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ORIGINAL ARTICLE

General anaesthesia versus subarachnoid block in patients undergoing percutaneous nephrolithotomy surgeries

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ABSTRACT:

Background: These days, percutaneous nephrolithotomy (PNCL) is a popular technique for removing kidney and urinary stones, as well as a preferred treatment for big, many, and stag-horn stones. The present study compared general anaesthesia and subarachnoid block (SAB) in patients undergoing percutaneous nephrolithotomy surgeries. **Materials & Methods:** 50 patients were divided into 2 groups of 25 in each group. Group Ipatients received general anaesthesia (GA). Group IIpatients received subarachnoid block (SAB). Parameters such as hemodynamic variables, pain score and side effects were recorded. **Results:** The mean duration of surgery (min) was 125.7 in group I and 123.5 in group I, Hb of irrigated fluid-blood mixture (g/dl) was 1.85 in group I and 1.23 in group II, blood loss (ml) was 210.5 in group I and 158.2 in group II. average stone size (mm) was 31.7 in group I and 29.4 in group II, volume of irrigation fluid used (ml) was 15380.2 in group I and 14862.3 in group II, change in Hb from pre- to post-surgery (g/dl) was 1.36 in group I and 1.14 in group II. The difference was non- significant (P> 0.05). The mean VAS at 1 hour was 3.6 in group I, at 2 hours was 2.9 in group I and 3.2 in group II, at 4 hours was 2.6 in group I and 3.1 in group II, at 12 hours was 3.2 in group I and 3.5 in group II, at 18 hours was 3.1 in group I and 3.3 in group II and at 24 hours was 3.5 in group I and 3.8 in group IIB. Side effects were nausea seen 1 in group I and 2 in group II, vomiting 3 in group I and 1 in group II and shivering 2 in group I and 1 in group II. The difference was significant (P< 0.05). **Conclusion:** Subarachnoid block is just as safe and effective during percutaneous nephrolithotomy patients' care as general anesthesia.

Key words:general anesthesia, subarachnoid block, percutaneous nephrolithotomy

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INTRODUCTION

These days, percutaneous nephrolithotomy (PNCL) is a popular technique for removing kidney and urinary stones, as well as a preferred treatment for big, many, and stag-horn stones.[1] Moreover, patients who have not responded well to shock and endoscopic studies can benefit from PNCL. General anesthesia (GA) or regional anesthesia, such as spinal anesthesia (SA), is used during urologic procedures in roughly 20% of patients.[2] Even while PNCL works well with GA, side effects including nausea, vomiting, atelectasis, and medication responses are possible.[3]SA is primarily used in conjunction with one medication for procedures on the abdomen and lower limbs. It has certain benefits, including less bleeding and decreased venous pressure during the surgical procedure. Recent results on the use of SA in PNCL, however, show less medication intake, fewer adverse effects, and less pain following surgery.[4] Additionally, several studies have demonstrated that SA improved the results of spine operations. Because acute hypotension from sympathetic block is the main concern, there are disagreements among studies over the use of SA in PNCL. As a result, in these individuals, blood pressure and pulse rate (PR) can be useful in monitoring sympathetic drive.[5]Numerous studies have compared GA and SA in a number of procedures; however, BP and PR have not definitively compared the cost-effectiveness and patient satisfaction of PNCL during surgery and in the recovery room.[6]The present study compared general anaesthesia and subarachnoid block (SAB) in patients undergoing percutaneous nephrolithotomy surgeries.

MATERIALS & METHODS

This present study was conducted on 50 patients undergoing percutaneous nephrolithotomy surgeries. All were informed regarding the study and their written consent was obtained.

Data such as name, age, gender etc. was recorded. The patients were divided into 2 groups of 25 in each group. Group Ipatients received general anaesthesia (GA).Group II patients received subarachnoid block (SAB).Parameters such as hemodynamic variables, intraoperative blood loss, intraoperative mean arterial pressure and heart rate were recorded. Results were assessed statistically. P value less than 0.05 was considered significant.

RESULTS

Table I Comparison of parameters

Parameters	Group A	Group B	P value
Duration of surgery (min)	125.7	123.5	0.97
Hb of irrigated fluid-blood mixture (g/dl)	1.85	1.26	0.05
Blood loss (ml)	210.5	158.2	0.04
Average stone size (mm)	31.7	29.4	0.19
Volume of irrigation fluid used (ml)	15380.2	14862.3	0.91
Change in Hb from pre- to post-surgery (g/dl)	1.36	1.14	0.75

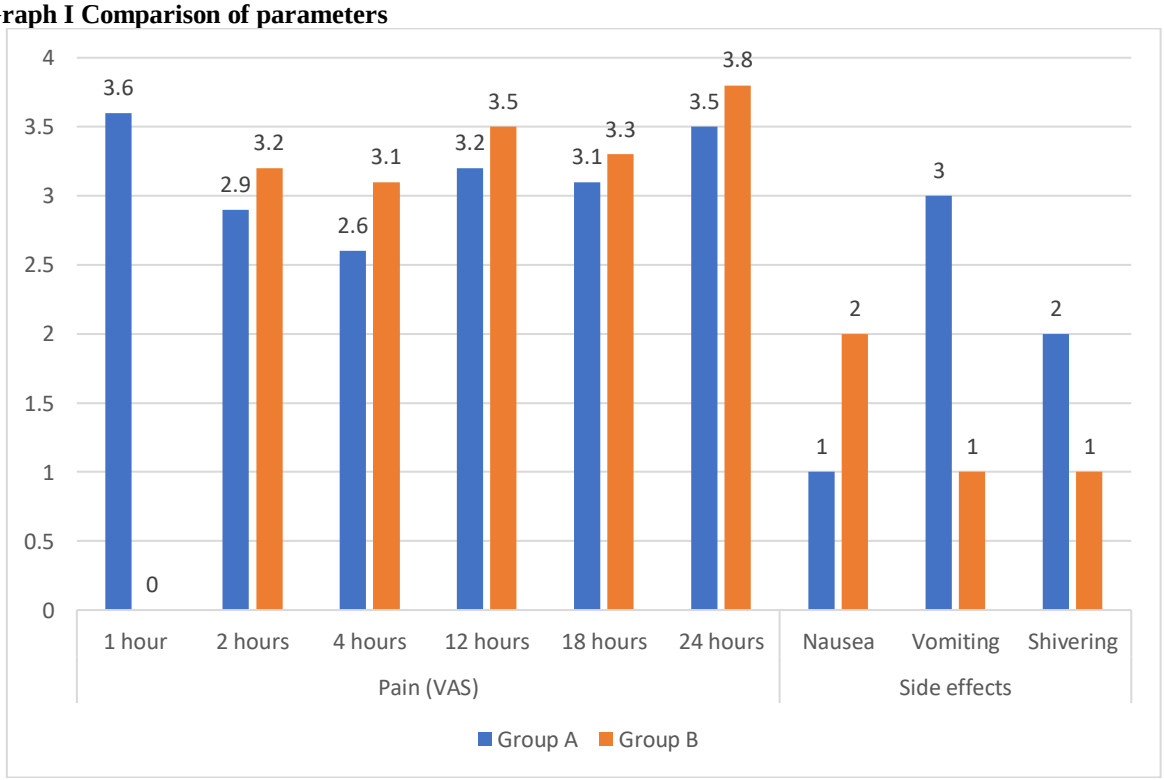
Table I shows that mean duration of surgery (min) was 125.7 in group I and123.5 in group I, Hb of irrigated fluid-blood mixture (g/dl) was 1.85 in group I and 1.23 in group II, blood loss (ml) was 210.5 in group I and 158.2 in group II. average stone size (mm) was 31.7 in group I and 29.4 in group II, volume of irrigation fluid used (ml) was 15380.2 in group I and 14862.3 in group II, change in Hb from pre- to post-surgery (g/dl) was 1.36 in group I and 1.14 in group II.The difference was non- significant (P> 0.05).

Table II Comparison of pain score and side effects

Parameters	Variables	Group A	Group B	P value
Pain (VAS)	1 hour	3.6	0	0.04
	2 hours	2.9	3.2	
	4 hours	2.6	3.1	
	12 hours	3.2	3.5	
	18 hours	3.1	3.3	
	24 hours	3.5	3.8	
Side effects	Nausea	1	2	0.05
	Vomiting	3	1	
	Shivering	2	1	

Table II, graph I shows that mean VAS at 1 hour was 3.6 in group I, at 2 hours was 2.9 in group I and 3.2 in group II, at 4 hours was 2.6 in group I and 3.1 in group II, at 12 hours was 3.2 in group I and 3.5 in group II, at 18 hours was 3.1in group I and 3.3 in group II and at 24 hours was 3.5 in group I and 3.8 in group IIB. Side effects were nausea seen 1 in group I and 2 in group II, vomiting 3 in group I and 1 in group II and shivering 2 in group I and 1 in group II. The difference was significant (P< 0.05).

Graph I Comparison of parameters



DISCUSSION

The gold standard for treating renal calculi is seen to be percutaneous nephrolithotomy (PCNL), particularly when the drawbacks of extracorporeal shock wave lithotripsy (ESWL) are overcome.[7] General anesthesia (GA), epidural anesthesia (EA), or spinal anesthesia (SA) can all be used for PCNL. Urologists find that GA is particularly advantageous in PCNL procedures because it may effectively control tidal volume, maintain patient airway, particularly when the patient is prone, and extend the duration of anesthesia.[8,9] The ability to regulate tidal volume reduces the amount of movement of the kidneys caused by breathing, and the long duration of anesthetic allows the surgeon to do many punctures, which increases the procedure's effectiveness, particularly in cases when there is a significant stone burden.[10]Additionally, GA is more pleasant for the patients, and another benefit is that it allows for extended prone operations without limiting breathing restriction. However, SA has certain advantages over GA, including reduced postoperative pain, reduced analgesic drug intake, and the avoidance of adverse effects from various medications used in GA.[11]The present study compared general anaesthesia and subarachnoid block (SAB) in patients undergoing percutaneous nephrolithotomy surgeries.

We found thatthe mean duration of surgery (min) was 125.7 in group I and 123.5 in group I, Hb of irrigated fluid-blood mixture (g/dl) was 1.85 in group I and 1.23 in group II, blood loss (ml) was 210.5 in group I and 158.2 in group II. average stone size (mm) was 31.7 in group I and 29.4 in group II, volume of irrigation fluid used (ml) was 15380.2 in group I and 14862.3 in group II, change in Hb from pre- to post-surgery (g/dl) was 1.36 in group I and 1.14 in group II. Heart rate, intraoperative mean arterial pressure, and intraoperative blood loss were compared by Sadrolsadat SH et al.[12] Prior to surgery, the hemodynamic parameters of both groups were comparable. In comparison to Group B (1.10 ± 0.67 g.dl−1), Group A's Hb reduction was considerable (1.28 ± 0.35 g.dl−1). When Hb in the irrigated fluid blood combination was calculated, Group A had a substantially larger value (1.87 ± 0.44 g.L−1) than Group B (1.25 ± 0.25 g.L−1).

We found that the mean VAS at 1 hour was 3.6 in group I, at 2 hours was 2.9 in group I and 3.2 in group II, at 4 hours was 2.6 in group I and 3.1 in group II, at 12 hours was 3.2 in group I and 3.5 in group II, at 18 hours was 3.1 in group I and 3.3 in group II and at 24 hours was 3.5 in group I and 3.8 in group II. Side effects were nausea seen 1 in group I and 2 in group II, vomiting 3 in group I and 1 in group II and shivering 2 in group I and 1 in group II.In a study conducted on two hundred patients, Moawad et al[13]evaluated the safety and effectiveness of spinal anesthesia (SA) versus general anesthesia (GA) for percutaneous nephrolithotomy (PCNL). During procedures, critical parameters in both groups were kept at safe levels. Until one hour after surgery, the SA group's visual analog pain score was lower than the GA group's ($P < 0.05$). Compared to the GA group, the SA group's patients reported using analgesics less frequently on the first postoperative day ($P < 0.05$). While nausea and vomiting were more common in the GA group than the SA group (5% vs. 2% and 4% vs. 1%, respectively), postoperative shivering was more common in the SA group (8% vs. 2%). Compared to the SA group, patients in the GA group had better overall satisfaction levels (mean 9.6 ± 0.4).

CONCLUSION

Authors found that subarachnoid block is just as safe and effective during percutaneous nephrolithotomy patients' care as general anesthesia.

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