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Comparison Of Low Dose Hyperbaric Bupivacaine Combined With Fentanyl, Clonidine Or Buprenorphine For Spinal Anaesthesia In Anorectal Surgeries.

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ABSTRACT

The aim of this study is to we compare fentanyl, clonidine, and buprenorphine, along with low dose hyperbaric bupivacaine, in "saddle block" spinal anesthesia for anorectal surgeries. In this prospective, double-blind study, 60 ASA I--II patients scheduled for elective anorectal surgery were randomized into 3 groups of 20 patients : Group F (Fentanyl group), Group C (Clonidine group) and Group B (Buprenorphine group). Sensory block was evaluated by pin-prick test and motor block was evaluated with a modified Bromage scale. We also studied the incidence of complications like nausea, vomiting and urinary retention. The duration of sensory block was significantly longer in patients receiving clonidine and buprenorphine compared to patients receiving fentanyl($p<0.05$). The duration of motor block was not significantly different in the three groups. The post-operative pain scores and analgesic consumption was also significantly lower(p 0.00) in patients receiving clonidine or buprenorphine, compared to patients receiving fentanyl. The incidence of urinary retention was higher in the buprenorphine group. We concluded that clonidine and buprenorphine provided a longer duration of sensory block and less post-operative pain and analgesic consumption when compared to fentanyl, when used along with hyperbaric bupivacaine for 'saddle block' spinal anaesthesia for anorectal surgeries.

Keywords: Anorectal surgeries, saddle block, clonidine, fentanyl, buprenorphine, low dose hyperbaric bupivacaine.

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INTRODUCTION

Anorectal surgeries require deep anaesthesia because the area gets multiple nerve supply and is reflexogenic[1]. Spinal anaesthesia is commonly used for anorectal surgeries due to advantages like simplicity, cost effectiveness, good relaxation and good postoperative pain relief. In the absence of contraindications, it is generally the preferred mode of anaesthesia for these surgeries.

Anorectal surgeries are increasingly being done as day care surgeries[2].The goal of anaesthesia is therefore to provide good relaxation, analgesia and also a rapid return of sensory and motor functions , with minimal incidence of complications, to enable the patients to be discharged home comfortably on the same day.

In this study, we used three additives, namely fentanyl, clonidine, and buprenorphine, along with low dose hyperbaric bupivacaine, in "saddle block" spinal anaesthesia for anorectal surgeries. We compared the three additives with respect to recovery of sensory and motor functions, and postoperative pain. We also studied the incidence of complications like nausea, vomiting and urinary retention.

METHODS

With the approval of the institutional ethical committee and written informed consent of the patients, 60 ASA physical status I and II patients, scheduled for elective anorectal surgeries (haemorrhoidectomy, fistulectomy), under spinal anaesthesia were enrolled. Patients aged 20-60yrs were included in the study. Patients of ASA physical status III or more, those preoperatively receiving clonidine and patients not giving consent for the study were excluded.

The patients were randomly allocated to three groups of 20 patients each: Group F (Fentanyl group), Group C (Clonidine group) and Group B (Buprenorphine group). All patients were started on intravenous infusion of Ringer Lactate through a 18G venous cannula. Standard monitoring was used namely ECG, Pulse-oximetry and Non- invasive Blood Pressure monitoring. Baseline Heart Rate, Blood Pressure and SpO2 were noted in all the patients.

Spinal anaesthesia was given in sitting position with 26G Quincke spinal needle in L3-L4 or L4-L5 space. After achieving free flow of CSF, the drug was injected into the subarachnoid space. The drug contained 0.6mg (1.2 cc) 0.5% hyperbaric bupivacaine along with additive: in group F, 10µg (0.2cc) of fentanyl; in group C, 30µg (0.2cc) of clonidine; and in group B, 60µg(0.2cc) of buprenorphine was added. The drug was prepared by one anaesthesiologist and the procedure was performed by another anaesthesiologist who was blinded to the group allocation of the patient. The patient was kept in sitting position for 5 mins after administration of spinal anaesthesia to achieve a "saddle block".

Heart rate and blood pressure were recorded every minute for 5 minutes, and thereafter once in 5 mins till the end of the surgery.

The level of sensory block was tested using loss of pain to pin prick with a blunt needle. Once sensory block of the perianal area was obtained, the patient was positioned in lithotomy position. Sensory level was checked once in 5 min for 15mins and thereafter once in 30 mins until the block regressed upto S3 level.

Motor block was tested with the modified Bromage scale[3] (0 = no motor block, 1 = able to flex ankle and bend knees, 2 = able to flex ankle, and 3 = full motor block), just before the start of surgery.

Postoperatively, motor block was assessed every 30 mins until there was no detectable motor block. Postoperative pain was assessed using VAS scale[4]. 100mg intravenous tramadol was administered when the VAS score was 4 or higher.

Incidence of complications like PONV and urinary retention were noted.

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RESULTS

The three groups were comparable with respect to age, sex ratio, body weight, height, base line heart rate, mean arterial pressure and duration of surgery.

The duration of sensory block was measured as the time taken for the sensory level to regress to S3 dermatomal level. The duration of sensory block was significantly longer (P value 0.023) in Groups C and B compared to Group F (160±12.5mins in Group F, 171±20.4mins in Group C and 174±15.5mins in Group B).

The time taken for complete recovery of motor function was not significantly different (p value 0.256) between the 3 group (Group F 110±20.5mins, Group C 122±25.2mins,Group B 115±22.5mins) as shown in the table 2.

The post operative pain scores measured by VAS scale were significantly lower (p value 0.000) in Groups C (2.8±0.8) and B (2.6±1.0) compared to Group F (3.6±0.5). The post operative tramadol consumption was also significantly lower (p value 0.000) in Groups C (25.5±8.5mg) and B (20.0±9.0mg)compared to Group F(40.5±10.5mg).

Only one patient in group F and one patient in Group B reported PONV. One patient in group F and 4 patients in group B had urinary retention. Though the incidence of urinary retention was higher in the buprenorphine group it did not reach statistical significance (p value 0.058).

TABLE 1: DEMOGRAPHIC DATA:

	Group F	Group C	Group B	P value
Age	49±8.7	44±9.9	48±9.50	0.213
Sex M/F	15/5	13/7	12/8	0.59
Weight(kgs)	58±6.64	54±3.04	57±7.10	0.091
Height(cms)	157±8.3	155±7.3	154±6.5	0.432
Duration of surgery(mins)	31±5.0	30±4.0	32±5.0	0.409
Baseline Heart Rate(bpm)	78±6.5	77±5.6	76±4.9	0.561
Baseline MAP(mm Hg)	95±8.4	99±7.3	101±10.1	0.093

TABLE 2: RECOVERY PROFILE

	Group F	Group C	Group B	P Value
Time to S3 regression(mins)	160±12.5	171±20.4	174±15.5	0.023
Time to full motor recovery(mins)	110±20.5	122±25.2	115±22.5	0.256

TABLE 3: POSTOPERATIVE ANALGESIA

	Group F	Group C	Group B	P Value
Mean Modified VAS Score	3.6±0.5	2.8±0.8	2.6±1.0	0.000
Mean Total Tramadol Consumption(mgs)	40.5±10.5	25.5±8.5	20.0±9.0	0.000

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TABLE 4: INCIDENCE OF SIDE EFFECTS:

	Group F	Group C	Group B	**P Value**
PONV	1	0	1	0.596
Urinary Retention	1	0	4	0.058

DISCUSSION

Adjuvants such as fentanyl, clonidine and buprenorphine are often used along with local anaesthetics in spinal anaesthesia. Advantages are a reduced dose of local anaesthetic, longer sensory block and less post-operative pain. We conducted this study to identify the best additive for anorectal surgeries.

A Gurbet et al[5] used fentanyl along with ultra low-dose bupivacaine, compared with low dose bupivacaine in anorectal surgeries. Intrathecal fentanyl (25ug) added to ultra-low dose (2.5 mg) bupivacaine was found to reduce post-operative analgesic requirement and provide faster recovery.

M Honca et al[6] used two different doses of fentanyl (12.5ug and 25ug) combined with low dose levobupivacaine in 'saddle block' spinal anaesthesia for anorectal surgery. They concluded that spinal saddle block using hyperbaric levobupivacaine with both 12.5ug and 25ug fentanyl provided good quality of anesthesia without motor block for anorectal surgery in the prone position. The time to two segment sensory regression was longer in the group receiving 25ug fentanyl. However, this group also had a higher incidence of pruritis.

B S Bajwa et al[7] compared intrathecal clonidine and fentanyl in hyperbaric bupivacaine for spinal anesthesia and postoperative analgesia in patients undergoing lower abdominal surgeries. The duration of analgesia was significantly longer in the clonidine group compared to the fentanyl group.

V Gour et al[8] did a comparative study of two different doses of 0.5% hyperbaric bupivacaine (4.5mg and 5.5mg) combined with 30ug buprenorphine for saddle block spinal anesthesia for perianal surgeries. There was no difference in sensory block or post-operative analgesic requirement in the two groups. However, patients receiving higher dose of local anesthetic had a higher rate of urinary retention.

In our study, patients in the clonidine and buprenorphine groups had longer duration of sensory block, less post-operative pain and analgesic requirement compared to the fentanyl group. The incidence of side effects like PONV and urinary retention was not significantly difeerent in the three groups.

CONCLU SION

We concluded that all the three additives namely fentanyl, clonidine and buprenorphine can be used along with hyperbaric bupivacaine for "saddle block" spinal anaesthesia for anorectal surgeries. Clonidine and buprenorphine provided a longer duration of sensory block and less post-operative pain and analgesic consumption when compared to fentanyl.

REFERENCES

[1] Erdman AG. Concise Anatomy for Anesthesia. Sacral plexus , the autonomic nervous system. London :Greenwich Medical Media; 2002. P.56, 59, 70-5.
[2] Smith LE. Ambulatory surgery for anorectal diseases: An Update. South Med J 1986; 79(2):163-6.
[3] Bromage PR. A comparison of the hydrochloride and carbon dioxide salt of lidocaine and prilocaine in epidural analgesia. Acta Anaesthesiol Scand Suppl 1965; 16: 55-69.
[4] McCormack HM, Horne DJ, Sheather S. Clinical applications of visual analogue scales: a critical review. Psychol Med 1988; 18:1007–19.
[5] A Gurbet, G Turker, NK Girgin et al.Combination of Ultra-low Dose Bupivacaine and Fentanyl for Spinal Anaesthesia in Out-patient Anorectal Surgery. The Journal of International Medical Research 2008; 36: 964 – 970.
[6] M Honcaa, N Derelia, E A Koseb et al. Low-dose levobupivacaine plus fentanyl combination for spinal anesthesia in anorectal surgery. Rev Bras Anestesiol. 2015; 65(6):461---465.

[7] B S Bajwa, A P Singh, A K Rekhi. Comparison of intrathecal clonidine and fentanyl in hyperbaric bupivacaine for spinal anesthesia and postoperative analgesia in patients undergoing lower abdominal surgeries. Saudi J Anaesth 2017; 11:37-40.

[8] V Gour, D Verma. Comparative Study of Two Different Doses of Hyperbaric 0.5% Bupivacaine on Saddle Anaesthesia for Perianal Surgeries – A Prospective Study. International Journal of Science and Research (IJSR) 2016; 5(2): 2240- 43.