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A comparative study between butorphanol and tramadol as adjuvant with epidural bupivacaine for post-operative analgesia after pelvi-acetabular surgery

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ABSTRACT

Background: Epidural analgesia using local anaesthetic agent is popular simple, effective & economical way of providing postoperative analgesia. In few previous study opioids were added with local anaesthetics, so that even small doses can provide profound analgesia of longer duration with less side effects. We compared the efficacy of epidural butophanol with tramadol as adjuvant with bupivacaine, for postoperative analgesia in view of safety profile among opioids.

Materials and Methods: Sixty patients undergoing pelvi-acetabular surgery were randomly assigned into two groups B & T in double blinded fashion. Group B received 2ml Butorphanol (2mg) & group T received 2ml of tramadol(100mg) as adjuvant with 8ml Bupivacaine (0.125%) as first does. 1ml Butorphanol (1mg) in group B & 1 ml Tramadol(50mg) in group T as adjuvant with 9ml Bupivacaine (0.125%) as subsequent does when VAS>4. Quality of analgesia assessed using VAS for 24hours. Duration of analgesia calculated by time of first analgesia request. Post-operative nausea vomiting & sedation compared.

Results: Both butorphanol group & tramadol group provide adequate analgesia but significantly lesser requirement of analgesic doses was observed in the group T compared to Group B. Duration of analgesia in Group B was about 6-7 hour & in Group T was about 8-9 hours. More PONV in Group T & more sedation in group B seen.

Conclusion: Therefore, it suggests that epidural bupivacaine with butorphanol has better quality of analgesia in comparison with bupivacaine with tramadol. Although bupivacaine with tramadol has longer duration of analgesia but causes significant nausea & vomiting.

1. Introduction

Giving absense of pain in postoperative period is the main part of sedative administration, particularly after pelvi-acetabular medical procedure. Postoperative agony lead to different physiological & mental peculiarity & compelling torment control is fundamental for early preparation & postoperative release.[1] Epidural absense of pain utilizing nearby sedative specialist is well known straightforward, viable & prudent approach to giving postoperative absense of pain. Because of brief span of nearby sedatives, narcotics have been added, so that even little dosages can furnish significant absense of pain of longer length with few incidental effects. Butorphanol, a blended agonist-bad guy narcotic & tramadol, a respectably powerful agonist have been utilized for this reason independently in not many studies.[2–4] Combination of butorphanol & nearby sedative has been concentrated on more frequently during

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work in parturients.[5] Narcotics as epidural adjuvant to neighborhood sedatives work on the nature of the block & give a portion saving effect.[6,7] Consequences of past examinations have been shown that intrathecal narcotics improve absense of pain as well as don't draw out recovery.[8–10]

Bharti N & Chari P tracked down quicker beginning & drawn out length of absense of pain subsequent to adding butophanol with bupivacain.[11] Geeta P, Shahveena R et al. found epidural butorphanol give more secure & quicker postoperative analgesia.[12] Kaur J et al. found epidural butorphanol gives essentially delayed postoperative absense of pain contrasted with fentanyl alongside bupivacaine.[13] Fatima N et al. furthermore, Shankar M et al.compared Butophanol with Dexmedetomidine & fentanyl in two separate concentrate as adjuvant to epidural lacal sedative for post employable absense of pain & found epidural butorphanol alongside neighborhood sedative give brilliant relief from discomfort & delayed term of action.[14] Banerjee S et al. in an another report looked at epidural Butorphanol, nalbuphine & fentanyl for post employable help with discomfort & found that butorphanol has longer length absense of pain than fentanyl or nalbuphine.[15] Anyway Babu S. Gupta BK. contrasted epidural Burtorphanol & Nalbuphine as adjuvent with ropivacaine & found ropivacain nalbuphine is more powerful than ropivacaine butorphanol for post employable agony relief.[16]

No review has contrasted the adequacy Epidural Butophanol & Tramadol as adjuvant to bupivacaine for post usable absense of pain in muscular pelvi-acetabular medical procedure. Butorphanol has been demonstrated to have negligible secondary effect profile among opioids.[4] Here, an endeavor has been made to evaluate the adequacy of butophanol in contrast with deeply grounded drug tramadol in blend with normally utilized neighborhood sedative specialist bupivacain careful epidural course for the board of postoperative agony after pelvi-acetabular medical procedure considering wellbeing profile among narcotics.

2. Materials and Methods

After institutional Ethics committee's approval, this Prospective, randomized, double blind study was carried out at Murshidabad Medical College & Hospital, a peripheral Medical College of West Bengal. Total sixty patients of ASA physical status I & II, aged between 18-60 years of both sex undergoing elective pelvi-acetabular surgey(like pelvic bone fracture or acetabular fracture) are included in this study. Selected sixty patients were randomly allocated into two equal groups, Group B (Bupivacaine plus Butorphanol) & Group T (Bupivacaine plus Tramadol). Patient in Group B received Butorphanol 2mg(2ml) plus Bupivacaine 0.125% (8ml), having total volume of 10ml as first dose & subsequent doses, Butorphanol 1mg(1ml) plus Bupivacaine 0.125% (9ml), total volume of 10ml. Where patients in Group T received Tramadol 100mg(2ml) plus 8ml of Bupivacaine 0.125% (total volume of 10ml) as first dose & subsequent doses, 1ml Tramadol 50mg plus 9ml Bupivacaine 0.125% (total volume of 10ml). Drugs were given at epidural space using epidural catheter & surgery was performed under General anaesthesia.

2.1. Exclusion criteria

Patients with ischemic coronary illness, hindered renal & liver capability, respiratory sickness, long haul pain relieving treatment, draining diathesis, skin contamination at back & aversion to concentrate on drugs & so on are barred from the review.

All patients were clinically analyzed in the preoperative period, when entire strategy was made sense of & composed assent acquired. 10 cm visual simple scale (VAS) (0, no torment & 10, most awful agony possible) was additionally made sense of during preoperative visit. All patients are researched for Hb%, tender loving care, DLC, ESR, glucose, urea, serum creatinine & liver capability tests. A 12 lead ECG & chest X-beam were likewise taken.

On entering the patient in the employable room standard intraoperative screens like ECG, beat oxymeter, harmless pulse were appended & benchmark boundary were recorded. Philips intelleview 20 multipara screen utilized for this purpose. The sedative procedure was normalized for all patients. Patients were given premedication with 1mg of Midazolam & 4 mg of Ondensetron intravenously. After skin's penetration with 2%lignocaine, epidural catheter addition was acted in sitting situation through midline approach with the assistance of 16 check Tuohy's epidural needle with avoiding potential risk. Epidural space was distinguished by utilizing loss of obstruction strategy. Test portion given with infusion lignocaine 2% with adrenaline (1:200,000) in the volume of 3 ml given through the epidural catheter to affirm the epidural space. Medical procedure was finished under the standard convention of general sedation. Patient was given 2 μcg/kg fentanyl before acceptance & infusion paracetamol (1gm) in the postoperative period. First portion of epidural given after the activity & resulting dosages are given when VAS score is 4 or 8 hourly. Respiratory rate & example, Pulse & NIBP recorded at like clockwork subsequent to giving review drug in postoperative period. Pin prick test for tactile block, ramsay sedation score for sedation, Visual simple score for torment & Adjusted Bromage scale for engine block are utilized for information assortment. Every one of the information were a uninformed gathered by a spectator of patient's gathering task.

2.2. Statistical analysis

The sample size is calculated based on the previous study taking significant level as 0.05, power as 90% & difference

between mean as 10 & standard deviation is 15, the required sample size is calculated as 25 in each group making the total sample size 50 which is convert to a round figure & the total sample size taken will be 60 with 30 in each group. Randomization will be done with the help of computer generated random number table. Sample was designed as per computerized randomization table.

3. Results

In group B, 22 patients were belongs from ASA grade I & 8 from Grade II, where 24 patients were from ASA grade I & 6 from ASA grade II in group T. Around 66% of patients are male & 33% are female in group B. Where about 73% patients were male & 26% were female in group T. There were no significant differences between the three groups with regard to demographic data such as age, body weight (Table 1). Mean VAS (Table 2) score of both the groups were compared at different point of time after surgery by using independent-t test. Mean difference was significant after 1 hour, 2 hours, 4 hours, 6 hours, 8 hours, & 12 hours. Mean difference was insignificant after 0 min, 30 & 24 hours. Mean duration of analgesia (Table 3) of two groups were compared by independent-t test. The difference is significant with p value of 0.00011. Incidence of nausea & vomiting (Figure 1) recorded 6.66% in Group B & 53.33% in case of Group T people. More Sedation (Figure 2) was seen in butorphanol group compared to tramadol group.

Table 1: Distribution of Age (Years) & Body weight in two groups.

	Group	Mean	Standard Deviation	Significance level
Age	B(Butophanol)	45.53	6.20	
	T(Tramadol)	47.97	7.27	
Body Weight	B(Butorphanol)	55.5	6.62	
	T(Tramadol)	57.3	8.39	

Table 2: Comparison of post-operative visual analogue scale (VAS) score

VAS(Hours)	Group B(mean)	Group T(Mean)	P value	Significance
VAS(0min)	4.37	4.37	0.135	Not significant
VAS(30min)	2,1	2.4	0.088	Not significant
VAS(1hr)	1.57	2.03	0.016	Significant
VAS(2hrs)	1.27	1.87	0.008	Significant
VAS(4hrs)	1.6	2.03	0.016	Significant
VAS(6hrs)	3.2	2.7	0.00014	Significant
VAS(8hrs)	2.37	3	0.00017	Significant
VAS(12hrs)	2.53	2.03	0.018	Significant
VAS(24hrs)	1.71	1.07	0.878	Not significant

Table 3: Duration of analgesia (in Hours) of two groups.

Variable	Group B(Mean)	Group T(Mean)	P Value	Significance
Duration of Analgesia (Hour)	7.03	7.8	0.00011	Significant

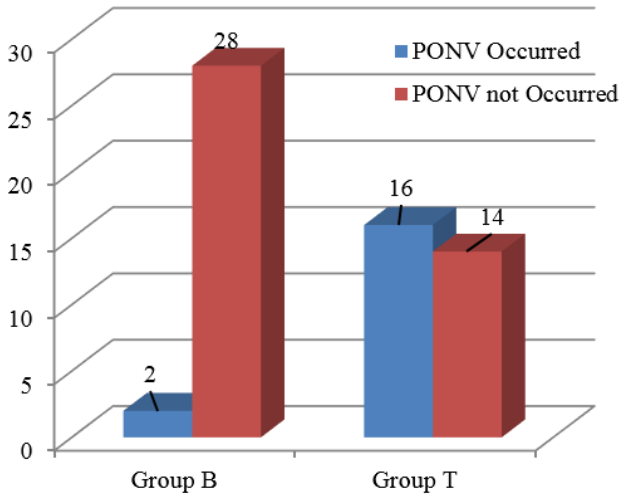

Fig. 1: Comparisonof incidence of nausea & committing between two groups.

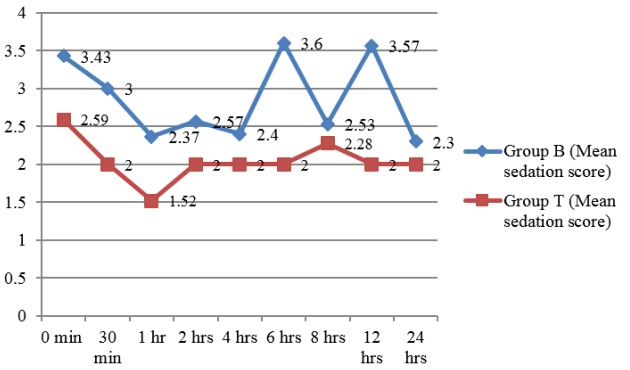

Fig. 2: Comparison sedation score among two groups.

4. Discussion

In our review both bupivacaine with butorphanol & bupivacaine with tramadol give satisfactory absense of pain however fundamentally lesser necessity of pain relieving dosages was seen in the gathering getting bupivacaine & tramadol contrasted with bupivacaine & butorphanol. The ideal opportunity for first solicitation with the utilization of bupivacaine with butorphanol was around 6-7 hour & in the event of bupivacaine with tramadol was around 8-9 hours. Be that as it may, there is increment occurrence of queasiness & retching are found in the gathering getting

bupivacaine & tramadol. Sedation was more in Bupivaine with Butorphanol than Bupivacaine with Tramadol.

Dongare HC, Dongare DH. Tracked down that the span of absense of pain in Tramadol + Bupivacaine was altogether drawn out when contrasted with plain Bupivacaine bunch in pediatric patient Epidura through epidural course.[17] This concentrate emphatically support the discoveries of our concentrate as expansion of adjuvant tramadol to epidural bupivacaine delays the length of absense of pain. Deo GP, Shrestha SK, Shrestha read up epidural butorphanol for post employable absense of pain in lower appendage surgeries. They were partitioned into two gatherings: Gathering B-Butorphanol endlessly bunch T-Tramadol bunch. Span of absense of pain was longer in Tramadol than Butorphanol gatherings. Sedation was fundamentally higher in butorphanol bunch though queasiness & retching was higher in tramadol bunch. Nature of absense of pain as far as quiet fulfillment was better with epidural butorphanol.[18] Aftereffects of this study are completely predictable with the consequences of our review. Swathi N, Ashwini N, Shukla M done a Similar investigation of epidural bupivacaine with butorphanol & bupivacaine with tramadol for postoperative relief from discomfort in stomach medical procedures & found VAS is preferable with butorphanol bunch over tramadol. Beginning of activity is quicker with butorphanol yet term of absense of pain longer with tramadol. Sedation is found in patients with butorphanol group.[19] This concentrate likewise upholds the consequence of our review with all aspects. Pavithra V, Ramani M, Bysani P & Srinivas D. analyzed Caudal Bupivacaine, Bupivacaine with Fentanyl & Bupivacaine with Tramadol for Post Usable Absense of pain. They close expansion of Tramadol to Bupivacaine gives drawn out & great quality post employable absense of pain in examination with Bupivacaine alone or with Fentanyl in Caudal Block in the post usable period.[20] This concentrate somewhat upholds our review.

Nageswararao P, Venugopalan B, Seetharamaiah S Looked at Epidural, Bupivacaine with Butorphanol & Bupivacaine with Fentanyl In Lower Appendage Medical procedures & reasoned that Butorphanol & Fentanyl altogether enlivens the beginning & drags out absense of pain. Beginning is quick with Bupivacaine with Fentanyl blend contrasted & Bupivacaine with Butorphanol mix. Bupivacaine with Butorphanol give more powerful & longer term of absense of pain as contrasted & Bupivacaine with Fentanyl.[21] This concentrate likewise upholds the discoveries of our review to some extent.Reddy RI, Aasim S, Komravelli K Looked at Viability of Sedation & Absense of pain between Intrathecal Fentanyl & Butorphanol with Bupivacaine & found that Intrathecal bupivacaine-butorphanol combination gives longer length of tactile barricade & unrivaled absense of pain than intrathecal fentanyl-bupivacaine mixture.[22] Results this study goes with the consequence of our study.Shankar KA, Puri R & Goel JK direct a concentrate on Butorphanol-bupivacaine versus Fentanyl-bupivacaine for Extradural Absense of pain during Work. They found that Butorphanol & fentanyl when utilized in blend with 0.1% bupivacaine are compelling, offer great patient fulfillment & are tantamount in labor absense of pain. However more patients were calmed in the butorphanol bunch.[23] The outcome is against the utilization of butorphanol as adjuvant for post employable absense of pain.

The consequences of our review are predictable with exploratory proof of synergistic collaboration between epidural narcotics & nearby sedatives, which are portrayed by improved substantial absense of pain without the impact on degree of neighborhood sedative initiated thoughtful or engine barricade. The synergism between epidural narcotics & neighborhood sedative is because of the medications separate instrument of activity, barricade of Na+ channel by nearby sedatives & voltage gated Ca++ channels with narcotics. The blend of narcotics with nearby sedatives help to decrease the portions of LA, in this way diminishing the probability of secondary effects. It is seen that bupivacaine with butorphanol has better nature of absense of pain. Sedation is found in the butorphanol bunch, none of the patient in two gatherings had respiratory melancholy. None of the patients announced PDPH or TNS. We likewise perceive the way that the wide fluctuation in the age of the patients remembered for the review is a perplexing component corresponding to impression of torment, as torment discernment shifts for different age gatherings. Further examination can be required at finding the negligible potential portions of epidural butorphanol or tramadol.

5. Conclusion

It is observed from this study that bupivacaine with butorphanol has better quality of analgesia in comparison with bupivacaine with tramadol. Although bupivacaine with tramadol has longer duration of analgesia, it causes significant nausea & vomiting. So, epidural bupivacaine with butorphanol is more superior & effective than epidural bupivacaine with tramadol for postoperative analgesia after pelvi-acetabular surgery.

6. Conflict of Interest

There are no conflicts of interest in this article.

7. Source of Funding

None.

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