min and then every 5 min for next 30 minutes and every 10 minutes until 30 min after caesarean section. Maternal hypotension was defined as blood pressure lower than 20% of baseline value and was treated with IV bolus doses of phenylephrine 50 mcg for patients in group P and norepinephrine 4 mcg in patients in group N. The number of IV boluses required to treat hypotension in each group was compared. Any maternal complications like bradycardia, tachycardia, hypertension, nausea, vomiting, dizziness was recorded for each group and compared. Neonatal APGAR scores in each group was recorded and compared.

Statistical Analysis

Data was entered in excel and analysed using statistical software SPSS version 21. Quantitative data was expressed as mean and SD. Independent sample t test and χ^2 test was used for comparison.

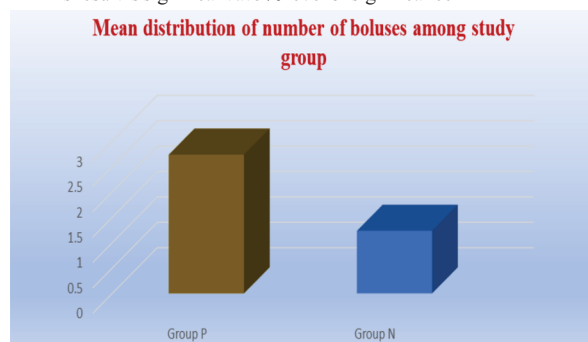
RESULTS

The number of IV boluses of vasopressors required to treat hypotension was significantly lower in group N (NOREPINEPHRINE GROUP) patients (1.233 $\pm$ 0.430 v/s 2.733 $\pm$ 0.640 with p value less than 0.005). This result is significant at 5% level of significance. The frequency of bradycardia was high in group P but the difference was not significant statistically (6.7% vs 0, p value 0.150). Maternal complications like nausea, vomiting were less in group N patients compared to group P patients but this result was not statistically significant. Incidence of maternal dizziness was comparable between the two groups.

1. Distribution Of Number Of Boluses Among Groups

Group	Mean	Standard deviation	P value
P Number of boluses	2.733	0.640	0.000**
N	1.233	0.430	

** This result is significant at 5% level of significance



1. Incidence Of Maternal Bradycardia Between The Groups

Incidence of bradycardia	Group		p value
	P n (%)	N n (%)	
Absent	28 (93.3)	30 (100.0)	0.150
Present	2 (6.7)	0	

1. Distribution Of Foetal Parameters Between Groups

Variables	Group		p value
	P	N	
	Mean (SD)	Mean (SD)	
APGAR 1 min	8.800 (0.761)	8.933 (0.365)	0.391
APGAR 5 min	8.933 (0.254)	8.967 (0.183)	0.561

DISCUSSION

In our study 60 patients with comparable demographic characters undergoing LSCS under spinal anaesthesia.

The mean of number of norepinephrine intravenous bolus required to manage hypotension was 1.233 with standard deviation of $\pm$ 0.430

The mean of number of phenylephrine intravenous bolus required to manage hypotension was 2.733 with standard deviation of ± 0.640

This result is significant at 5% level of significance as the p value is less than 0.05

The incidence of maternal bradycardia was 6.7% in phenylephrine group and was nil in norepinephrine group but the result was not statistically significant as the p value was 0.150

The fetal outcome (APGAR Score) was comparable between the groups.

CONCLUSION

Intermittent norepinephrine IV boluses can be used in the treatment of hypotension following spinal anaesthesia in caesarean section. It is more effective than intermittent phenylephrine intravenous boluses. The fetal outcome was comparable with phenylephrine. Maternal complications like bradycardia, nausea, vomiting were less compared to phenylephrine. Maternal dizziness were comparable with phenylephrine.

Conflicts Of Interest: nil

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