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A STUDY OF PRESCRIBING PATTERN OF NONSTEROIDAL ANTI-INFLAMMATORY DRUGS IN ORTHOPEDIC OPD AT A TERTIARY CARE HOSPITAL

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ABSTRACT

Aim: To determine the pattern of NSAID prescribing for arthritic and non-arthritic conditions in Orthopedic OPD.

Methodology: 100 prescription duplicates collected and analyzed prospectively for the pattern of NSAID prescription for arthritic and non-arthritic conditions: - the drug, formulation, route, frequency, duration of administration, and concomitant medications.

Results: NSAID (Non Steroidal Anti-inflammatory Drugs) were prescribed for osteoarthritis (20%), rheumatoid arthritis (3%), non-traumatic musculoskeletal pain (30%), post-traumatic conditions (27%), post-operative pain (9%), ankylosing spondylitis (4%), degenerative diseases of the spine (6%) and neuralgia (1%). The NSAIDs commonly prescribed were aceclofenac (43%), etodolac (25%), diclofenac (15%), etoricoxib (12%), and ibuprofen (5%). Fixed dose combinations (FDCs) of NSAIDs with adjuvants were prescribed in 66% subjects; the adjuvants included paracetamol (57.14%), serratiopeptidase (25.97%), chlorzoxazone (13%) and thiocolchicoside (3.89%). Oral formulations of NSAIDs were prescribed in all the patients, supplemented by topical formulations as gel/creams in 10% of the subjects. The dosing frequency was BID (68%), OD (25%), TID (1%) and SOS (6%), and the duration of administration ranged from 5-15 days. Other classes of drugs used concomitantly were PPIs (Proton Pump Inhibitors), calcium supplements, multivitamins, antimicrobials, immunosuppressants and glucosamine.

Conclusion: NSAIDs were prescribed empirically for various arthritic and non-arthritic conditions, frequently as FDCs with various adjuvants, as per the standard guidelines. However patient information was inadequate in most of the prescriptions. Proper patient assessment deemed necessary for individualizing NSAID use.

Keywords: NSAIDs, arthritis, Orthopedic OPD

INTRODUCTION

Inflammatory disorders, both arthritic and non arthritic, are the most commonly encountered in orthopedic practice, and are generally treated with various NSAIDs with or without additional or specific therapies like steroids, immunomodulators or disease modifying agents. The use of NSAIDs in inflammatory conditions is mainly empirical, as they provide only symptomatic relief without addressing the underlying disease process. NSAIDs also happen to be the most widely prescribed and often misused by self medication, even for trivial complaints.

Numerous studies, both from developed and developing countries have described the pattern of polypharmacy involving the use of NSAIDs that are unnecessary, expensive, irrational, inadequate amount or by self medications.[1, 2, 3, 4] Periodic evaluations of drug utilization patterns enables suitable modifications in NSAID prescribing to increase the therapeutic benefit and to minimize the adverse effects. Such studies seek to monitor, evaluate and if necessary, suggest modifications in the prescribing behavior of medical practitioners to make the medical care rational and cost effective.[5] In this regard the present study was taken up to generate useful data by analyzing pooled information regarding the prescribing pattern of NSAIDs.

The objectives of the study were:

1. To describes demographic characteristics.
2. To determine the pattern of NSAID prescribing such as, diagnosis, NSAID formulations, dose, route, frequency, duration of administration, concomitant medications, fixed dose combinations and average number drugs per prescription.
3. To calculate the percentage of drugs prescribed by the generic name/brand name.

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MATERIAL AND METHODS

The present study was a descriptive study carried out in orthopedic outpatient department at Kempegowda Institute of Medical Sciences Hospital and Research Centre, Bangalore, from 1st January 2013 to 30th March 2013 (Three months). After obtaining approval and clearance from the Institutional Ethics Committee, 100 prescription duplicates involving NSAID prescribing for arthritic and non- arthritic conditions by the orthopedicians were collected by purposive sampling for analysis. For the purpose of data collection the method of duplicate prescription was used, in which original prescription was given to the patient and the carbon copy of the original prescription was collected by the investigator from orthopedic OPD. The prescriptions were analyzed prospectively for the demographic characteristics of the patients, diagnosis/ provisional diagnosis, NSAID formulations, dose, route, frequency, duration of administration, concomitant medications, FDCs, whether the drugs were included in the NLEM-2011 and also for patient information/instructions.

As it was a descriptive study, the results were described in the form of percentages, table and graphs by using Ms-Excel 2007.

RESULTS

One hundred prescriptions were selected from patients (65 % male and 35% female) attending the orthopedic OPD and prescribed with NSAIDs; the mean age being 46.42 yrs (overall range 14-85yrs). The indications for OPD (Out Patient Department) prescribing included non-traumatic musculoskeletal pain (30%), post-traumatic conditions (27%), osteoarthritis (20%), post-operative pain (9%), degenerative diseases of the spine (6%), ankylosing spondylitis (4%), rheumatoid arthritis (3%), and neuralgia (1%) (Fig- 1). NSAIDs prescribed were aceclofenac (43%), etodolac (25%), diclofenac (15%), etoricoxib (12%), and ibuprofen (5%) (Fig-2).

Fixed dose combinations (FDCs) of NSAIDs with adjuvants were prescribed in 66% subjects; the adjuvants included paracetamol (57.14%), serratiopeptidase (25.97%), chlorzoxazone (13%) and thiocolchicoside (3.89%) (Fig-3). Oral formulations of NSAIDs were prescribed in all the patients, supplemented by topical formulations as gel/creams in 10% of the subjects. The overall dosing frequency was BID (68%), OD (25%), TID (1%) and SOS (6%), and the mean duration of administration 7.94 days (Range 5-15 days) and only 13% of the prescribed drugs were included in NLEM-2011. All the drugs were prescribed by their brand names and average number of drugs per prescription was 2.3.

Other classes of drugs used concomitantly were PPIs, calcium supplements, multivitamins, antimicrobials, immunosuppressants and glucosamine (Table-1).

Figure-1: INDICATIONS FOR NSAID PRESCRIBING

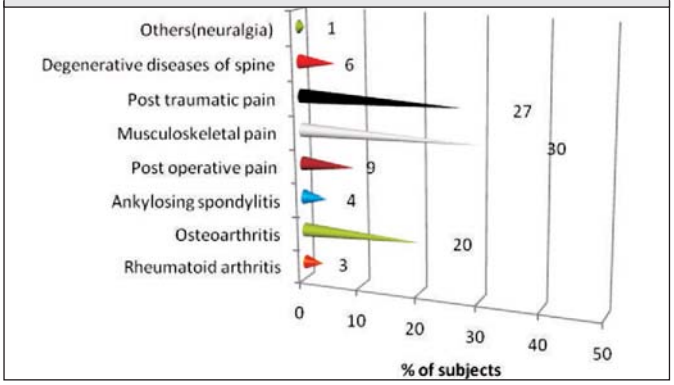


Figure-2: DETAILS OF NSAIDs PRESCRIBED

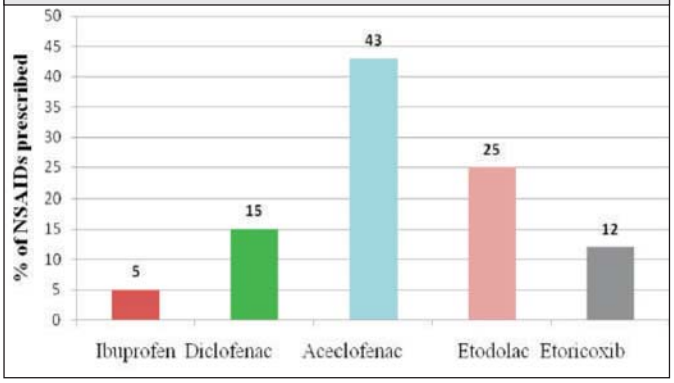
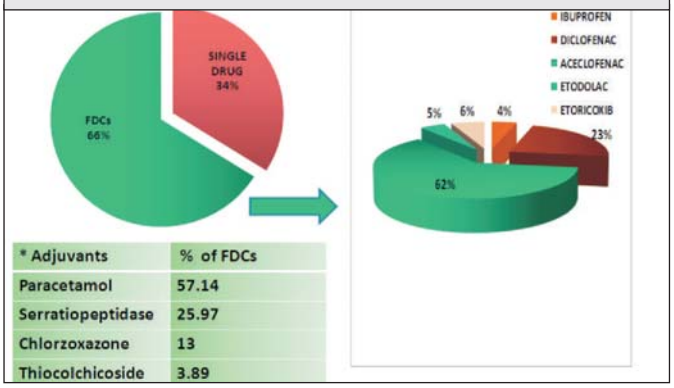


Figure-3: FDCs OF NSAIDs WITH ADJUVANTS *



* Adjuvants	% of FDCs
Paracetamol	57.14
Serratiopeptidase	25.97
Chlorzoxazone	13
Thiocolchicoside	3.89

Table-1: CONCOMITANT MEDICATIONS*

Drugs/ Class of Drugs	Total no. (n=121)	% of Total no.
1.PPIs a.Pantoprazole - 39 b.Rabeprazole - 06 c.Esmoprazole - 02	47	38.84
2.Skeletal muscle relaxants	05	4.13
3.Calcium supplements	12	9.92
4.Serratopeptidase	05	4.13
5.Vitamin B_{12} combinations	13	10.75
6.Multivitamin supplements	22	18.18
7.Antimicrobial agents	05	4.13
8.Others Methotrexate- 02 Diacerein+ glucosamine- 04 Digestives- 06	12	9.92

*** Used As Separate Formulations**

DISCUSSION

The assessment of drug utilization pattern is an important tool for clinical, educational, and economic purposes.[6] Drug utilization studies aim to provide the feedback to the prescribers and to create awareness about rational use of medicines.[7]

The present study regarding the pattern of NSAID prescribing in outpatient orthopedic practice revealed that the non-arthritic indications were more common than the arthritic conditions. Non-traumatic musculoskeletal pain (30%) and post-traumatic conditions (27%), were the most common indications for NSAID prescribing, which was consistent with the observations in other similar studies.[3,8]

The NSAIDs commonly prescribed were aceclofenac (43%), etodolac (25%), diclofenac (15%), etoricoxib (12%), and ibuprofen (5%). However in other studies diclofenac was the commonly prescribed NSAID.[8,9,10] Aceclofenac is a chemical congener of diclofenac with a better gastric tolerability with longer duration of action, and etodolac is a preferential COX-2 inhibitor[11].

Fixed dose combinations (FDCs) of NSAIDs with various adjuvants were prescribed in 66% subjects; the adjuvants included paracetamol (57.14%), **serratiopeptidase** (25.97%), chlorzoxazone (13%) and thiocolchicoside (3.89%). However such combinations were considered irrational. Paracetamol alone can be suggested as a simple analgesic in mild-to moderate joint pain as per American College of Rheumatology guidelines.[12]

In the present study all the NSAIDs were prescribed as oral formulations supplemented by topical formulations as gel/creams (Diclofenac) in 10% of the subjects.

The dosing frequency was BID in 68% of the subjects (aceclofenac, diclofenac, etodolac, etoricoxib and ibuprofen), OD in 25% (etodolac, etoricoxib, diclofenac, ibuprofen and aceclofenac), TID in 1% (aceclofenac) and SOS in 6% (aceclofenac, ibuprofen, etodolac and etoricoxib). However the frequency of administration did not correlate very well with the pharmacokinetics profile of the NSAID used in some patients. In 5 subjects etoricoxib was advised twice daily which can be considered inappropriate. Similarly advising ibuprofen twice daily (3%) and once daily (1%) also seem to be inappropriate. The duration of administration ranged from 5-15 days (mean 7.94 days) which conformed to the standard practice and was similar in other studies.[10] In two subjects diclofenac was advised once daily but the formulation was not specified whether slow release or extended release.

All the NSAIDs were prescribed by their brand names. Other studies have reported NSAIDs prescribing by generic names which ranged from 3% to 20%.[13,14,15,16] Generic prescribing is desirable to promote rational use of drugs, and to minimize cost of therapy and dispensing errors.

Other classes of drugs used concomitantly were PPIs, calcium supplements, multivitamins, antimicrobials, immunosuppressants and glucosamine, which were used as separate combinations. The PPIs used were pantoprazole (39%), rabeprazole (6%), and esomeprazole (2%). Concomitant administration of PPIs with NSAIDs can be considered rational and justified as these classes of drugs are most effective in countering NSAID related ulcerogenicity.[17,18]

Calcium preparations and multivitamins were used as nutritional supplements. Methotrexate was used as DMARD in two subjects with RA. Glucosamine in combination with diacerein was used in four subjects with OA, the former drug claimed to prevent the cartilage erosion and the latter supposed to be a cytokine modulator with potential anti-inflammatory action, however the beneficial effects not confirmed by control

clinical trials.

In most of the prescriptions the patient information/instructions regarding the timing of administration, or whether to take medication before/after food and regarding the possible side effects, were inadequate.

Prescribing the drugs from NLEM-2011ensures the use of well established and cost effective drugs. Among the prescribed drugs only 13% were included in NLEM-2011, which was lower than the previously reported studies.[10] Average number of drugs per prescription was 2.33, which was comparable to previously reported studies.[16]

CONCLUSION

NSAIDs were prescribed empirically for various arthritic and non-arthritic conditions, frequently as FDCs with various adjuvants like paracetamol, serratiopeptidase and skeletal muscle relaxants. Most of the FDCs were found irrational. Various other medications were also prescribed concomitantly with specific purpose, like PPIs, skeletal muscle relaxants, nutritional supplements, digestants etc. Only branded NSAIDs formulations were prescribed. Patient information was inadequate in most of the prescriptions. Proper awareness among the prescribers seems to be necessary for rational and cost-effective prescribing individualized to the patients' needs, and to avoid irrational combinations. It is also essential to encourage and promote generic prescribing to reduce the cost of therapy.

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