

Incidence of Hypotension during Recovery from Spinal and Epidural Anesthesia

Atia A^{1*} and Elyagoubi A²

¹ Department of anesthesia and intensive care, Faculty of Medical technology, Tripoli University, Libya.

² Department of Medical laboratories, Faculty of Medical technology, Tripoli University, Tripoli, Libya.

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ABSTRACT

Background: Postoperative hemodynamic complication (hypotension) can occur during recovery from spinal anesthesia. The aim of this study was to evaluate the level of blood pressure during and after applying spinal and epidural anesthesia techniques.

Methods: Forty patients were evaluated for hypotension induced by Lidocaine used in spinal or epidural anesthesia approaches. The patients were randomly assigned in the two groups and informed consent was taken. Lidocaine was injected in L4-L5 space using needle No. 23 in the spinal group and needle No. 16 in the epidural group.

Results: There was no significant decrease in systemic blood pressure before and after 10 min in both the spinal and epidural groups ($p>0.05$). There was also no significant difference in systolic blood pressure in the spinal group compared to the epidural group.

Conclusion: Appropriate assessment before anesthesia and perioperative adequate monitoring and preparation are important to prevent decrease in blood pressure.

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INTRODUCTION

Hypotension is one of the most common complication linked with spinal and epidural anesthesia, arising in the intra-operative interval due to reductions in systemic vascular resistance and central venous pressure from sympathetic block ^[1,2]. Epidural and spinal anesthesia are major regional techniques with an extensive history of efficient use for diversity of operation procedures and pain relief. Nonetheless, both techniques have their draw backs ^[3]. Postoperatively, cases of spinal anesthesia associated hypotension have been reported after arrival in recovery room ^[4]. The decrease in blood pressure is approximately reduced by 39-45% after spinal and epidural anesthesia ^[5]. The variations occur in systolic blood pressure, mean arterial pressure, peripheral vascular resistance without any alteration in cardiac output. Conversely, hypotension in general anesthesia is generally due to diminishing in myocardial contraction ^[2].

Hypotension occur in spinal technique is mostly due to a sympathetic block, while in epidural anesthesia it is more complicated by the level of sensory block and the dosage of the anesthesia drug.

*Corresponding author
elbadri83@yahoo.com

Administration of a large dosage of the local anesthetic drugs epidurally can result in a profound reduction in the level of blood pressure.

To the best of our knowledge, there has been limited reports of the epidemiology of hypotension during the recovery from spinal and epidural anesthesia at hospital in Libya. Therefore, the primary aim of this study was to evaluate the level of blood pressure during and after applying spinal and epidural anesthesia techniques.

METHODS

A prospective, randomized, double blind study was undertaken on 40 patients undergo surgery at Abosalim trauma hospital in Tripoli, Libya. The study protocol was endorsed by higher institute of science and Medical technology, Tripoli, Libya. All patients gave written informed consent. All cases were indiscriminately assigned to obtain either spinal or epidural anesthesia using a Lidocaine injection. Epinephrine was not used because of its consequence on the cardiovascular system which could affect the outcomes of the study. Lidocaine was administered alone in ordinary doses as described in Miller's textbook of anesthesia ^[6].

Patients were randomly divided into two groups of 20 each and all patients received 500ml intra venous Ringer's solution prior to receiving anesthesia. Lidocaine was injected in L4-L5 space using needle No. 23 in the spinal group and needle No. 16 in the epidural group.

To avoid inter-patient inconsistency, height of all cases was kept constant, ranging from 155 to 160 cm. Patients with neurological or coagulation disorder, systemic hypertension, and history of psychiatric diseases were excluded from the study. Patients were put in the supine position and systolic blood pressure was measured before and after 10 minutes of administering spinal or epidural anesthesia.

Data were analyzed by SPSS software and statistical comparisons between the two groups were performed using t-tests.

RESULTS

In this study, 40 patients under 50 years of age had regional anesthesia in two groups (spinal and epidural group). The mean age in spinal and epidural group was 32.1 and 36.7 years, respectively (Table 1). 50% of patients were males, and 50% of patients were female. The study subjects were predominated by Libyans in both genders.

Table 1 Age Distribution in Spinal and Epidural Groups

Age group (years)	<20	20-30	30-40	40-50	Total
Spinal	3 (15)	4 (20)	9 (45)	4 (20)	20 (100)
Epidural	1 (5)	5 (25)	12 (60)	2 (10)	20 (100)

*There were no age differences between the spinal and epidural groups ($p>0.05$)

There was no significant decrease in systemic blood pressure before and after 10 min in both the spinal and epidural groups ($p>0.05$). There was also no significant difference in systolic blood pressure in the spinal group compared to the epidural group (see Figure 1).

DISCUSSION

In this study, both spinal and epidural anesthesia caused non-significantly reduction in blood pressure. Spinal anesthesia cause more fall in blood pressure than epidural (17.5%, 7.5%, respectively), with no significant difference in blood pressure reduction with both genders.

Our study in line with previous studies that reported reduction of blood pressure after applying regional anesthesia [2,5]. This hypotension is due to a preganglionic sympathetic block, which results in vasodilator outcome and pooling of blood below the block level particularly in the inferior extremities.

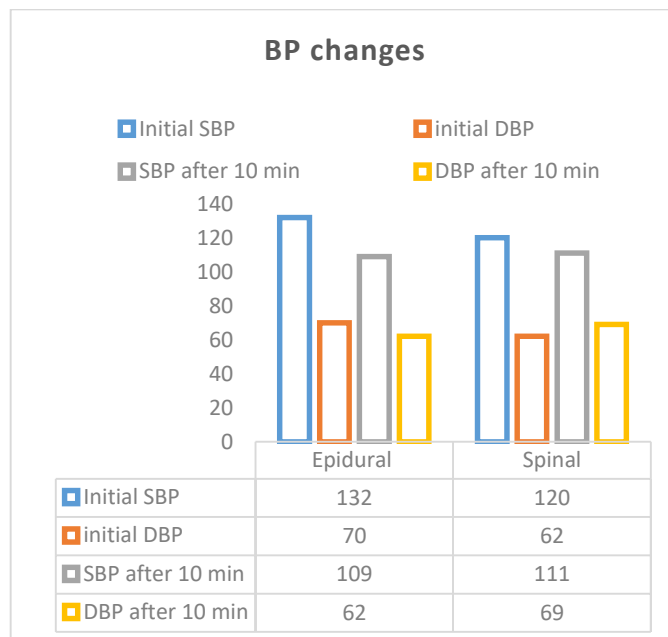


Figure 1. BP changes before and after the use of spinal and epidural anesthesia

Regional anesthesia using spinal and epidural approaches has cardiovascular problems which are more noticeable in the former method. These cardiovascular issues were deeply studied and concluded that the decrease of blood pressure in spinal anesthesia is more pronounced and occurs in short time. Low in blood pressure was also less intense during epidural anesthesia and was hindered in its occurrence [7]. These outcomes are comparable with those of our current study.

CONCLUSION

There were fall in blood pressure after given lidocaine in both regional anesthesia techniques. Spinal anesthesia decreases blood pressure more compared to epidural anesthesia. Appropriate assessment before anesthesia and perioperative adequate monitoring and preparation are important to prevent decrease in blood pressure.

No conflict of interest was present

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