

Original article :

Analysis of Usage of Analgesics in Perioperative Cases: An Institutional Based Study

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Abstract

Background: Effective perioperative pain control is an essential component of surgical recovery. Inadequate pain control is linked to a range of negative consequences. Hence; the present study was conducted to analyze the usage of analgesics in perioperative cases.

Materials and methods: 720 prescriptions from 510 patients were analyzed. Any changes in the prescribed analgesics or the route of administration were considered as new prescriptions for the study.

Results: The analysis revealed that analgesics were administered via the parenteral route in 61.2% of cases, orally in 41.6%, and topically in 8.5%. Pre-operative analgesic use was noted in surgery, orthopaedics, obstetrics/gynecology, and ENT departments, either orally or parenterally. In ophthalmology, pre-operative analgesics were exclusively administered via the topical route.

Conclusion: To maintain and promote reasonable prescription practices in healthcare settings, institutional prescribing rules must be established.

Keywords: Diclofenac, NSAIDs, Analgesics.

INTRODUCTION

Effective perioperative pain control is an essential component of surgical recovery. Inadequate pain control is linked to a range of negative consequences. In the immediate postoperative period, poor pain control is associated with a higher incidence of postoperative nausea and vomiting, increased cardiac and pulmonary stress, impaired immune function, delayed wound healing, and increased length of hospital stay.¹ It is also a strong predictor of poor long-term outcomes, such as increased psychological stress, delayed ambulation and return of function, higher readmission rate, and overall cost of care.^{2, 3}

Inadequate pain control could also contribute to chronic persistent postsurgical pain (CPPSP), a condition that occurs in 10–30% of postsurgical patients and is defined by pain lasting intraoperative and postoperative pain management can help decrease the physiological and psychological stress response, relieve suffering, and facilitate healing and rehabilitation.^{4, 5}

Lack of proper preoperative pain consultation and education has led to fear of inadequate postoperative control, resulting in patient tendency towards requesting more opioids than they need.⁶ Adverse effects associated with overutilization of opioids are well documented, including nausea, ileus, over sedation, respiratory depression,

immunosuppression, and rapid development of tolerance. Prolonged opioid use also increases risk of dependence, addiction, and opioid-induced hyperalgesia.⁷ The evolution of analgesics from traditional salicylates to a diverse array of synthetic compounds, including cyclooxygenase (COX-2) inhibitors, reflects an ongoing quest for safer and more potent pain relief options.⁸ Hence; the present study was conducted to analyze the usage of analgesics in perioperative cases.

MATERIALS AND METHODS

It was a cross-sectional hospital-based study focusing on the prescribing patterns for analgesics among peri-operative patients. Patients undergoing surgical procedures in all surgical departments, including general surgery, orthopedics, obstetrics and gynecology, ENT, and ophthalmology were included in the study. Data on analgesic prescriptions, including details such as the drug name, route of administration, frequency, and duration of administration, were collected from patients' case sheets and operation theatre notes.

In total, 720 prescriptions from 510 patients were analyzed. Any changes in the prescribed analgesics or the route of administration were

considered as new prescriptions for the study. All the results were recorded in Microsoft excel sheet and were subjected to statistical analysis using SPSS software.

RESULTS

Diclofenac was the most commonly prescribed analgesic across all departments, administered via parenteral, oral, and topical routes. In ophthalmology, flurbiprofen was the preferred analgesic for topical administration. Tramadol was utilized in general surgery and orthopaedics among opioids.

A combination of diclofenac and paracetamol was common in general surgery and ENT. Epidural bupivacaine was employed in general surgery for post-operative pain relief. The analysis revealed that analgesics were administered via the parenteral route in 61.2% of cases, orally in 41.6%, and topically in 8.5%. Pre-operative analgesic use was noted in surgery, orthopaedics, obstetrics/gynecology, and ENT departments, either orally or parenterally. In ophthalmology, pre-operative analgesics were exclusively administered via the topical route. Notably, medications were often prescribed using brand names without specified doses and durations in many prescriptions.

Table 1: Analgesics used by different departments (720 prescriptions)

Drug	General surgery	Ophthalmology	Orthopedics surgery	Obstetrics & gynaecology	ENT
Diclofenac	60	43	51	63	62
Flurbiprofen	35	45	12	52	50
Tramadol	23	10	33	53	43
Diclofenac + Paracetamol	12	7	2	20	20
Epidural bupivacaine	2	5	5	7	5
Others	132	110	103	195	180

DISCUSSION

The study revealed that diclofenac, a non-steroidal anti-inflammatory drug (NSAID), emerged as the most frequently prescribed analgesic within the perioperative period. The mechanism of action of diclofenac goes beyond COX inhibition and includes inhibition of thromboxane-prostanoid receptor, affecting arachidonic acid release and uptake, inhibition of lipoxygenase enzymes and activation of the nitric oxide-cyclic guanosine monophosphate anti-nociceptive pathway.⁸ Nonsteroidal anti-inflammatory drugs (NSAIDs) play a significant role in perioperative pain management due to their analgesic, anti-inflammatory, and antipyretic properties. NSAIDs are commonly used in the perioperative period to alleviate pain and reduce inflammation following surgical procedures.⁹

These medications work by inhibiting the enzymes cyclooxygenase-1 (COX-1) and cyclooxygenase-2 (COX-2), thereby decreasing the production of pro-inflammatory prostaglandins.¹⁰ NSAIDs are particularly beneficial for perioperative pain management because they can be administered through various routes, including oral, intravenous, and intramuscular, allowing for flexible dosing options based on the patient's needs and the type of surgery performed. NSAIDs like diclofenac, ibuprofen, ketorolac, and aspirin are commonly used in the perioperative setting to help control pain and reduce the need for opioid medications.¹¹ One advantage of using NSAIDs in the perioperative period is their ability to complement opioid analgesics, allowing for a multimodal approach to pain management. By incorporating NSAIDs into the analgesic regimen, healthcare providers can often achieve better pain control with lower opioid doses,

minimizing the risk of opioid-related side effects such as respiratory depression, nausea, and constipation.

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However, a recent meta-analysis suggested NSAIDs should not be withheld from patients with normal preoperative renal function. Although the COX-2 inhibitors were developed for chronic use in arthritis, there is interest in their possible role in

the management of acute pain. Parecoxib, a COX-2 inhibitor for parenteral administration, offers some safety advantages over ketorolac as it has a gastrointestinal safety profile comparable to placebo and no effect on platelet function.^{12, 13} Gao et al described the prescription patterns of analgesics during the last 3 months of life in lung cancer and determined the associated factors. Data on lung cancer patients (N = 10 202) who died during 2000 – 2008 were extracted from the General Practice Research Database (GPRD). This database records prescriptions of patients received from UK general practices (GP), but not those from non-GP routes. Prescription prevalences were estimated. The associated factors were investigated using log-binomial regression. The overall prescription prevalences were 50.4% (95% confidence interval (CI): 49.4 – 51.4%) for level 1 (e.g., paracetamol), 34.1% (95% CI: 33.2 – 35.0%) for level 2 (weak

opioids), and 55.5 % (95% CI: 54.5 – 56.4%) for level 3 analgesics (strong opioids). Prescription prevalence of analgesics of all levels showed an increasing trend over the period 2000 – 2008 (annual increases range: 1.1 – 1.5%) but a decreasing trend with age (average decrease per group range: 5.8 to 1.8%). Patients in the older age groups were less likely to be prescribed level 3 analgesics than those in the younger age groups. Analgesics have been increasingly prescribed in lung cancer. However, analgesics, especially at level 3, were relatively under-prescribed to people older than 70 years, warranting further investigation.¹⁴

CONCLUSION

To maintain and promote reasonable prescription practices in healthcare settings, institutional prescribing rules must be established.

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