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PRESCRIBING PATTERN OF ANALGESICS IN THE ORTHOPAEDIC DEPARTMENT OF A TEACHING HOSPITAL IN NORTH INDIA- AN OBSERVATIONAL STUDY

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Abstract

Background

Pain management is a crucial aspect of orthopedic care, and analgesics play a central role in treatment. The prescribing patterns of analgesics vary due to factors such as patient characteristics, physician preferences, and institutional protocols. Understanding these patterns can help optimize pain management and minimize adverse effects.

Aim: To assess the prescribing pattern of analgesics in the orthopedic department of a teaching hospital in north India.

Methods: This prospective observational study was conducted by the department of Pharmacology in association with the department of Orthopedics at SKIMS Medical College and Hospital, Srinagar, India, from November 2022 to March 2023. A total of 200 indoor patients receiving analgesics for orthopedic conditions were included. Data on patient demographics, type and number of analgesics prescribed, route of administration, duration of therapy, and any adverse effects were recorded and analyzed.

Results: The most commonly prescribed analgesics were non-steroidal anti-inflammatory drugs (NSAIDs), with diclofenac (37%) and aceclofenac (28%) being the most frequently used. Etoricoxib was prescribed in 5% of cases, while paracetamol was co-prescribed in 25% of patients. Opioid analgesics, such as tramadol, were used in 5% of patients, mainly in cases of severe postoperative pain. The average duration of analgesic therapy was less than 7 days for the majority of patients (85%), with only 15% requiring extended therapy for chronic conditions or complications. In 65% of patients, analgesics were prescribed in combination with gastroprotective agents, reflecting a cautious approach towards NSAID use.

Conclusion: The study highlights the predominant use of NSAIDs in orthopedic pain management, with paracetamol frequently co-prescribed. Opioid analgesics were reserved for severe pain, and combination therapies were used selectively; nevertheless, there is a need for regular monitoring of prescriptions to minimize adverse effects and promote rational analgesic use.

Keywords: Analgesics, NSAIDs, paracetamol, diclofenac, aceclofenac, etoricoxib, tramadol, orthopedic pain management, prescription pattern.

Introduction

Pain is one of the most common symptoms encountered in orthopedic practice, often resulting from trauma, degenerative diseases, post-surgical recovery, or inflammatory conditions. Effective pain management is crucial to improving patient outcomes, enhancing mobility, and ensuring better quality of life. Among the various pharmacological options, analgesics, particularly non-steroidal anti-inflammatory drugs (NSAIDs), paracetamol, and opioids, are widely used in orthopedic settings [1]. However, their prescribing patterns vary due to factors such as disease severity, patient demographics, comorbidities, physician preferences, and hospital protocols [2].

NSAIDs are the mainstay of orthopedic pain management due to their anti-inflammatory and analgesic properties. Drugs like diclofenac, aceclofenac, and etoricoxib are frequently used, either as monotherapy or in combination with other analgesics like paracetamol or opioids [3]. While NSAIDs are highly effective, they are also associated with gastrointestinal (GI), renal, and cardiovascular adverse effects, which necessitate careful selection and co-administration of gastroprotective agents [4]. Paracetamol, known for its safety profile, is often used as a first-line analgesic or in combination with NSAIDs to enhance pain relief [5]. In contrast, opioids such as tramadol are generally reserved for severe or refractory pain, particularly in post-surgical patients or those with contraindications to NSAIDs [6].

Rational prescribing of analgesics is essential to balance pain relief with safety concerns, particularly in a hospital setting where patient monitoring is more feasible. Various guidelines emphasize the need for an evidence-based approach to prescribing, considering factors like dose, duration, and risk of adverse drug reactions (ADRs) [7]. Studies conducted in different regions of India have shown considerable variation in analgesic prescribing patterns, reflecting diverse clinical practices and institutional policies [8]. However, there is limited data from teaching hospitals in north India, making this study significant in understanding current trends and guiding future prescribing practices.

This study aims to assess the prescribing pattern of analgesics in the orthopedic department of a tertiary care teaching hospital in north India. The findings will help assess the choice of analgesics, frequency of combination therapy, duration of treatment, and the extent of opioid use. Additionally, the study will provide insights into the use of gastroprotective agents alongside NSAIDs to mitigate adverse effects. By analyzing these patterns, we can contribute to optimizing pain management protocols and promoting rational drug use in orthopedic practice.

Materials and Methods

Study Design and Setting

This prospective observational study was conducted by the department of Pharmacology in association with the department of Orthopaedics at Sher-I-Kashmir Institute of Medical Sciences Medical College and Hospital (SKIMS MCH), Srinagar, India. The study spanned from November 2022 to March 2023 and included hospitalized patients receiving analgesics for orthopedic conditions.

Study Population

A total of randomly selected 200 indoor patients from the orthopedic department were included in the study. Patients of 18 years of age or more and both genders who were prescribed at least one analgesic during their hospital stay were considered eligible. Exclusion criteria included patients with incomplete medical records, those receiving analgesics for non-orthopedic conditions, and patients discharged before 24 hours of admission.

Data Collection

Data were collected prospectively from patient medical records, prescription charts, and treatment orders. The collected variables included:

- Patient demographics (age, gender)
- Type and number of analgesics prescribed
- Route of administration (oral, intravenous, intramuscular, transdermal patch)
- Duration of analgesic therapy
- Co-administration of gastroprotective agents
- Occurrence of any adverse effects related to analgesic use

Ethical Approval

The study was conducted following ethical guidelines, and protocol approval was obtained from the Institutional Ethics Committee (IEC/80/2022). Written informed consent was obtained from patients before data collection.

Data Analysis

Descriptive statistics were used to summarize the findings. Continuous variables such as age and duration of therapy were expressed as mean ± standard deviation (SD). Categorical variables like the type of analgesic used and the route of administration were presented as frequencies and percentages. Data analysis was performed using Microsoft Excel and statistical software SPSS version 25.

Results

This study analyzed the prescribing patterns of analgesics in 200 indoor patients admitted to the orthopedic department at SKIMS Medical College and Hospital, Srinagar.

Most patients were between 31-50 years (45%). Males comprised 65% of the study population, while females made up 35% [Table 1].

Table 1: Demographic Characteristics of Patients

Characteristic	Number of Patients (n=200)	Percentage (%)
Age Group (years)		
18-30	50	25%
31-50	90	45%
>50	60	30%
Gender		
Male	130	65%
Female	70	35%

In this study of 200 patients, nonsteroidal anti-inflammatory drugs (NSAIDs) were the most frequently prescribed analgesics for orthopedic pain management. Diclofenac was the most commonly used NSAID, prescribed to 74 patients (37%), followed by aceclofenac which was prescribed to 56 patients (28%). Paracetamol was given to 90 patients (45%) either alone (20%) or in combination with NSAIDs (25%). The selective COX-2 inhibitor etoricoxib was prescribed in 10 patients (5%), mainly in cases where NSAID-related gastrointestinal side effects were a concern.

Tramadol, an opioid analgesic, was used in 10 patients (5%), primarily for moderate to severe pain, particularly post-surgical pain. Pregabalin was prescribed in 6 patients (3%), typically for neuropathic pain, while piroxicam, a long-acting NSAID (half-life 30-68 hours), was the least prescribed, used in only 4 patients (2%) [Table 2].

Table 2. Distribution of Analgesic Use

Analgesic	Number of Patients	Percentage (%)
Diclofenac	74	37%
Aceclofenac	56	28%
Paracetamol	40	20%
Etoricoxib	10	5%
Tramadol	10	5%
Pregablin	6	3 %
Piroxicam	4	2%

The average duration of analgesic therapy was less than 7 days in 85% of patients, while 15% required extended therapy due to chronic conditions or postoperative complications [Table 3].

Table 3: Duration of Analgesic Therapy

Duration of Therapy	Number of Patients	Percentage (%)
< 7 days	170	85%
≥ 7 days	30	15%

Most analgesics were administered by parenteral route especially in post operative patients. Oral administration was the preferred route for less severe conditions [Table 4].

Table 4: Route of Administration

Route	Number of Patients	Percentage (%)
Oral	32	16 %
Parenteral route	168	84 %

To mitigate NSAID-induced gastric irritation, 65% of all patients were prescribed proton pump inhibitors (PPIs) [Table 5].

Table 5: Co-Prescription of Gastroprotective Agents

Use of Gastroprotective Agents	Number of Patients	Percentage (%)
Prescribed	130	65%
Not Prescribed	70	35%

Among the 200 patients studied, 12% reported mild adverse effects, mostly gastrointestinal discomfort and nausea. Serious adverse effects were not reported [Table 6].

Table 6: Adverse Effects Reported

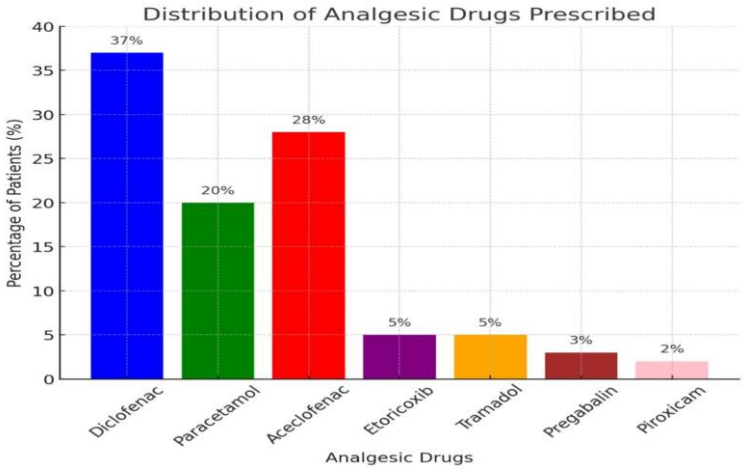
Adverse Effects	Number of Patients	Percentage (%)
No Adverse Effects	176	88%
Mild Adverse Effects	24	12%
Serious Adverse Effects	0	0%

Paracetamol was used in 45% of cases, either alone (20%) or in combination with NSAIDs (25%). The most common combination was Paracetamol + Diclofenac (15%) [Table 7].

Table 7: Combination Therapy with Paracetamol and Other Analgesics

Analgesic Combination	Number of Patients	Percentage (%)
Paracetamol + Diclofenac	30	15%
Paracetamol + Aceclofenac	14	7%
Paracetamol + Etoricoxib	6	3%
Paracetamol alone	40	20%
No Paracetamol used	110	55%

Bar graph: prescription pattern of analgesics



Discussion

The study provides valuable insights into the prescribing patterns of analgesics in orthopedic patients. Male patients outnumbered female patients in our study which is consistent with similar studies done in Indian patients (9,10) and reflects the predominant role of males in outdoor activities in our country.

NSAIDs are most commonly prescribed analgesics for musculoskeletal pain and inflammation globally; nevertheless, choice of NSAID might vary in different studies. In our study diclofenac was the most commonly (37%) prescribed individual NSAID followed by aceclofenac (28%). Mathew G, et al. and Rault A, et al also reported diclofenac as the most common NSAID (11,12), however, some authors have observed paracetamol or ibuprofen as the preferred analgesic (9,13).

The findings of our study indicate that 65% of our patients received PPIs along with analgesics. Similar prescribing patterns are observed from other parts of the country (14,15). However, recently there have been concerns about the combination regarding small intestine injury due to gut microbiota dysbiosis caused by PPIs (16).

Non-selective COX inhibitors outnumbered selective COX-2 inhibitors in this study. COX-2 inhibition produces cardiovascular hazards due to loss of vascular prostacyclin synthesis. This causes predisposition to thrombosis, atherosclerosis and hypertension. However, COX-2 inhibitors offer better gastric safety profile; furthermore, they are being investigated for their role in cancer chemotherapy and neurological diseases such as Parkinson and Alzheimer's disease .It would be valuable to search for novel COX-2 inhibitors with improved tolerability. Pregablin was prescribed in 3 % of patients which is in line with other studies (17).The relatively low opioid prescription rate in this study reflects a preference for non-opioid analgesia due to concerns regarding opioid dependence, sedation and nausea (18). Serious adverse effects were not reported; reflecting enough gastroprotection offered by co-prescribed PPIs.

While the study provides valuable insights on prescribing patterns, it has some limitations. The sample size was limited to 200 patients , and the study was conducted at a single center, which may limit generalizability. Additionally, patient adherence and long-term outcomes were not assessed.

Conclusion

The study highlights that the most commonly prescribed analgesics in indoor osrthopedic patients are non-selective NSAIDs. Selective COX-2 inhibitors, opioids and pregabalin are used in selective cases. PPIs are the most commonly co-prescribed drugs with NSAIDs providing substantial gastroprotection. However, regular evaluation of prescriptions and CME (Continuing Medical Education) are mandatory for rational prescription of analgesics.

Moving forward, there is a need for further research focusing on long-term safety, patient-reported outcomes, and adherence to pain management protocols. Strengthening pharmacovigilance and promoting rational prescribing practices will be crucial in optimizing analgesic use in Orthopedic settings.

Conflict of interest: Nil

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