

Original article:

Use of Meperidine for Saddle Block Anaesthesia in Perineal Surgery

Patients

Dr. Gurdeep Singh Jheetay

Associate Professor, Department of Anaesthesia, Shri Guru Ram Rai Institute of Medical & Health Sciences, Dehradun, Uttarakhand, India.

Corresponding Author: Dr. Gurdeep Singh Jheetay, Associate Professor, Department of Anaesthesia, Shri Guru Ram Rai Institute of Medical & Health Sciences, Dehradun, Uttarakhand, India.

Abstract:

Introduction: Principle of preemptive analgesia suggests that analgesic medication should be administered before onset of pain stimulus rather than after onset of pain stimulus. Pethidine has been found effective as general anaesthetic drug along with it is equally effective as analgesic drug in labour cases when it is administered in lower doses. Therefore, the present study was designed to observe time duration of analgesic and side effects of saddle block with meperidine.

Materials and Methods: This was a cross sectional type of study which was conducted at Department of Anaesthesia, Shri Guru Ram Rai Institute of Medical & Health Sciences, Dehradun from September 2011 to January 2012. This study included seventy five patients enrolled for anorectal surgery on the basis of physical status classified by American Society of Anaesthesiologists.

Results: All the patients both male (45) and female (30) included in the study had a mean age 40.4 ± 14.6 SD (standard deviation). Results of the present study shows that there was more than 10 hours duration of analgesia without any additional analgesic drug either oral or injection form in 80% (60) patients. Among total 75 patients, 20% (15) patients showed analgesic effect less than 10 hours whereas analgesic effect was sustained more than 12 hours in 16% (12) patients. Participants of the study did not show any type of alteration in hemodynamic as well as vital signs. Respiratory depression was not observed in any patients during and 24 hours after surgery.

Conclusion: Findings of the current study suggest that pethidine was effective in prolonging painless duration after surgery. Moreover, it does not induce any type of side effects or hemodynamic alteration in the patients. Therefore, we conclude that low dosage of pethidine injection (30mg) for saddle block anaesthesia for perineal and anorectal surgeries should be used.

Key words: Pethidine, Anorectal Surgery, Anaesthetic Duration, Complications.

Introduction

Principle of preemptive analgesia suggests that analgesic medication should be administered before onset of pain stimulus rather than after onset of pain stimulus. It is known as considerably effective among other forms of analgesia; however, role of this anaesthesia in postoperative pain amelioration is not well understood.¹ Various anaesthetic agents or drugs like lidocaine, tetracaine etc have been used for general anaesthesia. Uses of spinal anaesthesia in patients of inguinal surgery with high risk like obesity, cardiovascular diseases and old age may lead to damage. Whereas, local anaesthesia may be beneficial compared to general anaesthesia as it does not interfere with the vital systems of the body.² Study has shown that anaesthetic blockage duration caused by various drugs are lidocaine 55-60 minutes, tetracaine 60 to 90 minutes and bupivacaine up to 90 minutes.²

Pethidine the drug belonging to the opioid family is one of the important anaesthetic agents used clinically for spinal as well as local anaesthesia. Pethidine has been found effective as general anaesthetic drug along with it is equally effective as analgesic drug in labour cases when it is administered in lower doses. Nevertheless, it is one of the important challenges to identify an ideal technique to increase the duration of anaesthesia along with decreasing the ailments as well as complications of the anaesthetic drugs.³

Meperidine is used as general anaesthetic drug along with various complications; however, it contains properties of local anaesthesia.^{4,5} Administration of 1mg/Kg does of meperidine injection in the intrathecal may induce the duration of motor and sensory nerves blockage in patients of surgery of perineum, lower limb and lower abdomen. Moreover, postoperative analgesic effect of meperidine was longer.⁷

Several studies have recorded successful use of meperidine in diverse surgical procedures with very few complications like nausea, vomiting, pruritus and hypotension. Further, they observed prolonged analgesic effects of meperidine along with few complications and side effects.⁷⁻¹⁰

On the other hand some studies showed that intrathecal meperidine has few haemodynamic effects.⁸⁻¹¹ Therefore, the present study was designed to observed time duration of analgesic and side effects of saddle block with meperidine.

MATERIALS AND METHODS

This was a cross sectional type of study which was conducted at Department of Anaesthesia, Shri Guru Ram Rai Institute of Medical & Health Sciences, Dehradun from September 2011 to January 2012. This study included seventy five patients enrolled for anorectal surgery on the basis of physical status classified by American Society of Anaesthesiologists.¹² All the patients prepared for perineal surgery and willing to take part in the study were included in this study. Whereas, patients suffering from cardiopulmonary diseases and the patients who did not fulfilled the criteria according to American Society of Anaesthesiologists (ASA) as class I and II candidates for perineal surgery were excluded from the study. The clinical examination was done of each patient and extensive study of medical history of all the patients were done before they recruited for the study.

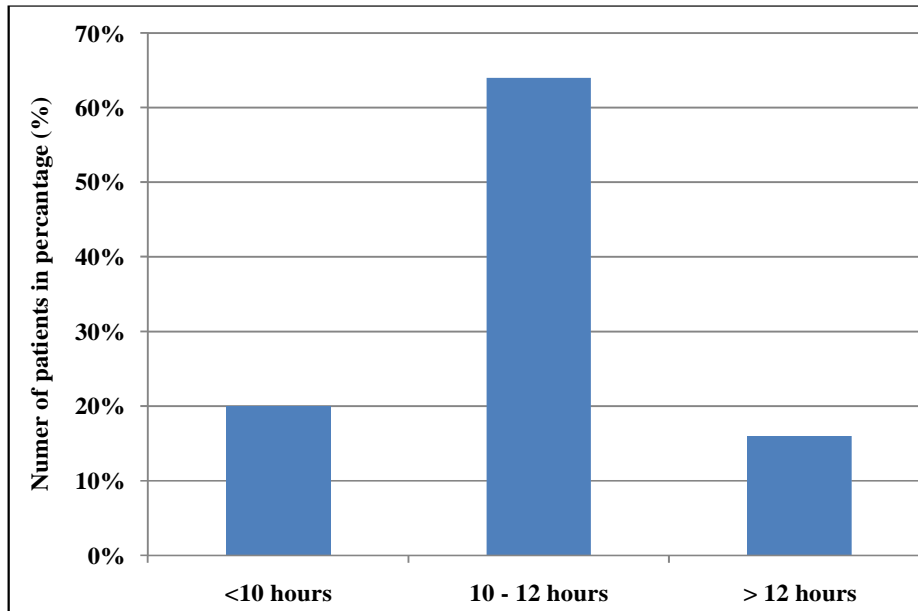
All the patients were on overnight fasting when they were prepared for the surgery. All the patients received crystalloid solution (500 ml) before anaesthesia. 5% Meperidine does as per weight of patients was injected with a 24 gauge spinal needle in subarachnoidal space of L3-L4 or L4- L5 vertebra. Patient was asked to sit in supine position at the time injecting the meperidine in lumbar vertebra. After injecting the pethidine patient was asked to stay in supine position for next 5 minutes to stabilize the drug. Then cardiac parameters of the patient was recorded followed by lying in lithotomy position. Evaluation of anaesthesia was done by touching, pricking pins and pinching the patient. Visual Analogue Score of Facial Expression (0: no pain, 1-3: mild pain, 4-7: moderate pain, >7: high pain) was used to determine the degree of pain. All the patients did not receive any medicine before surgery and post-surgery stage. Patients were kept under observation for 48 after surgery and vital signs , ECG and pulse-oximetry were recorded time to time. Classification of sphincter tone was determined under three categories normal, intermediate and bad. Statistical analysis was done with SPSS V.32 manufactured by USA.

RESULTS

All the patients both male (45) and female (30) included in the study had a mean age 40.4 ± 14.6 SD (standard deviation).

Results of the present study shows that there was more than 10 hours duration of analgesia without any additional analgesic drug either oral or injection form in 80% (60) patients. Among total 75 patients, 20% (15) patients showed analgesic effect less than 10 hours whereas analgesic effect was sustained more than 12 hours in 16% (12) patients. (Fig 1)

Fig 1: Distribution of patients according to the duration of analgesia after surgery.



Results of the current study revealed that 80% (60) patients were painless whereas, 12% (9) patients and 8% (6) patients complained at incision mild and moderate degree pain correspondingly. However, severe degree of pain was not recorded in any patients participated in the study.

Urinary retention was observed in 51.11% (23) male subjects for initial 12 hours after the surgery. Among total 45 male patients 4.44% (2) patients were needed for the catheterization. However, no complaint of urine retention was recorded in female patients. Further, none of the patients showed any spinal canal block complications like backache, nausea, vomiting, headache and arrhythmia.

Participants of the study did not show any type of alteration in hemodynamic as well as vital signs. Respiratory depression was not observed in any patients during and 24 hours after surgery.

DISCUSSION

Intrathecal opioids are considered as well established anaesthetic agents for postoperative pain.¹³ Nonetheless, investigators have shown interest in using meperidine an opioid as the intrathecal anaesthetic drug.^{14,15}

Studies have shown that saddle block anaesthesia with meperidine is associated with various adverse effects like hypoxia, tachycardia, hypotension and bradycardia for 20 to 30 minutes after administration of meperidine. However, these adverse effects can be restored to normal by administering artificial ventilation and pressure medicines.¹⁴⁻¹⁶

Findings of the present study have shown that only 2 patients (4.44%) complained neurological complications. These findings were similar to the findings of the previous study of Acalovaschi I et al¹⁷ in which they recorded postoperative neurological complications in three patients (2.7%).

Mircea N et al¹⁸ used a prolonged anaesthetic agent on patients in their study. They recorded a significantly increased painless duration during postoperative time. However, they observed various types of the side effects like urinary retention (two patients), hypotension (five patients), vomiting (six patients) and pruritus (five patients). In addition they did not record any respiratory distress in postoperative patients.

On the other hand, use of the postoperative length of analgesia in the present study was satisfactory. Investigators suggest that pain in post-operative patients may lead to damage of respiratory functions which may in turn cause infections and discharge.

Findings of the present study showed that there were 80% (60) patients painless whereas, 12% (9) patients and 8% (6) patients complained at incision mild and moderate degree pain correspondingly. Choudhry LS et al conducted a comparative study on intrathecal lignocaine vs intrathecal pethidine as an anaesthetic agent for perianal surgery. They observed 90% patients of pethidine group did not require intramuscular analgesic supplementation; while, 30% patients of lignocaine group needed intramuscular analgesic supplementation.

In addition Ong B et al²⁰ in their study in Canada observed that use of intrathecal meperidine as an anaesthetic drug fulfils two aspects, first as surgical anaesthesia and second as postoperative analgesia for more than 8 hours. Further, they recorded respiratory distress in two patients who got meperidine as spinal anaesthetic drug. Therefore, they suggested respiratory variables of the patients should be monitored in post-operative patients at least for four to six hours.

Few investigators suggested that regional anaesthetic technique (saddle block) may induce stress response in patients of anorectal surgery as it blocks afferent neural input.²¹

A combination bupivacaine – fentanyl have been found effective in controlling pain during and after surgery. However, relatively short duration of analgesic properties of this combination is one of the most important shortcomings of this technique.²²

However, Booth JV et al tested the hypothesis that duration of analgesia is significantly increased by meperidine in comparison of bupivacaine-fentanyl combination. They recorded that meperidine was more effective in prolonging post-operative analgesia compare to bupivacaine-fentanyl. Though, they had to discontinue the study due higher rate of side effects especially nausea and vomiting in patients of meperidine group.²²

Results of the current study showed that 20% patients complained mild to moderate degree pain at the location of incision. Severe degree of pain was not recorded in any patients participated of the study. Further, no side effects like nausea, vomiting and headache were recorded in any participants of the present study. Similarly, Ehikhametalor KO et al⁶ observed a significantly high incidence of complications in lidocaine- glucose group compare to pethidine group. However, prevalence rate of headache, nausea and vomiting were same in both groups.

In contrast to the present study Sia AT et al recorded an insignificant difference between the complications of intrathecal bupivacaine group and intrathecal pethidine group.²³

Current study did not observe respiratory distress in any participant. These results are opposite to the earlier studies of Thomas et al²⁴ and Martindale et al²⁵ in which they recorded drowsiness and depression as common complications of meperidine.

Grace D et al showed that pethidine drug has been found effective in providing longer painless duration after surgery without any remarkable side effects. Similarly, Mircea N et al²⁷ recorded there was no side effects in 90% patients of pethidine group patients. Moreover, they did not observe respiratory distress in any patients.

Findings of the current study recorded that hemodynamic and vital sign of all the patients were intact. Moreover, none of the patients complained of respiratory distress after surgery. These findings are very similar to the findings of the earlier studies of Yokoyama et al²⁸ in which they did not observed any side effects or respiratory distress in patients after administrating meperidine.

CONCLUSION

Findings of the current study suggest that pethidine was effective in prolonging painless duration after surgery. Moreover, it does not induce any type of side effects or hemodynamic alteration in the patients. Therefore, we conclude that low dosage of pethidine injection (30mg) for saddle block anaesthesia for perineal and anorectal surgeries should be used.

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