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COMPARISON OF SUBARACHNOID BLOCK WITH SUBARACHNOID BLOCK COMBINED WITH EPIDURAL TOPUP OF NORMAL SALINE ON PROGRESSION OF ANAESTHESIA.

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ABSTRACT

Aim: To study the effect of epidural injection of 10 ml of normal saline given 10 mins after spinal anaesthesia using combined spinal epidural technique on onset of action,efficacy of sensory blockade,progression of sensory level and highest level of sensory block.

Methods: in this study, 60 patients of ASA 1 and 2 scheduled for elective inguinal hernia repair were randomized to gp A(n=30), who received only SAB ,and gp B (n=30) who received epidural injection of 10 ml of normal saline given 10 mins after SAB.The primary objective was to study progression of spinal anaesthesia and requirement of epidural topup of local anaesthesia.difference in two gps were analysed using unpaired "t" test and chisquare test.

Results : The progression of sensory level of block was significantly faster in gp B than gp A.($p<0.05$).

Conclusion: The epidurally 10 ml NS achieved higher level of sensory block with good quality of anaesthesia and less requirement of epidural topup of LA.

KEYWORDS : Combined Spinal Epidural Anaesthesia,progression Of Spinal Anaesthesia.

AIM

To study the effect of extradural injection of normal saline, given 10 minutes after spinal anesthesia using combined spinal epidural technique on -

- Onset of action.
- Efficacy of sensory blockade.
- Progression of sensory level.
- Highest level of sensory blockade.
- Time interval between spinal injection and first top-up of epidural local anaesthesia.

METHODS / PROCEDURE

The present study consist of 60 adult patients undergoing surgery for inguinal hernia under combined spinal epidural analgesia. This study was designed to compare the effects of extradural injection of normal saline on the progression of spinal analgesia with control group receiving no extradural injection given 10 min after subarachnoid block.

Selection of the patients : For this study , ASA grade one , male patients in the age group of 20 – 50 years, with height of 150-180 cm undergoing inguinal hernia repair surgery were selected.

All the patients received SAB with 0.5% bupivacaine
2 ml [10 mg] if the patient's height was 150 – 160 cm.
2.5 ml [12.5 mg] if the patient's height was 161 – 170 cm.
2.75 ml [13.75 mg] if the patient's height was 171 – 180 cm.

The patient was then allocated randomly to one of the two groups.
Group A : (Control : 30 patients) no epidural injection 10 minutes after subarachnoid injection was given.

Group B : (study group 30 patients) epidural injection of 10 ml of normal saline 10 min after subarachnoid injection was given.

Following parameters were studied :-

1. Sensory level :-

a) Onset of Analgesia.
b) Progression of sensory level of blockade.
c) Highest (maximum) sensory level.
d) Regression of the sensory level.

Time taken for two segment regression was noted and comparison between two groups done.

2. Time interval :-between SAB and first epidual topup of LA.
3. Surgical analgesia :-quqlity of anaesthesia.
4. Complications :-PDPH.

Difference between two groups were analyzed using unpaired ' t ' test , Chi square test as appropriate for interval of original data. A value of less than 0.05 was considered statistically significant.

OBSERVATIONS AND RESULTS :-

Mean age group A is 33.77 = 6.73 years. Mean age for group B is 33.23 = 7.34 years. By applying unpaired ' t ' test , value is 0.29 which is statistically not significant ($p > 0.05$).

Mean height for group A is 165 = 6.75 cms. Mean height for group B is 165 = 8.21 cms . By applying unpaired ' t ' test, calculated value is 0.43, which is statistically not significant ($p > 0.05$).

Mean weight for age group A IS 59.03 = 7.41 kgs. Mean weight for B is 59.57 = 7.98 kgs. By applying unpaired ' t ' test, calculated value is 0.27, which is statistically not significant ($p > 0.05$).

There was no statistically significant ($p > 0.05$) difference in age (33.77 = 6.73 years Vs 33.23 = 7.34 years), height (165 = 6.75 cms Vs 165.83 = 8.21 cms) and weight (59.03 = 7.41 kgs Vs 59.5 = 7.98 kgs) between control and study group seen.

Mean duration for group A is 101.33 = 15.08 minutes. Mean duration for B is 100.33 = 18.38 minutes. By applying unpaired 't 'test, calculated value is 0.23, which is statistically not significant ($p > 0.05$).

Table 1 - Progression of Sensory Level

	Mean Sensory Level	
Time after Sub arachnoid block (minutes)	Group A	Group B
5	T12	T12
10	T11	T11
15	T10	T8
20	T9	T7
25	T9	T7
30	T9	T7

The level of sensory blockade 5 and 10 minutes, after subarachnoid block, was not significantly different between two groups. However, the level of sensory blockade after epidural injection of 10 ml of normal saline, progressed rapidly. In group B five minutes after epidural saline injection level progressed to T8 and ten minutes after epidural saline injection level was T7 . In group A level was T10 and T9 at the fifteen minutes and twenty minutes after subarachnoid block respectively.

Table 2 - Highest level of sensory blockade at 30 minutes

	Group A		Group B	
Sensory Level	Number of cases	Percentage	Number of cases	Percentage
T5	-	0	3	10.00
T6	-	0	4	13.33
T7	-	0	18	60.00
T8	5	16.66	5	16.66
T9	18	60.00	-	0
T10	5	16.66	-	0
T11	2	6.66	-	0

After epidural injection of 10 ml normal saline, 10 minutes after subarachnoid block in group B level of sensory blockade progressed rapidly to achieve highest level of T7 (T5 – T8) at the end of 30 minutes after subarachnoid block. In group A, the highest level of sensory blockade achieved was T9 (T8 – T11) at the end of 30 minutes after subarachnoid block. Time taken for two segments regression was not different for control and study group.

Table 3 - Epidural Top-up Requirement.

Whether Epidural top-up required	Group A		Group B	
	Number of cases	Percentage	Number of cases	Percentage
Yes	22	73.33	10	33.33
No	8	26.66	20	66.66

By applying 'Chi square' test, the calculated value is 8.10, which is statistically very significant ($p<0.01$) which suggest the number of patients, requiring epidural top-up of local anesthetic drug was much higher for group A patients than group B patients.

Mean time interval between subarachnoid block and first epidural top-up, for group A is 67.73 = 15.41 minutes, and for group B , it is 96.00 = 7.75 minutes. By applying unpaired ' t ' test, the calculated value is 6.90, which is highly significant ($p < 0.01$). This suggest that local anesthetic requirement for group A is earlier than group B.

SUMMARY AND CONCLUSION

In this study , we had used, combined spinal epidural technique for 60 patients undergoing inguinal hernia repair surgery. The effect of extradural injection of 10 ml normal saline 10 minutes after subarachnoid block, on the progression of spinal anesthesia, was studied.

Male patients, of ASA grade I , in age group of 20-50 years, with height of 150-170 cms were selected for this study. All the patients were comparable in age, height and weight in both the groups. Pre-operatively , all the patients were examined and investigated. Confirmation of informed consent, adequate fasting status and atropinisation half an hour prior to surgery was done. Once, the patients was inside the operation theatre, vital parameters noted, monitors attached and pre-loaded with 500 ml of Ringer Lactate solution. Using complete aseptic precaution in sitting position, using Tuohy's 16 g epidural needle, L2 – L3 epidural space reached. Portex epidural catheter (16 g) passed 3 cm inside the epidural space. Epidural catheter was fixed to the back. Using 23 g spinal needle, subarachnoid block was given in L3 – L4 subarachnoid space using 0.5 % bupivacaine – 2 ml. (10 mg) if patient's height was between 150 to 160 cms, 2.5 ml (12.5 mg) if the patient's height was between 161 to 170 cms, 2.75 ml, (13.75 mg.) if the patient's height was between 171 to 180 cms. Patient was placed in supine position.

All the patients were divided into two groups

Group A - No extradural injection of 10 ml of normal saline given 10 minutes after subarachnoid block.

Group B - Extradural injection of 10 ml of normal saline given 10 minutes after subarachnoid block.

Vital parameters like heart rate, blood pressure, oxygen saturation assessed every 5 minutes for first 30 minutes and then every 15 minutes till the end of surgery. Assessment of sensory level was also done every 5 minutes.

The time taken for onset of action was similar for both the groups. However, the progression of sensory level of blockade as assessed by pinprick every 5 minutes was significantly faster in group B than in group A ($P < 0.05$). The highest level of sensory blockade was T9 in group A patient and T7 in group B patients which was 2-3 segments higher in group B patients. Total number of patients requiring epidural top up were more in group A than group B. The time interval between spinal anesthesia and first epidural top up in group A is shorter than group B patients ($p < 0.001$). Two segment regression time in both the group was not statistically significant ($p > 0.05$). Incidences of adverse effect was not significant for both the groups, but quality of anaesthesia was definitely better for group B than group A.

From our study of combined spinal epidural on 60 patients undergoing inguinal hernia repair surgery , we have concluded that epidural injection of 10 ml normal saline 10 minutes after subarachnoid block achieves,

- Two segments higher level of sensory blockade.
- Rapid progression of sensory blockade.
- Less requirement of epidural topup of local anaesthetics.
- Increased time interval between subarachnoid block and first epidural top –up.
- Good quality of anaesthesia.
- Fewer incidence of PDPH.

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