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Research Article

**ANALYSIS OF HYPOTENSION AFTER SPINAL ANESTHESIA
FOR CAESAREAN SECTION IN LOCAL FEMALE
POPULATION OF LAHORE**Mariam Khalid¹, Farheen Ramzan Ali², Sabhi Ul Hassan³¹WMO at RHC Khabeki Tehsil Naushehra dist. Khushab, ²Sharif Medical and Dental college, ³Islamic International Medical College, Rawalpindi (RU)**Article Received:** January 2019**Accepted:** February 2019**Published:** March 2019**Abstract:**

Introduction: Hemodynamic changes during normal pregnancy are characterized by an increase in cardiac output (CO), heart rate (HR), and circulating blood volume and a reduction in systemic vascular resistance (SVR).

Objectives of the study: The main objective of the study is to find the level of hypotension after spinal anesthesia for caesarean section in local female population of Pakistan.

Materials and methods: This cross sectional study was conducted at POF Hospital Wah Cantt during March 2018 to December 2018. The sample size is 50 from the age group 20 to 40. 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 per operatively, 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.

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. **Conclusion:** It is concluded 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: General, Anaesthesia, C-section, pregnancy, Blood pressure

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INTRODUCTION:

Hemodynamic changes during normal pregnancy are characterized by an increase in cardiac output (CO), heart rate (HR), and circulating blood volume and a reduction in systemic vascular resistance (SVR). Spinal anesthesia is the popular route of anesthesia in patient for cesarean delivery [1]. 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 [2]. 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 [3]. 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 [4].

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 [5].

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 [6].

Objectives of the study

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

MATERIALS AND METHODS:

This cross sectional study was conducted at POF Hospital Wah Cantt during March 2018 to December 2018. The sample size is 50 from the age group 20 to 40. 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 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.

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	52.5	97- 112	7.5
			84- 89	6.2		
Peroperative	70- 80	36.2	43- 51	1.3	80- 90	12.5

	81- 91 92- 102 103- 113	56.3 6.2 1.3	52- 60 61- 69 70- 78	7.5 58.7 32.5	91- 101 102- 112 113- 123	38.7 43.8 5.00
Postoperative	105- 111 112- 118 119- 125 126- 132	2.5 68.7 27.5 1.3	66- 69 70- 73 74- 77 78- 81	5.00 23.7 43.8 27.5	80- 84 85- 89 90- 94 95- 99	7.5 27.4 43.8 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].

Although phenylephrine produces less fetal acidosis than ephedrine, there is no evidence supporting phenylephrine on more global neonatal outcomes. The theoretical risk of phenylephrine use in pre-eclamptic patients and patients with uteroplacental insufficiency should be an area of future investigation. Norepinephrine was recently reported as an alternative to phenylephrine with less cardiac depression; however, the optimum norepinephrine dosing regimen needs more research [10].

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.

CONCLUSION:

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

anaesthesia. 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.

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