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Original Research Paper

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EFFICACY OF POST-OPERATIVE ANALGESIC MONOTHERAPY REGIMENS IN PATIENT OPERATED FOR INGUINAL HERNIA-A HOSPITAL BASED OBSERVATIONAL STUDY

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ABSTRACT Postoperative pain management after open inguinal hernia surgery faced by healthcare physicians is a major issue on a routine basis. The purpose of this study to find out the analgesic efficacy of the drugs administered to patients operated for inguinal hernia. It was three months; prospective observational study in patients underwent open inguinal hernia surgery. A total of 33 patients operated for open inguinal hernia were enrolled. Each patient was randomly received the analgesic drug treatment and was grouped as parecoxib treated (NSAIDs COX 2 inhibitor), pethidine treated (opioid analgesic) and acetaminophen treated (analgesic and antipyretic). The analgesic mono-therapy of parecoxip and pethidine were found to be of equivalent efficacy. In contrast, patient treated with the mono-therapy of acetaminophen had higher Visual Analog Score (VAS) score. Parecoxib sodium was well tolerated in all patients and rated parecoxib as well as pethidine as either good or excellent analgesic monotherapy. The study observed that the parecoxib compares favorably with pethidine and parecoxib can be suggested as significant and useful component of postoperative pain control in hernia surgery.

KEYWORDS : Parecoxib, Pethidine, Acetaminophen, Post-operative inguinal hernia repair

INTRODUCTION

Pain is an unpleasant sensory and emotional experience. It is a subjective experience consisting of two complementing elements: a localized feeling in a specific body area and an unpleasant quality of different severity that is frequently linked to actions meant to alleviate or end the experience.

Pain and other sensory modalities share a lot of similarities. There are particular pain receptors, to start. These nerve terminals are present in most body tissues and only react to stimuli that are toxic or potentially hazardous. Second, the messages that these unpleasant stimuli start send to the spinal cord are carried by certain, recognized nerves.

The primary afferent nociceptor is the collective name for the nerve that is linked to the tissue and the sensitive nerve ending located within it. The primary afferent nociceptor contacts second-order pain-transmission neurons in the spinal cord.

The brain stem reticular formation, thalamus, somatosensory cortex, and limbic system are among the higher centers to which the second-order cells transmit the message via clearly defined pathways. It is believed that the thalamus and cortex play a major role in the processes that underlie pain perception(Osterweis et al., 1987).

Postoperative pain management aims to lessen the adverse effects of immediate postsurgical pain and facilitate the patient's seamless return to normal activity. Opioid analgesic therapy has long been the cornerstone of care for immediate postoperative pain. This activity explores the significance of optimized postoperative pain control in improving immediate outcomes, reducing hospital stays, and enhancing overall patient satisfaction.

The health care professional enhances its competence in navigating the complexities of postoperative pain management, ultimately contributing to superior patient care and outcomes. NSAIDs and Opioid analgesic are widely used in postoperative pain management(Rachel Horn, Joesph Maxwel Hendrix, Jeremy Kramer, Postoperative Pain Cntrol': 2024 Jan, n.d.).

Parecoxib, also known as valdecoxib, is a selective COX-2 inhibitor with antipyretic, analgesic, and anti-inflammatory effects. It inhibits prostaglandin synthesis by lowering COX-2 activity, which results in less prostaglandin precursor generation.

Pethidine functions as an agonist at the -opioid receptor to provide its analgesic effects. The anti-shivering effects it evokes may also be due to its agonistic -opioid receptor activation.

Paracetamol, often known as acetaminophen, is a mild inhibitor of prostaglandin production(PGs). Nonetheless, paracetamol's effects in vivo are comparable to those of selective COX-2 (cyclooxygenase-2) inhibitors.

The present study conducted to find out the postoperative analgesic efficacy drug profile of parecoxib, pethidine and acetaminophen in patients operated for inguinal hernia.

AIM

This clinical study was designed to demonstrate the analgesic efficacy of analgesic monotherapy of Intravenous Parecoxib, Intramuscular Pethidine and Intravenous acetaminophen in the setting of open inguinal hernia surgery.

MATERIALS AND METHODS

Design Of Study

The study was conducted in Government Cuddalore Medical

College and Hospital, Chidambaram. It was three months, prospective observational study in patients operated for inguinal hernia. All the patients operated for inguinal hernia during the period of three months were recruited. Total 33 patients were enrolled in the study. Each patient was randomly assigned the analgesic drug treatment and was grouped as parecoxib treated, pethidine treated and acetaminophen treated.

Parecoxib group: Patients in this group were administered parecoxib 40 mg intravenously as single dose. Out of total number of patients enrolled in study, 13 patients were included in this group. Pethidine group: Patients in this group were administered pethidine 50 mg intramuscular as single dose. Out of total number of patients enrolled in study, 12 patients were included in this group. Acetaminophen group: Patients in this group were administered acetaminophen 1g intravenously as single dose. Out of total number of patients enrolled in study, 8 patients were included in this group.

Inclusion Criteria

The study included all male patients over the age of 18 who underwent inguinal hernia surgery and experienced pain measuring at least 45 mm on the visual analog scale (VAS) or categorized pain intensity of moderate to severe type within 6 hours of waking up from anesthesia.

Exclusion Criteria

Non-inguinal hernia patients who underwent surgery were not taken into consideration. Individuals who have previously experienced gastric, pyloric, duodenal, or gastrointestinal bleeding were not accepted. Individuals who had previously experienced hypersensitive reactions to any analgesic medication, opiates, COX-2 specific inhibitors, or NSAIDs were excluded.

Post Operative Pain Assessment

Onset of Analgesia: The investigator watched each patient for the first hour to see when analgesia started. The patient was asked to indicate the point at which the drug's pain-relieving effects became noticeable.

Duration of Analgesia: This was ascertained by computing the interval between the delivery of the investigational medication and the recurrence of surface discomfort. When the patient reported that the surface discomfort had returned, the time was recorded.

Pain Intensity Assessment

Pain intensity was assessed as score on visual analog scale (VAS) as indicated by patients.

Visual Analog Scale (Vas)

This scale was plotted as 10 cm horizontal line and denoted as severe pain as '10' cm and no pain as '0' cm. Patient was explained about this scale and performed to point out pain intensity according to him at each time interval. This was performed postoperatively before administration of analgesic study drug to assess patient's baseline pain intensity. It was also performed at 4, 10, 16 and 24 hours after administration of study drug during the study period. From these measurements, pain intensity difference (PID) was calculated by subtracting pain intensity at each interval from baseline pain intensity.

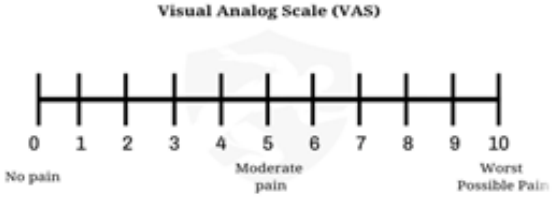

Figure-1: Visual Analog Scale Used For Pain Assessment.

Result

Patient Characteristics

In total 33 patients fulfilled the study criteria and were enrolled. The patient's demographic data are shown in Table 1.

Table-1: Patients Demographic And Preoperative Data.

	Parecoxib	Pethidine	Acetaminophen
Number of patients (n)	13	12	8
Males/ Females (n)	13/0	12/0	8/0
Mean age (years)	53 (35-65)	51 (34-65)	46 (36-56)
Hospitalization days	1	1	1
Intraoperative complications (n)	0	0	0
Dosage	40mg IV	50mg IM	1g IV

Post Operative Pain Assesment

The mean VAS for patients that were treated with IV parecoxib were 5.51 at 4 hours, 5.10 at 10 hours, 4.24 at 16 hours and 3.53 at 24 hours. The mean VAS for patients that were treated with IM pethidine were 5.66 at 4 hours, 5.33 at 10 hours, 4.40 at 16 hours and 3.89 at 24 hours, while the mean VAS for patients that were treated with only IV acetaminophen 6.98 at 4 hours, 6.23 at 10 hours, 5.89 at 16 hours and 4.40 at 24 hours (Figure 1). The VAS of acetaminophen monotherapy was significantly higher than those pethidine and parecoxib, while there was no significant difference between patients of parecoxib and pethidine.

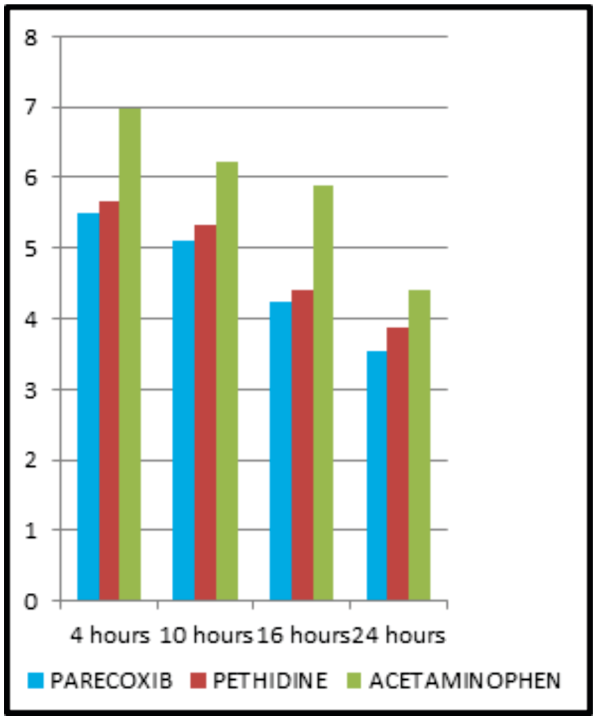

Figure-2: Mean VAS Between Patients Treated With Parecoxib, Pethidine And Acetaminophen Based On Time.

DISCUSSION

Despite increased knowledge in physiology, pharmacology and anesthesiology, it is difficult to predict which patient will experience severe postoperative pain. The percentage of patients dissatisfied with postoperative analgesia has remained constant for the last 20 years about 60%(Zende & Bhosale, 2013).

Pain is determined not only by the characteristics of the noxious stimulus, but also by cognitive and behavioral

factors. Next, there is significant inter individual variability due to psychological profiles of previous pain experiences, memory and context of occurrence.

Pain is one of the most important postoperative side effects. Single pain relievers, whether opioids or NSAIDs, cannot provide effective pain relief without side effects such as nausea, vomiting, sedation or bleeding(Zende & Bhosale, 2013).

Reducing drowsiness, poor pulmonary function, and constipation in patients following surgery is highly dependent on lowering the need for opioids by using postoperative non-opioid analgesics(Gehling et al., 2010).

In our study, Parecoxib, Pethidine and Acetaminophen were found to be reduced postoperative pain assessed by the Visual Analog scale. The pain intensity difference scores of treatments were compared with each other at designed interval of time and the results of this randomized, prospective study suggested that the postoperative analgesic treatment with IV parecoxib is equivalent to IM pethidine.

Both drugs were found to be superior to acetaminophen monotherapy in achieving pain control in patients with open inguinal hernia repair. Furthermore, since these two treatment of analgesics appear to have similar efficacy, parecoxib should be preferred over acetaminophen and pethidine, in order to reduce opioid consumption and associated adverse events(Nong et al., 2013).

The fact that we did not collect data during mobilization, pain scores were only collected during rest- is one study limitation that needs to be taken into account.

Since the functional outcome is what is of therapeutic relevance, the pain rating at rest alone is not particularly helpful. Further research on the assessment of pain during movement is recommended(Shen et al., 2015).

CONCLUSION

In patients undergoing open inguinal hernia surgery, intravenous parecoxib is an equivalent postoperative analgesic therapy to intramuscular pethidine. Open inguinal hernia repair should therefore favor both postoperative analgesic treatments since they are superior to acetaminophen monotherapy. Additionally, our research validates the idea that parecoxib has a notable opioid-sparing effect when it comes to postoperative pain control following open inguinal hernia surgery.

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