SHORT ARTICLE

Prescribing Pattern of NSAIDs in Orthopaedic OPD of a Tertiary Care Teaching Hospital in Uttaranchal

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Abstract

The present prospective study was planned and conducted in the Department of Pharmacology and in Orthopaedics OPD of a tertiary care teaching hospital, Himalayan Institute of Medical Sciences (HIMS), Dehradun during year 2003-04. The aim of the study was to analyze the prescribing pattern of NSAIDs in patients attending Orthpaedics OPD and to correlate the use of selective COX-2 inhibitors and older conventional NSAIDs in practice in the present scenario. The result of present study suggests frequent use of selective COX-2 inhibitors although conventional non-selective NSAIDs topped the list of various selective and non-selective NSAIDs. Concomitant gastroprotectives were also used. Fixed dose combinations were also prescribed.

Key Words

NSAIDs, COX-1, COX-2, Orthopaedics

Introduction

Non-steroidal anti-inflammatory drugs (NSAIDs) are most commonly used drugs for years for management of pain and inflammation with good efficacy and represent most widely prescribed class of medications in the world and are used as over the counter drugs. They work by interfering with cyclooxygenase [COX] pathway, which involves the conversion of arachidonic acid by the enzyme COX to prostaglandins . COX is available in two isoforms i.e. COX-1 and COX-2 (1,2). The COX-1 enzyme is constitutive and control physiological functions such as stomach mucus production and kidney water excretion as well as platelet formation. In contrast COX-2, is involved in producing prostaglandins for inflammatory response. Despite wide clinical use of classical NSAIDs as analgesics, anti-pyretics, and anti-inflammatory agents their gastro-intestinal toxicity is a major clinical limitation. This adverse effect is associated with their ability to inhibit COX-1 in the GIT. Subsequently, the selective COX-2 inhibitors emerged as potentially gastro-friendly NSAIDs and it was conceptualized that sufficient therapeutic benefits are achieved by selective COX-2 inhibition (3,4). At first glance these COX-2 inhibitors, look like solution to NSAIDs related GI complication. However, Post marketing experience unmarked various adverse cardiovascular effects. Recent evidences of adverse CVS events with the use of COX-2 selective inhibitors have created a sense of insecurity not only among prescribers but also among consumers (5).

With variety of NSAIDs that are presently available, it is difficult at times to select a particular NSAID on a rationale basis alone but on empiricism. These are increasingly used for variety of indications like rheumatoid arthritis (RA), osteoarthritis (OA), low back pain (LBP) etc.

Keeping present scenerio in mind, a prospective study was planned and conducted in the Department of Pharmacology and in Orthopaedics OPD of a tertiary care teaching hospital, Himalayan Institute of Medical Sciences (HIMS), Dehradun during year 2003-04 to analyze the prescribing pattern of NSAIDs.

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Material and Methods

Patients attending Orthopaedics OPD, during a one year period from 2003-2004 suffering from RA, OA, and LBP were included in the study, after consulting the OPD register/registration number and confirming that it was a new patient to the hospital Prescriptions from such registered patients were collected and analyzed, once the patients had been attended to by the doctors, in the OPD. For better co-operation, patients were informed in brief regarding the benefits they could subsequently reap from the feed back study. In case of children and women, their parents, and spouses or close relatives respectively were taken into confidence for a better communication. Individual data was collected in a preformed format and was analyzed on parameters such as demographic profile and NSAID's usage pattern.

Results

In a one year period from 2003 to 2004, a total of 300 patients were included in the study and their prescriptions were analyzed. Most of the patients co-operated as the reasons for the study were explained politely before seeking their participation. The demographic profile has been described in Table No.1.

A total of 796 drugs were prescribed, out of which 724 were oral, 72 were topical (Table No.2). Out of 796 drugs, total number of systemic NSAID's used were 487 [67.3%]. Of these 277(56.8%) were used as monotherapy and 210 (43.12%) were used as fixed dose combinations (FDC). Among monotherapy 56.3% were non-selective and 43.6% were selective NSAIDs (Table 3). Diclofenac sodium (38.98%) followed by ibuprofen and piroxicam were the conventional older NSAIDs commonly used and among newer selective COX-2 inhibitors valdecoxib (25.3%) and rofecoxib (13.4%) were most commonly prescribed. The ratio of non-selective to selective NSAID drug prescription was 1.28:1.

FDC of diclofenac sodium, paracetamol with chlorzoxazone (45.7%) was most commonly prescribed followed by combination of valdecoxib and tizanidine (34.3%). Most commonly prescribed NSAIDs were diclofenac sodium followed by valdecoxib and rofecoxib suggesting that GI safety may have been an important concern while prescribing these drugs. In 14.1% of prescriptions, gastroprotective agents were used along with NSAID's and most commonly ranitidine was prescribed.

Tables

Table No1 Demographic Characteristics

Patient Characteristics	Number	(%)
Age groups (years)		
18-30	95	32
31-49	115	38.3
50-69	67	22
69-70	23	7.6
Total	300	
Sex		
Male	173	58
Female	127	42
M : F Ratio	1.36:1	
Prescribing indicators		
Average Number of drugs per prescription	2-6	
Concomitant medications		
H_2 Receptor Blockers	112	14
Analgesic Gels	72	9
Vitamin E	62	7.9
Calcium Salts	57	7.2

Table-2

Pattern of NSAIDs used in Orthopaedics OPD

Total number of prescriptions	n=300
Total number of drugs used	796
Average number of drugs per prescription	2.6
Total number of systemic NSAIDs	487 (67.3%); a) As Monotherapy- 277(56.8%); b) As F.D.C- 210 (43.1%)
Topical NSAIDs	72 (9.04%)
Total number of non-selective NSAIDs	156 (56.3%)
Total number of selective NSAIDs	121 (43.6%)
Total number of Gastroprotective agents	112 (Ranitidine 90%; Pantaprezole 19.6%)

(Percentages have been mentioned in parenthesis)

Table 3

Comparison of Selective and Non-Selective NSAIDs

Name of Drug	Numbers Prescribed	Percentage
Selective		
Celecoxib	14	5.1
Valdecoxib	70	25.3
Rofecocib	37	13.4
Total	121	
Non-Selective		
Diclofinac	108	38.98
Ibuprofen	18	6.5
Piroxicam	30	10.8
Total	156	

Non-Selective : Selctive usage ratio: 1.28 : 1

Discussion

A Substantial use of selective COX-2 inhibitors was evident though conventional non-selective NSAIDs topped the list of various selective and non-selective NSAIDs in the present study. Concomitant gastroprotectives were also used. Fixed dose combinations [FDC] were also prescribed, in the OPDs. COX-2 selective inhibitors were developed with assumption of better safety profile (renal and GI) than non-selective NSAIDs and became very popular few years back. However, the results of present study points towards the reversal of trends back to the use of conventional NSAIDs. This shift might have come with the recent reported CVS toxcity with the use of selective COX-2 inhibitors. Recent reports from population based studies indicate increase risk of myocardial infaraction and congestive cardiac failure in patients prescribe refocoxib and celocoxib. Similarly, thrombo-embolic phenomenon with parecoxib & veldicoxib use has been reported after cardic surgery (5). On the other hand it is alarming that after awareness campaign about COX-2 selective inhibitors, there use continues. The possible reason appear to be confusion have been created with recent NSAIDs related controversies. Moreover, the period in which the present study was carried happens to be in transformation phase of preception towards use of NSAIDs

Although the selective NSAIDs are costlier than the non-selective NSAIDs, the cost of therapy per prescription to the patient is lower as the selective NSAIDs need not be complimented with concomitant therapy with gastoprotective agents. In settings such as the one we have used, the Orthopaedic patients have to undergo relatively, a long-term therapy. Treatment with selective NSAIDs works out to be cost effective without any additional expense.

Initial trials showed superiority of COX-2 selective drugs over non-selective drugs but clinical experience has put their safety in question (6). The withdrawal of rofecoxib and valdecoxib by the manufacturing company, in lieu of causing cardiovascular side effects, has probably changed the prescribing pattern of NSAIDs (7). The choice of COX-2 selective inhibitors for a particular patient should be based upon a number of factors including relative efficacy, toxicity, concomitant disease states, patients, age, renal function and cost (8,9).

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