Original Research Paper

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Anesthesiology

COMPARISON OF POST OPERATIVE ANALGESIA WITH CAUDAL BUPIVACAINE VERSUS BUPIVACAINE + TRAMADOL IN PAEDIATRIC PATIENT UNDERGOING LOWER ABDOMINAL AND PERINEAL SURGERY

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ABSTRACT Pain is a common postoperative symptom impairing the quality of postoperative recovery, delaying discharge from Post-anaesthesia care unit (PACU) or surgical centre. It leads to an increase in the incidence of post-discharge readmissions. It increases overall morbidity and incurs higher costs. Ongoing acute postoperative pain may lead to chronic pain after surgery. Caudal block is a useful alternative/supplement to general anaesthesia and total I.V. anaesthesia as it provides effective post-operative analgesia.Considering the above facts, we have designed a randomised prospective intervention open labelled study using Bupivacaine alone and Bupivacaine plus Tramadol in caudal epidural block in order to assess duration of postoperative analgesia, haemodynamic changes, side effects and degree of sedation.

KEYWORDS : Pediatric Surgery,caudal Bock Bupivacaine, Bupivacaine + Tramadol

AIMS AND OBJECTIVES

1. To compare intra-operative haemo-dynamic parameters.
2. To compare intra-operative or postoperative complications
3. To compare the duration of postoperative analgesia.

MATERIALS AND METHODS

Following the approval by hospital ethical committee, written, informed consent obtained from patient's relatives. Sixty patients, aged 6 month- 6 years, either sex, ASA grade I and II , scheduled to undergo infra umbilical surgery. Patients were randomly assigned into two groups, group B and group BT.

INCLUSION CRITERIA :

Age between 6 month to 6 years, Genders: Both, ASA physical status I, II.

LOWER ABDOMINAL AND PERINEAL ELECTIVE SUR GERY

Duration of surgery not more than two hours Pre-operative assessment of the patient including history, general examination, systemic examination with all required investigations were done a day before operation.

- Patient was advised NBM 6 hours.
- Informed and written consent was taken.
- Baseline vitals were recorded.
- In the operative room ECG, NIBP, SPO2, TEMP., ETCO2 were monitored.
- 24 or 22 gauge intravenous canula was inserted and infusion of Ringer Lactate solution was starded at 10-15 ml/kg/hr.
- All patients were Premedicated with i.v. Inj. Glycopyrrolate 0.004mg/kg, Inj. Ondansetron 0.15mg/kg, inj. Fentanyl 1mcg/kg.
- Preoxygenation with 100% oxygen for 3-5 minutes.
- Induction of anesthesia was done using inhalation method with 50% oxygen and 50 % nitrous oxide with Sevoflurane 2-7%. I gel was inserted.
- Caudal epidural was performed with a 19-gauze paediatric caudal epidural needle under complete aseptic precaution with child in a left lateral position. After confirmation and negative aspiration for blood and CSF, the study drugs were injected. Group BT - 1.0ml/kg of 0.25% Bupivacaine with 1 mg/kg of Tramadol.

- Group B - 1.0ml/kg of 0.25% Bupivacaine.
- The patients were repositioned supine.
- Maintenance of anesthesia: 50%O2 and 50%N2O mixture with Sevoflurane 2-7%.
- Patient's hemodynamic parameters i.e. NIBP, HR, SPO2, ETCO2 Temperature were recorded pre-op, at the time of pre-medication, induction, after caudal and then every five minutes till 20 min and then every 10 minutes till 90 min then at 30 min till surgery ends.
- During surgery adequate analgesia was evaluated by hemodynamic parameters like change in heart rate and systolic blood pressure at +/- 15% of baseline values and requirement of Sevoflurane concentration. An increase in heart rate and systolic blood pressure within 15-20 minute of skin incision was considered as a failure of caudal anesthesia.
- Supraglottic device was removed when patient had established protective airway reflexes with adequate tidal volume and hemodynamic stability.
- Duration of surgery, duration of anaesthesia and peri-operative complications like bradycardia /tachycardia, hypotension /hypertension, respiratory depression, vomiting, nausea were recorded.
- In post-operative period sedation was assessed by using sedation score.
- Postoperative pain was evaluated by using FLACC score (maximum score of 10) at 30 min interval up to first 2 hour ,one hour interval for
- next three hours and thereafter every 2 hours interval till score >4 for 24 hours and rescue analgesic was give.

STUDY END POINTS

- This study involves observation of analgesic efficacy of caudal Bupivacaine alone and caudal Bupivacaine and Tramadol in patients undergoing lower abdominal and perineal surgery. The end point of the study was 24 hours after the completion of the surgery where postoperative pain was evaluated by using FLACC score (maximum score of 10) at 30 min interval up to first 2 hour, one hour interval for next three hours and thereafter every 2 hours interval till score >4 for 24 hours and rescue analgesic was given.

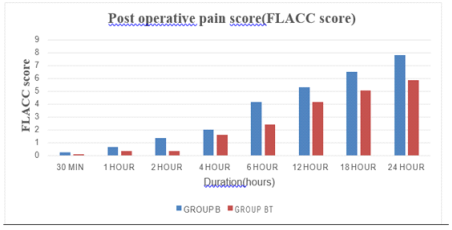
STATISTICAL ANALYSIS

- All observation were recorded and results were analysed statistically. All data were expressed as mean +/- SD. It was done using student's "t" test and Microsoft excel software. Numerical data analysis was done by Graph pad software. P value < 0.05 was interpreted as clinically significant.

RESULT

Time	Group B (N=30)	Group BT (N=30)	P Value
30 min	0.27+0.44	0.1+0.3	0.08
1 hour	0.67±0.47	0.36±0.49	<0.0001
2 hour	1.36±0.61	0.36±0.49	<0.0001
4 hour	2.0±0.0	1.63±0.55	<0.0001
6 hour	4.16±0.37	2.43±0.50	<0.0001
12 hour	5.3±0.59	4.16±0.37	<0.0001

18 hour	6.5±0..86	5.06±0.58	<0.0001
24 hour	7.83±0.74	5.86±0.49	<0.0001



FLACC score1, 2, 4, 6, 12, 18, 24 hours postoperatively. Adding Tramadol significantly reduce the FLACC scores in group BT as compared to group B. Higher FLACC scores were observed in plain Bupivacaine group (group B).

There was statistically significant difference in FLACC scores between group B & group BT ($p<0.05$).

SEDATION SCORE

TIME(Hours)	B group	BT group	P value
1	0.9± 0.3	0.93 ± 0.50	<0.0001
2	0.3 ± 0.46	0.56±0.37	<0.0001
4	0.13 ± 0.34	0.40 ± 0.49	<0.0001
6	0 ± 0	0.2 ± 0.40	<0.0001

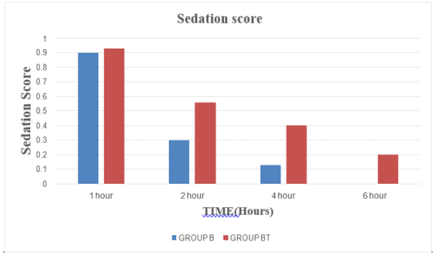
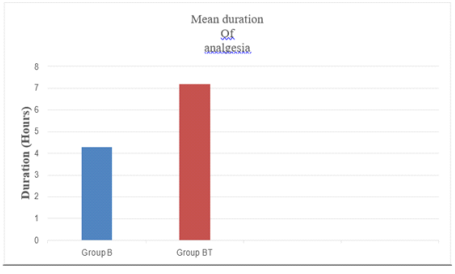


Table shows sedation score in postoperative period. There was higher sedation score in postoperative period in group BT. There was gradual fall in sedation score in both groups.

MEAN DURATION OF ANALGESIA

Mean duration Of analgesia(Hours)	Group B	Group BT	P-value
Mean± SD	4.3±0.56	7.18±0.5	0.03



significantly prolonged by addition of Tramadol to Bupivacaine (group BT) in comparison to Bupivacaine alone (group B). There was statistically significant difference in duration of caudal analgesia between both the groups ($p<0.05$).

DISCUSSION

DURATION OF ANALGESIA

In our study we had used doses of Tramadol 1 mg/kg. **Senel AC, Akyol A, Dohman D, Solak M**[1] compared three groups, group B received 0.25% Bupivacaine 1 ml /kg, group BT received 0.25% plain Bupivacaine plus Tramadol 1.5 mg/kg and group T received caudal Tramadol 1.5 mg/kg in 0.9% sodium chloride in the same total volume (1 ml /kg), for caudal analgesia in paediatric patients .Analgesia time in group BT (13.5+/-2.2 h) was significantly longer than in the other two groups ($P<0.05$).

SEDATION

In our study the period of sedation was slightly higher in children who received Tramadol. Patients were sedated but arousable and the difference is not significant in both groups. **Khalid A et al**[16] and **Naseer Laiq et al**[18] in their study also noted that there was no significant difference in mean sedation score of both groups.

HEMODYNAMICS

In our study, there was no decrease in respiratory rate, fall in SpO_2 and incidence of hypotension. Prosser DP et al[34], S Ozkan et al[26], Nasreen laiq et al[18], also noted that any incidence of respiratory depression and hypotension had not occur.

CONCLUSION

- Addition of Tramadol to caudal Bupivacaine significantly prolo ngs the duration of post-operative analgesia.
- Arousable sedation is seen in Tramadol group.
- Addition of Tramadol does not produce significant hemodynamic fluct uations or major side effects.

Hence, we find Tramadol (1 mg/kg dose) is safe and effective adjuvant to Bupivacaine in paediatric caudal block.

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