

Role of Diacerein in Primary Osteoarthritis Knee: A Cross Sectional Study Conducted in a Tertiary Care Hospital

Role of Diacerein in Primary Osteoarthritis Knee

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ABSTRACT

Objective: To determine role of diacerein among the patient with primary osteoarthritis knee.

Study Design: cross sectional study

Place and Duration of Study: This study was conducted at the department of orthopedic surgery Sir Ram Hospital Lahore. Study was completed in six months duration from Jan., 2021 to June, 2021 for a period of six months.

Materials and Methods: Patients presenting to the out-patient department with primary osteoarthritis knee having age >50 years were included in this study. Patients were evaluated according to WOMAC (Western Ontario and McMaster Universities Arthritis Index) and VAS (visual analogue Scale). Patients were given diacerein 100mg twice daily for 06 months duration. WOMAC and VAS were recorded of study patients initially and after six months and results were compared to see improvement in the patients.

Results: There were 110 cases in this study including 60(54.5%) male and 50(45.5%) female cases. All patients were having age >50 years with mean age of 59.28 ± 4.64 years. Before and after treatment mean WOMAC score was 46.34 ± 5.72 and 35.92 ± 16.4 respectively ($p < 0.05$) while mean VAS was 6.43 ± 2.50 and 4.4 ± 1.22 respectively ($p < 0.05$). 30% improvement was seen in 45% cases. Efficacy of the drug was labelled as yes in 45% cases. Only two patients suffered from diarrhea while one patient had deranged LFTs after treatment.

Conclusion: Patients showed significant improvement in the mean WOMAC and VAS scores after six months therapy of diacerein. This drug can be considered as an alternative therapy among those patient who don't respond to conventional analgesics therapy.

Key Words: Diacerein, improvement, Osteoarthritis Knee, VAS, WOMAC

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INTRODUCTION

Osteoarthritis is a degenerative joint disease which gradually progress with age.¹ It causes destruction of joint articular cartilage. Initially there is softening, sclerosis, subchondral cysts and ultimately osteophytes formation in the joint.² Usual presenting symptoms are joint pain, effusion and stiffness. A Pakistani study has shown that 25% of our rural population is suffering from primary osteoarthritis of knee.³

Knee osteoarthritis incidence in the western countries is 18-25% among males and 24-40% among females

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above 50 years of age.⁴ All compartments of knee can be affected but mostly medial compartment is involved because during walking repeatedly varus movements causes increased stress on medial compartment causing degenerative changes in arthritis patients. Main aims of the treatment are to relieve pain, limit the progression of disease and to minimize functional disability of the patient.⁵ Anti-inflammatory drugs and analgesics are very important in treating these patients. Previous researches have shown that interleukin-1-beta (IL-1B) plays main role in the joint cartilage destruction, chondrocyte apoptosis, subchondral bone remodeling and joint inflammation. Cytokines produce nitric oxide which also contribute in joint destruction.⁶ Previously many drugs were studied for its treatment like nimesulide and glucosamine sulphate, but diacerein is an anthraquinone derivative which inhibit IL-1B.⁷ It relieves symptoms and decreases progression of the disease. Primary osteoarthritis is a very common disease causing disability among old age population.

There is no gold standard treatment for this disease so far.⁸ Usually structure modifying or disease modifying agents are used in its treatment. According to some studies diacerein is a structure modifying agent.^{9,10} This study has been conducted to evaluate the role of diacerein in reducing pain and inflammation among the old age patients with knee osteoarthritis.

MATERIALS AND METHODS

This is a cross sectional study, conducted in the department of orthopedic surgery Sir Ram Hospital Lahore. Study was completed in six months duration from Jan., 2021 to June, 2021. Study sample was calculated using WHO sample size calculator. Patients were collected using consecutive sampling technique. Patients presenting to the out-patient door with primary osteoarthritis knee having age >50 years were included in this study. Patients diagnosed with knee osteoarthritis according to ACR criteria having grade II,III and IV disease were included in this study. Those with secondary osteoarthritis knee, using heavy dose of steroids for more than one year, those who took intra-articular steroid injection in last three months, or with history of trauma to involved knee joint in recent six months were excluded from the study. Patients were evaluated according to WOMAC (Western Ontario and McMaster Universities Arthritis Index) and VAS (visual analogue Scale). Patients were given diacerein 100mg twice daily for 06 months duration. WOMAC and VAS were recorded of study patients initially and after six months and results were compared to see improvement in the patients. Informed consent was taken from all the patients in study group. Approval was taken from the institutional ethical review board. Statistical analysis was done using SPSS (version-20) software.

RESULTS

Total 110 cases were included in this study including 60(54.5%) male and 50(45.5%) female cases. Mostly patients (45.5%) were having age between 50-60 years. All patients were having age >50 years with mean age of 59.28 ± 4.64 years (Table-I). Mean BMI of the patients was 29.83 ± 4.32 kg/m². There were 03(2.70%) cases with diabetes mellitus and 12(10.90%) cases with hypertension.

Table No.1: Distribution of patients according to age and gender

Age (years)	Gender		Total
	Male	Female	
50-60	30 (27.3%)	20 (18.2%)	50 (45.5%)
60-70	11 (10%)	17 (15.5%)	28 (25.5%)
>70	09 (8.2%)	13 (11.8%)	22 (20%)
Total	60 (54.5%)	50 (45.5%)	110 (100%)

Before and after treatment mean WOMAC score was 46.34 ± 5.72 and 35.92 ± 16.4 respectively ($p < 0.05$) while mean VAS was 6.43 ± 2.50 and 4.4 ± 1.22 respectively ($p < 0.05$). 30% improvement was seen in 45% cases (Table-II). Only two patients suffered from diarrhea while one patient had deranged LFTs after treatment.

Table No.2: Distribution of patients according to WOMAC score and VAS at presentation and after six months follow up

	WOMAC score (Mean \pm SD)	VAS (Mean \pm SD)
Baseline	46.34 ± 5.72	6.43 ± 2.50
After 06 months	35.92 ± 16.40	4.40 ± 1.22
p-value	0.001	0.001

There was no patient with grade-I osteoarthritis, while 35(31.8%) cases were having grade-II, 55(50%) grade-III and 20(18.2%) were having grade-IV osteoarthritis knee (Table-III). Overall 40% improvement was seen in 45% cases so efficacy of the drug was labeled as yes in 45% cases.

Table No.3: Patients distribution according to severity of osteoarthritis knee

Grade of Knee osteoarthritis	Number of patients	Patients showing improvement
Grade-I	00	00
Grade-II	35	27 (77.1%)
Grade-III	55	15 (27.3%)
Grade-IV	20	03 (15%)

DISCUSSION

Diacerein as a structure modifying agent is under practice since many years. There is little data available about its efficacy.¹¹ This study was conducted to know efficacy of diacerein in primary osteoarthritis knee and improvement in symptoms of patients over the period of six months. Our results were in favor of diacerein with the improvement in mean WOMAC score and VAS after six months therapy. In our study efficacy of the drug was reported as 45%, that is much attractive. Diacerein is an inhibitor of IL-1B production. Previous literature has shown its role as disease modifying agent.^{12,13} Previously a study conducted by Pelletier et al reported significant improvement in osteoarthritis knee after use of diacerein. Their outcomes parameters were radiographic evaluation of the joint.¹⁴ In another study by Sharapova et al reported that diacerein showed good outcomes in improving pain and functional disability among patients.¹⁵ Karateev et al conducted study on 100 cases with primary knee osteoarthritis and divided patients in two groups, one group was given conventional treatment and second group given diacerein plus conventional treatment. They concluded

that 60% cases receiving diacerein plus conventional treatment showed good outcomes as compared to 20% cases receiving just conventional treatment.¹⁶

In our study 45 cases showed significant improvement in symptoms and functional disability after six months therapy with diacerein. We used WOMAC score VAS comprising on a question to evaluate functional outcomes in patients. Other scales like OMERACT-6 and Lequesne Functional Severity Index have also been used in literature. However VAS and WOMAC are simple, reliable and easy to use.¹⁷ Hailer et al in their study reported that diacerein 50mg given two times a day showed very good improvement in VAS and WOMAC score in their patients.¹⁸

In our study we observed that most of the patients showed improvement in WOMAC score less than 30% and no patient showed improvement more than 50%. 77% cases with grade-II osteoarthritis, 27.3% with grade-III and 15% with grade-IV showed significant improvement. These results show that %age improvement depends on the severity of osteoarthritis. In our study two patients had diarrhea while one patient showed deranged LFTs after six months therapy. According to a study conducted by Chaudhari et al diarrhea was noted as most common side effect of diacerein, reported in 46% cases in diacerein group as compared to 12% cases in placebo group.¹⁹ Usually diarrhea is mild in severity according to previous studies. Other less common side effects include abnormal LFTs and discoloration of urine.^{20,21}

CONCLUSION

Diacerein provides significant improvement in pain and function in patients with primary osteoarthritis of knee joint. This is safe and effective drug with minimum side effects. It is much effective in patients resistant to conventional analgesics therapy with mild to moderate severity of the disease.

Author's Contribution:

Concept & Design of Study:	Subhan Shahid
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Conflict of Interest: The study has no conflict of interest to declare by any author.

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