EMPTIVE ETORICOXIB IN PATIENTS UNDERGOING HERNIOPLASTY UNDER GENERAL ANAESTHESIA- A PROSPECTIVE RANDOMISED-CONTROLLED TRIAL

Vigil Peter¹, Peter Alapatt², Davies C. V³

¹Consultant, Department of Anaesthesiology, Jubilee Mission Medical College and Research Institute, Thrissur.
²Consultant, Department of Urology, St. James Hospital, Thrissur.
³Consultant, Department of Anaesthesiology, Jubilee Mission Medical College and Research Institute, Thrissur.

ABSTRACT

BACKGROUND

Obtaining adequate analgesia in the perioperative period is an enormous task. Studies show that etoricoxib, a selective COX-2 inhibitor given pre-emptively reduces the pain and thereby enhances recovery.

The aim of the study is to evaluate the effect of pre-emptive etoricoxib in reducing intraoperative requirements of anaesthetic agents, decreasing postoperative pain and improving functional outcome in patients undergoing inguinal hernioplasty.

MATERIALS AND METHODS

Two groups, each of thirty patients were formed- Group S and Group C. Group S received a single dose of etoricoxib two hours prior to anaesthesia, while Group C received a placebo. Sevoflurane used during the intraoperative period was calculated. The patient’s pain, sleep and body language in the postoperative period was noted. The rescue analgesics were recorded. Statistical Analysis- The data was analysed using Mann-Whitney U test, Wilcoxon test, independent two sample t-test, Pearson Chi-square test and Fischer's exact test.

Settings and Design- The study was performed in the Department of Anaesthesia in Jubilee Mission Medical College and Regional Institute, Thrissur, from January 2015 to March 2016. This was a prospective study.

RESULTS

Age, gender and duration of surgery were comparable in both groups. The amount of sevoflurane consumed was less in group S. The postoperative pain was also less in group S at all the time points. Patients in group S demanded less rescue analgesics. 83.3% of the patients in group S had good sleep versus 26.7% in the group C. Up to 93.3% of the patients in group S had a relaxed body language versus 36.7% in group C. No adverse effects were noted.

CONCLUSION

Pre-emptive etoricoxib is thus a safe, simple and cost-effective therapy in reducing the intraoperative anaesthetic and postoperative analgesic requirements.

KEYWORDS

Anti-Inflammatory Agents, Non-Steroidal, Cyclooxygenase-2 Inhibitors, Double-Blind Methods, Herniorrhaphy, Pain Management, Prospective Studies.

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BACKGROUND

Inadequate treatment of pain in the perioperative period predisposes to persistent pain in about 10-50% individuals and chronic pain in about 2-10% patients.¹² Thus, postoperative analgesia enhances patient recovery and rehabilitation, while reducing complications and hospital stay.

Most of the conventional analgesics are associated with undesirable side effects, which are often dose-related.³ The nonselective NSAIDs, which act on both isoforms of cyclooxygenase (COX) enzymes. This implies that their analgesic effect is accompanied by gastric ulceration, platelet dysfunction and renal irritation.⁴⁵

Etoricoxib, a selective COX-2 inhibitor provides analgesia with greater gastrointestinal safety and unimpaired platelet function.⁶⁷

AIMS AND OBJECTIVES

Our study aims primarily to test the efficacy of etoricoxib in reducing the intraoperative anaesthetic and postoperative analgesic requirements.
MATERIALS AND METHODS
After obtaining institutional ethical committee approval, eighty patients aged between 20 and 65 years of age posted for inguinal hernioplasty were recruited for the study. This was a prospective, double-blind study conducted in our hospital during the period from January 2015 to March 2016. Informed consent was obtained from all patients. Patients with ASA-PS class 3 or more, known allergy to NSAIDs, renal, hepatic or cardiac problems and coagulopathies were excluded from the study. The patients were randomly allocated to two groups using a computer generated number. Group S received a single dose of etoricoxib, whereas Group C received a placebo two hours prior to anaesthesia and surgery. The dose of etoricoxib was predetermined depending on the patient's body weight.

All the patients were premedicated with IV midazolam 1 mg, IV ondansetron 4 mg and IV glycopyrrolate 0.2 mg. They were hydrated with 10 mL/kg of lactated Ringer's solution through an 18-gauge intravenous cannula. The non-invasive blood pressure, oxygen saturation (SpO2) and electrocardiogram (ECG) were monitored. The patients were induced with IV propofol 1.5 mg/kg. The airway was secured using a laryngeal mask airway. Intraoperative analgesia was attained with IV fentanyl. A bolus of 1 µ/kg followed by half-hourly supplements of 0.25 µ/kg were given. IV atracurium 0.5 mg/kg was used to facilitate muscle relaxation. The depth of anaesthesia was maintained with the help of sevoflurane. The concentration was adjusted so that the non-invasive blood pressure, oxygen saturation (SpO2) and electrocardiogram (ECG) were monitored. The patients were extubated two hours prior to anaesthesia and surgery. The dose of etoricoxib was predetermined depending on the patient's body weight.

The patients in Group S also demanded less rescue analgesics as compared to Group C (16.387±6.03 vs 30.067±18.57) (Table 3).

Intraoperative sevoflurane requirements (sevoflurane consumed per minute) was found to be less in Group S when compared to Group C (6.031043±39.067 vs 18.565905±18.57) (Table 3).

Pain rating was lower in group S at all study points (Table 4). The patients in Group S also demanded less rescue analgesics (IV tramadol) compared to their counterparts in Group C (mean of 22.95 in Group S vs. 38.05 in Group C; p-value=0.000).
93.3% of the patients in group S had a relaxed body language as against 36.7% in Group C. Only, 6.7% of the patients in group S had a tensed body language, whereas about 40% of the patients in Group C were tensed. None of the patients in Group S were unhappy versus 23.3% in Group C (Table 5).

The quality of sleep was also found to be better in Group S (Table 6).

No undesirable effects attributable to etoricoxib was noted.

DISCUSSION
Unrelieved pain, prolonged recovery and minor anaesthetic complications after surgery often lead to delayed discharge resulting in increased healthcare costs and unnecessary patient dissatisfaction. Recently, it was shown that multimodal analgesia was a rational approach to pain management and was in fact more effective. A study by Kehlet and Dahl showed the important role of the anaesthetist in facilitating early postoperative recovery and preventing a transition from acute to chronic pain by ensuring optimal intraoperative anaesthetic management and adequate pain relief well into the postoperative period. Watson et al revealed that the majority of the patients suffered inadequate pain relief and interference with sleep and daily living activities.

Non-Steroidal Anti-Inflammatory Drugs (NSAIDs) constitute 10% of the non-opioid analgesics. Traditional NSAIDs and more recently COX-2 selective inhibitors have also been used for postoperative analgesia after daycare surgery. Etoricoxib is one of the newer available COX-2 inhibitors. It inhibits the enzyme COX, which catalyses the first step in the pathway of prostanoid synthesis. Some of these are implicated in the pathogenesis of inflammation and nociceptive pain. It has got a rapid absorption after oral intake resulting in peak plasma concentration after one hour. It has also got the long duration of analgesic action lasting 22–24 hours. Etoricoxib has got a definite clinical advantage in terms of gastrointestinal safety and unimpaired platelet function. Dizziness is a less common side effect associated with this drug.

Pre-emptive analgesia is an attractive strategy whereby the analgesics are administered before surgery in order to prevent the establishment of central sensitisation evoked by the incisional and inflammatory injuries occurring during surgery and in the early postoperative period. Owing to this ‘protective effect’ on the nociceptive system, pre-emptive analgesia has the potential to be more effective than a similar analgesic treatment initiated after the surgery. Therefore, pre-emptive analgesia can reduce immediate postoperative pain and also prevent the development of chronic pain by decreasing the altered central sensory processing.
Several studies have examined the use of etoricoxib and have confirmed its efficacy in providing pain relief after gynaecological procedures (Liu et al, 2005; Chau-in et al, 2008), after laparoscopic surgery (Puura et al, 2006), after thyroid surgery (Smirnov et al, 2008; Ibrahim et al, 2008; Gowbhagya et al, 2014) and after trauma surgery (Siddiqui et al, 2008). Our work studies the efficacy of a single dose of etoricoxib administered preoperatively in reducing the intraoperative anaesthetic and postoperative analgesic requirements in patients undergoing open inguinal hernioplasty under general anaesthesia.

In our study, we found out that the amount of sevoflurane consumed during the intraoperative period was significantly less when a single dose of etoricoxib was administered two hours prior to the anaesthesia. The pain scores were also lower on the first postoperative day and subsequently demanded lesser rescue analgesics. Those who received etoricoxib were noted to be more comfortable and had a better sleep. None of the patients experienced any problems relating to the side effects of the analgesics.

**CONCLUSION**

Etoricoxib is COX-2 inhibitor by which it relieves pain, other non-steroid, non-anti-inflammatory drugs act by inhibiting enzyme cyclooxygenase inhibition. But, these drugs do have effects on thrombocytes, renal system and gastroenterology systems, which COX-2 inhibitors don’t have, now multimodal analgesic therapy, one is usually fixed opiate derivative, next analgesic should be safe like etoricoxib as it reduces the need of general anaesthetics. It provides postoperative analgesia excellently and safely.

Limitations of our study was the relatively small sample size. A larger sample would perhaps have been more useful to assess the incidence of the adverse effects, which may occur due to intake of etoricoxib. Another limitation was that the rescue analgesic was given on demand by the patient without monitoring the pain score.

**REFERENCES**


