



COMPARATIVE STUDY OF EPIDURAL BUTORPHANOL AND EPIDURAL TRAMADOL FOR POST OPERATIVE ANALGESIA

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Conflicts of Interest: Nil

ABSTRACT:

Introduction: Postoperative pain may raise various psychological and physiological phenomenon that effective pain control vital for early mobilization and postoperative discharge. In major surgeries cases, Postoperative analgesia is the most important aspect of anesthesia. In such cases which cause severe pain which if treated inadequately causes atelectasis of lungs, shallow breathing. Hence secretions of retention and more time will be required in ambulation. This may increases incidence of postoperative morbidity which leads to delayed recovery. Using local anesthetic agent as Epidural analgesia is popular simple, effective and economical way of providing postoperative analgesia. opioids have been added due to short duration of local anesthetic so that even small doses can provide extreme analgesia of good duration with less side effects. With addition of opioids in Local anesthetics increase the duration of analgesia reducing frequent supplementation of drugs. Therefore there is less frequency of systemic side effects and reduction in dosage attributable to each. Pethidine and Morphine remain the standard opioids which are used for postoperative pain. However they are related with delayed respiratory depression and abuse potential. Mixtures of agonistantagonist opioid and tramadol hydrochloride a moderately potent opioid agonist have been used in both for this purpose separately in few studies.

Aim of study: The main objective of this study is to the effectiveness of butorphanol and tramadol as postoperative analgesics.

Material and Methods: The present study was carried out in the department of anaesthesia at Prakash Institute of Medical Science and Research Urun-Islampur Maharashtra. All patients which undergoing surgeries were included in this study. Total 60 paediatric patients were included in this study with the age range from 15 years to 60 years. Aseptic precautions were taken to the patients when epidural needle was introduced and space identified using loss of resistance to air technique. spinal anaesthesia were given to all patients for the surgical procedure one space lower than the insertion site of epidural catheter using 25G spinal needle and 2.5-3ml of heavy bupivacaine 0.5% was given. Sensory and motor effects were also checked.

Result: According to age, sex, sensory level attain during spinal anaesthesia and duration of surgery where two groups were compared. Among postoperative parameters mean systolic and diastolic blood pressure and pulse rate decreased significantly ($p < 0.05$) when compared with the time intervals during 0 hours and 24 hour period in both the groups, however on intergroup comparison the difference was not found statistically significant ($p > 0.05$). Mean duration of analgesia was significantly higher ($p < 0.05$) in group II when compared with 2mg butorphanol. Out of 30 patients in group II 3patients Nausea and vomiting was seen which was found significant statistically from group I i.e. butorphanol group where no patient had such problem. Out of 30 patients in group I (butorphanol) 27 patients and 15 patients from group II (tramadol) had sedation which was highly significant.

Conclusion: Epidural butorphanol has better quality of analgesia (VAS) as compared to tramadol in which shorter duration and sedation are major disadvantages. Although Butorphanol has shorter duration

of analgesia but has better pain relief as compared to tramadol. Therefore more prospective studies are required in order to recommend any drug as useful supplement for increasing post operative analgesia.

Keywords: Post-operative, Pain, Epidural, Butorphanol, Tramadol,

Introduction

In major surgeries cases, Postoperative analgesia is the most important aspect of anesthesia. In such cases which cause severe pain which if treated inadequately causes atelectasis of lungs, shallow breathing. Hence secretions of retention and more time will be required in ambulation. This may increase incidence of postoperative morbidity which leads to delayed recoveryⁱ. Postoperative pain may raise various psychological and physiological phenomenon that effective pain control vital for early mobilization and postoperative dischargeⁱⁱ. Because of this analgesia are considered to be the safest and cost-effective method for relieving the postoperative pain. Local anesthetics as epidural analgesia using as which provides good pain relief in the perioperative periodⁱⁱⁱ. Using local anesthetic agent as Epidural analgesia is popular simple, effective and economical way of providing postoperative analgesia. opioids have been added due to short duration of local anesthetic so that even small doses can provide extreme analgesia of good duration with less side effects. With addition of opioids in Local anesthetics increase the duration of analgesia reducing frequent supplementation of drugs. Therefore there is less frequency of systemic side effects and reduction in dosage attributable to each. Pethidine and Morphine remain the standard opioids which are used for postoperative pain. However they are related with delayed respiratory depression and abuse potential^{iv}. A mixture of agonist-antagonist opioid and tramadol hydrochloride a moderately potent opioid agonist have been used in both for this purpose separately in few studies^{v,vi}. There is no studies which has been compared the efficacy of the combination in major surgeries which is a cause of morbidity in hospital admissions. Butorphanol was proved to have minimal side effect among opioids^{vii}. The main objective of this study is to the effectiveness of butorphanol and tramadol as postoperative analgesics.

MATERIAL AND METHOD:

The present study was carried out in the department of anaesthesia at Prakash Institute of Medical Science and Research Urun-Islampur Maharashtra. All patients which undergoing surgeries were included in present study. Total 60 paediatric patients were included in this study with the age range from 15 years to 60 years. From all the patients for the records of data as documentation was collect by physical examination, past and present history and medical assistance and investigation were taken through pre-anesthetic check-up and routine investigations were carried out before the surgery. Patients with sepsis, bleeding tendency, spinal deformity, suffering from asthma, neurological disorders, cardiac, respiratory, renal, hepatic and CNS diseases and hypersensitivity to local anesthetics were excluded in this study. Randomly patients were divided one of the two groups of 30 patients each. Patients were carrying out the observation and blinded to drug solution injected. With the help of two separate syringes of 10 ml and 20 ml the drug solution was prepared. Patients were explained about linear visual analogue score (VAS) using 11 centimeter line in which 0 denoted "no pain" while 10 "worst pain imaginable". Tablet alprazolam 0.25 mg orally was given on day of surgery 2 hours prior and were were reassessed in the preanaesthetic room. Blood pressure (BP), Heart rate (HR) and peripheral arterial oxygen saturation (SpO₂) were read as baseline.

Aseptic precautions were taken to the patients when epidural needle was introduced and space identified using loss of resistance to air technique. spinal anaesthesia were given to all patients for the surgical procedure one space lower than the insertion site of epidural catheter using 25G spinal needle and 2.5-3ml of heavy bupivacaine 0.5% was given. Sensory and motor effects were also checked.

For postoperative period, patients were given high doses from 20 ml syringe on having pain of

VAS>4. In some case where more doses were needed supervisor provided additional doses filled in 20 ml syringe according to group.

Increasing of doses in timing interval between injections was given in 24 hours were recorded. If analgesia was found minimal even after two

consecutive epidural doses which are given at 20-30 minutes aside, patients were given diclofenac sodium 75 mg intramuscularly as rescue analgesia.

OBSERVATIONS AND RESULTS:

Table 1: Distribution of patients with two groups

	Group I	Group II
Age (years) (mean+SD)	37.2±12.7	36.6±12.9
Sex (F:M)	6:24	5:25
Durationofsurgery(min)(mean+SD)	2.7±0.4	2.5±0.4
Sensory level (mean+SD)	T9.29±1.5	T9.44±1.4

According to age, sex, sensory level attain during spinal anaesthesia and duration of surgery where two groups were compared as shown in above table.

Table 2: Duration of Analgesia

	Group I	Group II
Duration of analgesia (hrs)	5.35±0.29	6.25±1.58*

Data are mean±SD, * statistically significant (p<0.05)

Among postoperative parameters mean systolic and diastolic blood pressure and pulse rate decreased significantly (p<0.05) when compared with the time intervals during 0 hours and 24 hour period in both the groups, however on intergroup comparison the difference was not found statistically significant (p>0.05). Mean duration of analgesia was significantly higher (p < 0.05) in group II when compared with 2mg butorphanol as shown in above table.

Table 3 Comparison of Number of Epidural dosages required to produce Analgesia over 24 Hours in two groups.

No. of epidural dosages	Group I(No. of patients)	Group II (No. of patients)
2	3	2
3	4	18
4	23	10

**Highly significant (p <0.001)

In group I butorphanol majority of the patients required 4 dosages while in group II tramadol 3 dosages were required for pain relief and difference was highly significant statistically(p<0.001) as shown in above table. There is no patient in group I (butorphanol) required rescue analgesia in group II tramadol required rescue analgesia.

Table4 Postoperative Side Effects

Side effects	Group I(No. of patients)	Group II (No. of patients)
Nausea & Vomiting	-	3*
Sedation	27**	15
Pruritis	-	-
Bradycardia	-	-
Hypotension	-	-
Respiratory depression	-	-

*Significant (p<0.05)

**highly significant (p<0.001)

Out of 30 patients in group II 3 patients Nausea and vomiting was seen which was found significant statistically from group I i.e. butorphanol group where no patient had such problem. Out of 30 patients in group I (butorphanol) 27 patients and 15 patients from group II (tramadol) had sedation which was highly significant.

DISCUSSION:

Still postoperative pain Management poses a lot of challenges to anesthetists even after all efforts have been taken to make the intra-operative period pain free. Both humanitarian and therapeutic reasons Pain relief is necessary. Intolerable pain can have physiological effects in the postoperative period. The roles of epidural and subarachnoid opioids for the relief of postoperative pain introduce a new platform in recent times. In a search in Medicine for pertinent articles on epidural anesthesia Epidural has been signify to improve postoperative outcome and lessen the physiologic response to surgery^{viii}. Prime concern for anaesthesiologists effective pain control is essential which has been recognized. For postoperative pain control Epidural route is used extensively. It combines advantages of both spinal and epidural technique by initially providing intense motor block and sensory of rapid onset. The epidural catheter can be used to provide post operative pain relief after the surgical procedure and regression of spinal analgesia^{ix}.

According to study of Abboud TK et al found an analgesia lasting 5.53 ± 0.86 hours and 8 hours respectively with epidural butorphanol^x. Studies by Sayyid S et al^{xi} and Rathie P et al^{xii} on epidural tramadol (100 mg) for postoperative pain relief found duration of analgesia to be 4.5 ± 3.1 hours and 10.26 ± 2.73 hours respectively which is different to this study because of the difference in the type of surgery or may be due to addition of local anaesthetic agents used as drug. The significant observed of decreased in mean systolic and diastolic blood pressure and pulse rates from the baseline seen in both the groups which could be due to increased initial values because of pain (VAS -4) significantly reduced after effective analgesic action of drugs.

According to studies of Rawal H et al^{xiii} shows that decreased VAS scores with epidural tramadol 100 mg as compare to this study and Palacios Q et al^{xiv} found decreased VAS with epidural butorphanol which is similar to this study.

CONCLUSION:

In this study main side effects as nausea, vomiting with tramadol and mild sedation in butorphanol group which was considered desirable rather than a side effect. Epidural butorphanol has better quality of analgesia (VAS) as compared to tramadol in which shorter duration and sedation are major disadvantages. Although Butorphanol has shorter duration of analgesia but has better pain relief as compared to tramadol. It also caused less nausea and vomiting and slight sedation which was rather advantageous. Whereas in tramadol there is longer duration of analgesia with no sedation, more nausea and vomiting was observed. Therefore more prospective studies are required in order to recommend any drug as useful supplement for increasing post operative analgesia.

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