



Original Research Article

Prospective study on assessment of efficacy of etoricoxib versus etoricoxib with combination of glucosamine and chondroitin in primary osteoarthritis of knee

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ABSTRACT

Introduction: In the elderly, one of the most common joint diseases is osteoarthritis (OA). Established risk factors include obesity, increasing age, female sex, knee joint injury and meniscectomy. NSAIDs including selective COX – 2 inhibitors have come to play an important role in the pharmacologic management of arthritis and pain. Etoricoxib has been found to be less harmful to the gastrointestinal, renovascular and cardiovascular system.

Materials and Methods: Demographic data was collected in detail from all the patients. The site and severity of pain was assessed using the Lequesne Index. The subjects were randomly divided into 2 groups. The first group - GROUP – A was treated with Etoricoxib [90 mg OD for 14 days] and the second group - GROUP – B was treated with Etoricoxib [14 day] and combination of glucosamine and chondroitin [1 month]. The severity of the pain was noted from all the patients before treatment, during 1st follow up after 1 month, and the 2nd follow up after 2 months.

Results: No patient in both A and B group were in the extremely severe category, while 80% in group A and 60% in Group B were in the moderate to severe category. 20% in Group A and 40% in Group B were in the mild to moderate category after 4 weeks of treatment. After 8 weeks of treatment, 10% in group A and 5% in group B were in the moderate to severe category and 55% in Group A and 28% in Group B were in the mild to moderate category while 35% in Group A and 67% in Group B were under satisfactory joint function category.

Conclusion: Etoricoxib 90 mg OD for 3 weeks plus combination of glucosamine and chondroitin for 4 weeks is more effective when compared to Etoricoxib as single therapy.

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1. Introduction

In the elderly, one of the most common joint diseases is osteoarthritis (OA). Osteoarthritis is characterized by the breakdown of cartilage in joints. The most commonly affected joints are the knees, hips, hand, spine and shoulder joints. As the disease progresses, there is a direct effect on the quality of life of the patient, which includes functional as well as social activities, body image and also their emotional

well being.¹

As cartilage deteriorates, the bones of the joint begin to rub against one another, causing stiffness and pain, which often impairs movement. Osteoarthritis also can damage ligaments, menisci, and muscles. Bone or cartilage fragments may float in the joint space, causing irritation and pain. Bone spurs, or osteophytes, may also develop, causing additional pain and potentially damaging surrounding tissues.²

Around the world, an estimated 10%-15% of adults over 60 have some degree of osteoarthritis. Osteoarthritis is the

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second most common rheumatologic problem and it is the most frequent joint disease with a prevalence of 22% to 39% in India. OA is more common in women than men, but the prevalence increases dramatically with age. Nearly, 45% of women over the age of 65 years have symptoms while radiological evidence is found in 70% of those over 65 years. OA of the knee is a major cause of mobility impairment, particularly among females. OA was estimated to be the 10th leading cause of nonfatal burden.³

The prevalence of knee OA is rising in parallel with population ageing^{4,5} making the search for interventions to reduce disease occurrence and progression even more pressing. The aetiology of the disorder is likely to depend in part on mechanical insults to the joint and in part on a generalized predisposition to OA.⁶ Established risk factors include obesity, increasing age, female sex, knee joint injury and meniscectomy.⁷ Additionally, a significant body of evidence has accrued suggesting that occupational mechanical loading of the knee joint can cause or aggravate the disease.⁸

Management of the knee with osteoarthritis is usually with medications and a few lifestyle changes. The most commonly prescribed drugs are non-steroidal anti-inflammatory drugs (NSAIDs), but these normally come with the risk of heart attack and other vascular effects, kidney problems and gastrointestinal disturbances.^{9,10}

Thus, there is an increasing use of the second line of drugs, those which are symptomatic slow acting, like glucosamine hydrochloride, glucosamine sulfate, chondroitin sulfate, hyaluronic acid etc. They are supposed to reduce the cartilage degradation improving the patient symptoms.^{11,12}

Etoricoxib is a selective COX-2 inhibitor used to relieve pain and swelling in Osteoarthritis. It also exhibits gastrointestinal safety. Oral Etoricoxib is rapidly and completely absorbed from GI tract. Absorption is slowed, but not diminished, following a high-fat meal meaning that Etoricoxib can be administered without dietary consideration.¹³ Glucosamine stimulates the production of cartilage, which leads to joint repair, for its use as a symptom modifying drug in knee OA. Chondroitin stimulates the proteoglycans and hyaluronic acid. It decreases the catabolic activity of chondrocytes and inhibits proteolytic enzymes.

NSAIDs including selective COX – 2 inhibitors have come to play an important role in the pharmacologic management of arthritis and pain. Etoricoxib has been found to be less harmful to the gastrointestinal, renovascular and cardiovascular system. The available data suggests that Etoricoxib is an efficacious alternative in the management of arthritis and pain with potential advantages of convenient once daily administration and superior gastrointestinal tolerability compared with traditional NSAIDs.

Hence, the aim of this study is to assess the efficacy of Etoricoxib versus Etoricoxib with combination of glucosamine and chondroitin in primary osteoarthritis of knee in adults.

2. Materials and Methods

This community based prospective comparative study was done in the Department of orthopaedics at Malla Reddy Hospital, Suraram, Rangareddy Dist. from January 2019 to march 2019 over a period of 6 months. 128 patients over the age of 40 years with primary osteoarthritis of Grade 0, Grade1, Grade 2 and Grade 3 were included in the study. This study was cleared by the institutional ethical committee and the nature of the study was explained to the patients and their relatives and informed consent was taken from all them. Pregnant and lactating women, Patients with Uncontrolled Hypertension and uncontrolled diabetes, Patients with previous history of coronary artery disease, cardiac arrest and coronary artery bypass surgery, Patients who have a history of Cardiac, Respiratory, Hepatic, Renal disorders and Neoplastic conditions and Patients who are allergic to NSAIDs were excluded from the study.

Demographic data was collected in detail from all the patients. The site and severity of pain was assessed using the Lequesne Index. The subjects were randomly divided into 2 groups of 64 each. The first group - GROUP – A was treated with Etoricoxib [90 mg OD for 14 days] and the second group - GROUP – B was treated with Etoricoxib [14 day] and combination of glucosamine and chondroitin [1 month]. The severity of the pain was noted from all the patients before treatment, during 1st follow up after 1 month and the 2nd follow up after 2 months.

Counselling was done to all the patients

Statistical analysis was done by chi square test, graphs and percentages.

3. Results

Out of 128 patients included in the study, the number of females were 100 (78%) and males were 28 (22%), showing that the females were more prone to osteoarthritis than males (Figure 1).

Out of (n=128) patients, maximum number of patients with osteoarthritis were in the age group of 40-50(51.6% in group-A and 51.6% in group- B) and 51-60(29.7% in group-A and 31.3% in group-B) followed by age group of 61-70(15.6% in both groups) and least in 71-80(3.1% in group-A and 1.6% in group-B) (Table 1).

101 (79%) of the patients were from the rural background while 27 (21%) were from the urban background. Maximum number were house wives (29 in group A and 28 in group B) followed by farmer (16 in group A and 15 in group B), wage workers (11 in group A and 15 in group B) and

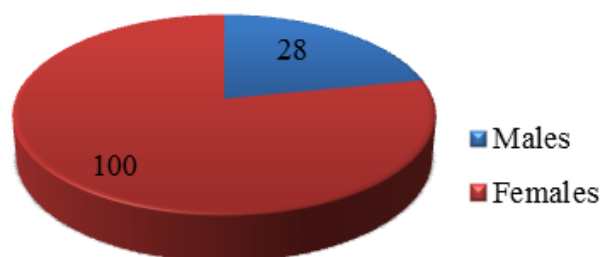


Fig. 1: Gender wise distribution of patients

Table 1: Age wise distribution of patients

| Age | Group A (n=64) | Group B (n=64) |
|-------|----------------|----------------|
| 40-50 | 33 (51.6%) | 33 (51.6%) |
| 51-60 | 19 (29.7%) | 20 (31.3%) |
| 61-70 | 10 (15.6%) | 10 (15.6%) |
| 71-80 | 2 (3.1%) | 1 (1.6%) |

others(8 group A and 6 in group B). Out of (n=128) patients, maximum number of patients with osteoarthritis were of normal weight (38.3%) followed by overweight(32.8%), obese(27.3%) and underweight(1.6%) (Table 2).

Table 2: General details of the patients

| Variables | Group A | Group B | Total |
|---------------------------|-----------|-----------|-----------|
| Place of residence | | | |
| Rural | 50 | 51 | 101 |
| Urban | 14 | 13 | 27 |
| Educational qualification | | | |
| House wife | 29 | 28 | 57 |
| Farmer | 16 | 15 | 31 |
| Wage worker | 11 | 15 | 26 |
| Others | 8 | 6 | 14 |
| BMI ((kg/m ²) | | | |
| Underweight (<18) | 1(1.6%) | 1(1.6%) | 2(1.6%) |
| Normal (18-24.9) | 24(37.5%) | 25(39.1%) | 29(38.3%) |
| Overweight (25-29.9) | 22(34.4%) | 20(31.3%) | 42(32.8%) |
| Obese (>30) | 17(26.6%) | 18(28.1%) | 35(27.3%) |

Most of the patients had a grade 3 severity of osteoarthritis by Kellegren and Lawrence Scale of Grading. 64.3% of the males and 51% of the females had Grade 3, 32.1% of the males and 39% of the females had Grade 2. Grade 1 was seen in 1(3.6%) of the males in the study and in 10(10%) of the females (Table 3).

Table 3: Kellegren and Lawrence Scale of Grading of osteoarthritis

| Grade (Severity) | Male (n=28) | Female (n=100) |
|------------------|-------------|----------------|
| Grade 1 (n=11) | 1(3.6%) | 10(10%) |
| Grade 2 (n=48) | 9(32.1%) | 39(39%) |
| Grade 3 (n=69) | 18(64.3%) | 51(51%) |

Among Group A subjects, 18(28.1%) were under extremely severe category, 40(62.5%) were under moderate to severe category, 6(9.3%) were under mild to moderate category and 0% were under satisfactory joint function category before treatment with Etoricoxib using Lequesne. After treatment with Etoricoxib, during 1st follow up - 0% were under extremely severe category, 51(79.7%) were under moderate to severe category, 13(19.3%) were under mild to moderate category and 0% were under satisfactory joint function category. During 2nd follow up, 0% were under extremely severe category, 22(34.5%) were under moderate to severe category, 42(65.6%) were under mild to moderate category and 0% were under satisfactory joint function category.

Among Group B subjects, 16(25%) were under extremely severe category, 43(67.1%) were under moderate to severe category, 5(7.8%) were under mild to moderate category and 0% were under satisfactory joint function category before treatment with Etoricoxib, Glucosamine and Chondroitin. During 1st follow up, after treatment, 0% were under extremely severe category, 38(60%) were under moderate to severe category, 26(40%) were under mild to moderate category and 0% were under satisfactory joint function category. During 2nd follow up, 0% were under extremely severe category, 8(12.5%) were under moderate to severe category, 54(84.4%) were under mild to moderate category and 2 (3.1%) were under satisfactory joint function category (Table 4).

4. Discussion

There have been a few studies which have shown that pain due to osteoarthritis can be treated with the use of COX-2 inhibitors.¹⁴⁻¹⁷ In the present study we compared the efficacy of Etoricoxib alone and Etoricoxib in combination with Glucosamine and Chondroitin.

In our study, the prevalence rate of osteoarthritis was more in females (78% females compared to 22% males) showing that females are more prone to osteoarthritis than males with the most predominant age group being 40-50 years. Most of the patients were from the rural background and housewives

According to Lequesne index 1st follow up represents that among Group A subjects 0% were under extremely severe category, 80% were under moderate to severe category, 20% were under mild to moderate category and 0% were under satisfactory joint function category. Among Group B subjects 0% were under extremely severe category, 60% were under moderate to severe category, 40% were under mild to moderate category and 0% were under satisfactory joint function category. After 8 weeks of treatment during 2nd follow up, among Group A subjects, 0% were under extremely severe category, 10% were under moderate to severe category, 55% were under mild to moderate category and 35% were under satisfactory joint

Table 4: 4: Comparison of pain severity using Lequesne Index

| Severity of pain | Pre treatment | | Post treatment 1 st follow up | | Post treatment 2 nd follow up | |
|--------------------|---------------|-----------|--|-----------|--|-----------|
| | Group A | Group B | Group A | Group B | Group A | Group B |
| Extremely severe | 18(28.1%) | 16(25%) | 0(0%) | 0(0%) | 0(0%) | 0(0%) |
| Moderate to severe | 40(62.5%) | 43(67.2%) | 51(79.7%) | 38(59.4%) | 22(34.4%) | 8 (12.5%) |
| Mild to moderate | 6(9.3%) | 5(7.8%) | 13(19.3%) | 26(40.6%) | 42(65.6%) | 54(84.4%) |
| SJF | 0(0%) | 0(0%) | 0(0%) | 0(0%) | 0(0%) | 2(3.1%) |

function category. Among Group B subjects 0% were under extremely severe category, 5% were under moderate to severe category, 28% were under mild to moderate category and 67% were under satisfactory joint function category. It is shown that Etoricoxib with glucosamine and chondroitin is better in treating pain of osteoarthritis than Etoricoxib alone.

Zeng et al in their study have reported that glucosamine with chondroitin was more effective for pain relief and functional improvement of the individual. Further, they also observed that there were no adverse effects found.¹⁸

Glucosamine is useful in the anti-inflammatory effect of the body, pro anabolic effect in the promotion of osteoblast proliferation as well as in the inhibition of catabolic intermediates.^{19–21} Chondroitin is a glycosaminoglycan which is a part of the aggrecan structure of the articular cartilage. There uses are varied, they are anabolic, anti-inflammatory, antiapoptotic, anti- catabolic and anti-oxidant.^{20,21}

In studies by Chan et al, anti-catabolic and anti-inflammatory action was found with glucosamine with chondroitin rather than either of them alone.^{22–24} A study by Kongtharvonskul et al also reported that the presence of glucosamine in the treatment of osteoarthritis helped in relieving pain faster.²⁵ In some cases, both glucosamine and chondroitin are recommended for the treatment of osteoarthritis.^{26–28}

5. Conclusion

Etoricoxib is a COX – 2 inhibitor used in relieving severity of pain in Osteoarthritis. Glucosamine and Chondroitin are given as nutritional supplements for improving cartilage function and joint movements. Therefore, they provide additional benefit to COX – 2 inhibitors in relieving pain. This study concludes that Etoricoxib 90 mg OD for 3 weeks plus combination of glucosamine and chondroitin for 4 weeks is more effective when compared to Etoricoxib as single therapy.

6. Source of Funding

None.

7. Conflict of Interest

None.

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