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Research Article

**ANALYSIS OF CHANGES IN BLOOD PRESSURE AFTER
SPINAL ANESTHESIA FOR CAESAREAN SECTION IN LOCAL
FEMALE POPULATION OF PAKISTAN**Maryam¹, Muhammad Sehran Khalid², Amna Razzaq³¹WMO at B.H.U Karnana, Pakistan.²MO against SMO seat in RHC Lalamusa.³FMH College of Medicine and dentistry Lahore**Abstract:**

Introduction: Spinal anesthesia is the popular route of anesthesia in patient for cesarean delivery. Maternal hypotension is a common complication after spinal anesthesia resulting in adverse maternal and fetal outcomes. Prevention and management of post-spinal hypotension (PSH) is continuously investigated. **Objectives of the study:** The main objective of the study is to find the changes in blood pressure after spinal anesthesia for caesarean section in local female population of Pakistan. **Materials and methods:** This descriptive study was carried out after the approval from ethical committee at the department of gynecology and obstetrics, FMH hospital Shadman Lahore and BHU Karnana from September-December 2017. The sample size is 50 from the age group 25 to 40. This research was performed while the patient was sitting on the operating table and placing the feet on the stool. Blood pressure, heart rate and oxygen saturation was maintained and electrocardiography was also recorded as vital signs before spinal anesthesia was given. **Results:** Hypotension occurred after the spinal anesthesia in 85% patients and 15% remained with stable blood pressure. Hypotension was considered when systolic blood pressure was less than 90 mm Hg. Postspinal hypotension was treated with injection ephedrine intravenously. Postspinal hypotension was observed in 85% of patients. **Conclusion:** It is concluded from our analysis that spinal anaesthesia is most common technique used for cesarean section. It is a safest and most economical method as compared with general anaesthesia.

Key words: Anaesthesia, C-section, pregnant, Blood pressure**Corresponding author:****Dr. Maryam,**WMO at B.H.U Karnana,
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INTRODUCTION:

Spinal anesthesia is the popular route of anesthesia in patient for cesarean delivery. Maternal hypotension is a common complication after spinal anesthesia resulting in adverse maternal and fetal outcomes. Prevention and management of post-spinal hypotension (PSH) is continuously investigated [1]. Caesarean section is a common surgical procedure performed for the delivery of the newborn. In caesarean section, spinal anesthesia is mostly used method due to its safety, simplicity and cost effectiveness. During the spinal anesthesia there is a decrease in blood pressure (hypotension) in the patient. Blood pressure defines the force/pressure exerted by the blood on the vessel wall. The quantity of blood pumped by the heart into the aorta is approx 5 L/min in a healthy adult person at rest. The terms which are used to explain arterial blood pressure are systolic blood pressure, diastolic blood pressure, pulse pressure and mean arterial pressure [2].

Changes in blood pressure are seen with respect to sex and age. In each heart beat oxygenated blood is pushed into the arteries. In each pulse the systolic blood pressure is 120mm Hg and diastolic blood pressure is about 80mm Hg in an adult person. Pulse pressure is determined by the difference of systolic and diastolic pressure [3].

Background of the study

Spinal hypotension is common in women who receive spinal anaesthesia for Caesarean delivery, with an incidence of up to 71%. Spinal hypotension can occur precipitously and, if severe, can result in important perinatal adverse outcomes, such as maternal nausea and vomiting, fetal acidosis and may be an important contributory factor for maternal death related to regional anaesthesia. Mothers with pre-delivery hypovolaemia may be at risk of cardiovascular collapse because the sympathetic blockade may severely decrease venous return. As a consequence, prevention of spinal hypotension has been a key research area within the field of obstetric anaesthesia [5]. In spinal anesthesia the local anesthetics are injected into the subarachnoid space. Different local anesthetics like procaine, lidocaine, tetracaine, levobupivacaine and bupivacaine are used for spinal anesthesia. Local anesthetic molecules consist of an aromatic part linked by an ester or amide bond to a basic side-chain. The local anesthetics block the generation and conduction of nerve impulses by blocking the sodium channels [6].

Objectives of the study

The main objective of the study is to find the changes in blood pressure after spinal anesthesia for caesarean section in local female population of Pakistan.

MATERIALS AND METHODS:

This descriptive study was carried out after the approval from ethical committee at the department of gynecology and obstetrics, FMH hospital Shadman Lahore and BHU Karnana from September-December 2017.

Data collection

The sample size is 50 from the age group 25 to 40. This research was performed while the patient was sitting on the operating table and placing the feet on the stool. Blood pressure, heart rate and oxygen saturation was maintained and electrocardiography was also recorded as vital signs before spinal anesthesia was given. Each parturient was given peroperatively, 500 ml haemaccele. A 25-gauge spinal needle was used for anesthesia and introduced at the level of lumber 3-4 in subarchnoid space in sitting position. The 1.8 ml hyperbaric solution of bupivacaine was injected into the subarchnoid space and 3 liters of oxygen/min with the help of face mask was provided to the patient.

Blood pressure measurement

The blood pressure was noted every 5 minutes until completion of surgery. Ephedrine 5 mg bolus and 10 mg bolus was injected when systolic blood pressure was between 90-100 mm Hg and or when blood pressure was below 90mm Hg, respectively. Nausea/vomiting were also noted during the operation. The readings of blood pressure were noted for 120 minutes at intervals from the start of surgery.

Statistical analysis

The collected data were analyzed using SPSS software (version 17). The results are presented as a mean with 95% confidence interval limits or standard deviations. The significant value for $P < .05$ was accepted as statistically significant.

RESULTS:

Hypotension occurred after the spinal anesthesia in 85% patients and 15% remained with stable blood pressure. The percentage distribution of pre-operative, peroperative and postoperative, systolic, diastolic and pulse rate are shown in Table 1. According to the American Society of Anesthesiologists (ASA) status 76.3% parturients were in ASA I and 23.7% Parturients were in ASA II.

Table 1: The normal preoperative, peroperative and postoperative blood pressure and pulse rate of patients.

	Systolic BP range	Patient (%)	Diastolic BP range	Patient (%)	Patient (%) Pulse rate range	Patient (%)
Preoperative	106- 116	11.3	60- 65	1.3	79- 84	30
	117- 127	82.4	66- 71	11.2	85- 90	51.3
	128- 138	5.0	72- 77	28.8	91- 96	11.2
	139- 149	1.3	78- 83 84- 89	52.5 6.2	97- 112	7.5
Peroperative	70- 80	36.2	43- 51	1.3	80- 90	12.5
	81- 91	56.3	52- 60	7.5	91- 101	38.7
	92- 102	6.2	61- 69	58.7	102- 112	43.8
	103- 113	1.3	70- 78	32.5	113- 123	5.00
Postoperative	105- 111	2.5	66- 69	5.00	80- 84	7.5
	112- 118	68.7	70- 73	23.7	85- 89	27.4
	119- 125	27.5	74- 77	43.8	90- 94	43.8
	126- 132	1.3	78- 81	27.5	95- 99	21.3

DISCUSSION:

CS is a very common operation performed nearly in every hospital, we assume that dealing with PSH is a daily situation facing anesthetists with variable levels of experience; thus, future research should focus on simple and rapid protocols that can be easily applied by anesthetists with moderate and low experience with minimal need of complex devices or costly drugs [7].

Nausea and vomiting was developed peroperatively in spinal anesthesia may be due to anxiety, arterial hypotension, CNS hypoperfusion, and movement of abdominal organs and use of opiates. In this study vasopressin i.e., ephedrine is used for the correction and management of hypotension for C-section after spinal anesthesia. In another research phenylephrine was given and showed no fatal effects on the mother and newborn [8]. The phenylephrine is also a good vasopressin agent. Ephedrine showed no adverse effects on the mother and fetus in hypotensive cases. Ephedrine has effects both on α -adrenergic and β -adrenergic receptors, either directly or indirectly whereas phenylephrine has effect directly on alpha receptors [9].

To prevent spinal hypotension, a number of approaches have been investigated, notably fluid loading, vasopressors, or both. Despite early enthusiasm, the efficacy of fluid loading for preventing spinal hypotension has been called into question. In contrast, the use of vasopressors has gained increasing prominence as the primary

technique for the prevention and treatment of spinal hypotension during Caesarean delivery.

Traditionally, attempts to reduce the incidence and severity of maternal hypotension during spinal anaesthesia for Caesarean section have included fluid preloading, specific positioning of the patient and the judicious use of vasopressors [10]. A fluid preload, at one time positively encouraged, is now no longer advocated. For example, a study in 1976 showed that a 1000-ml crystalloid preload reduced the incidence of hypotension from 92% to 57% but did not eliminate it [11]. One centre compared 10, 20 and 30 ml.kg⁻¹ crystalloid preload and showed that although there was no difference in the incidence of hypotension, there was a significant decrease in maternal colloid osmotic pressure (COP), the greatest decrease occurring with the larger volumes [12].

CONCLUSION:

It is concluded from our analysis that spinal anaesthesia is most common technique used for cesarean section. It is a safest and most economical method as compared with general anaesthesia.

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