

ROLE OF INTRA-ARTICULAR CORTICOSTEROID INJECTIONS IN PAIN MANAGEMENT DURING PHYSICAL REHABILITATION OF MODERATE TO SEVERE CASES OF KNEE OSTEOARTHRITIS

Naureen Tasaduq*, Syed Shakil-ur-Rehman, Muhammad Saleem

*Fauji Foundation Hospital Rawalpindi, Riphah International University, Rawalpindi

ABSTRACT

Objective: To determine the role of intra-articular corticosteroid injections in pain management during physical rehabilitation of moderate to severe cases of knee osteoarthritis.

Study Design: Randomized control trial (RCT).

Place and Duration of Study: Department of Rheumatology and Rehabilitation, Fauji Foundation Hospital Rawalpindi during June 2011 to February 2012.

Patients and Methods: Sixty patients with moderate to severe knee osteoarthritis were randomly selected by using probability simple random sampling technique, and randomly placed into two groups A and B through flip a coin method. The intra-articular corticosteroid injections were administered into 30 patients, including 22 female and 08 male, followed by a 2 weeks physical rehabilitation program. In group B all 30 patients, 19 female and 11 male, underwent through a 2 weeks physical rehabilitation program. The visual analog scale (VAS) was used to assess the intensity of pain and was measured at the start and at completion of the 2 week treatment program.

Results: There were 60 cases in the study; 30 in each treatment groups A and B, and no drop outs. Mean age of the patients in group A was 56.25 and group B it was 58.75 years. Majority of patients in both the groups were between 44 - 77 years of age. The pain intensity was calculated in group A (p -value=0.007) and group B (p -value=0.009) at baseline. The patients in group A was treated by intra-articular corticosteroid injections followed by physical rehabilitation and group B was treated only with physical rehabilitation for two months. The pain intensity was measured at the completion of treatment for group A (p - value = 0.006) and B (p - value = 0.271).

Conclusion: The study concluded that intra-articular corticosteroid injections combined with physical therapy management are more effective in pain management during physical rehabilitation of moderate to severe cases of knee osteoarthritis as compare with physical therapy alone.

Keywords: Knee Osteoarthritis, Pain management, Physical Rehabilitation

INTRODUCTION

Osteoarthritis is a very common degenerative joint disease, and causes wear and tear in large weight bearing joints of human body, particularly the knee and hip joints. The symptoms usually appear during middle age and affect every person after the age of 70 years¹. The etiology is unknown but some factors can contribute including obesity, family history of osteoarthritis, trauma, jobs that requires kneeling, squatting, lifting, climbing stairs or walking, and

some sports, like basketball, football and throwing².

The common signs and symptoms of osteoarthritis are joint pain on weight bearing, morning stiffness, joint swelling, deformity and degenerative changes, osteophytes and altered alignment on x-rays. The signs on physical examination are positive crepitus sound on passive movement, joint swelling, and restricted range of motion, tenderness when the joint is palpated, and normal movement is often painful³.

The management of knee osteoarthritis includes a variety of treatment options to benefit the patients, including medication, life style modification, braces, physical therapy and surgeries including arthroscopy and arthroplasty.

Correspondence: Dr Syed Shakil ur Rehman, RCRS Main Peshawar road Rawalpindi.

Email: syedshakilurrehman@yahoo.com

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The intra-articular corticosteroids injections are one of the commonly used remedy for pain management in osteoarthritis⁴.

The physical therapy has also important role in pain management, muscle strengthening, and prevention of joint deformity with restoration of joint function. The pain always challenges the physical therapists in patients with moderate to severe pain which increases during muscle strengthening exercises⁵.

The severity of knee osteoarthritis is classified by Kellgren-Lawrence based on radiological findings including joint space narrowing, osteophytes and bony sclerosis. It consists of normal, Grade I, Grade II, Grade III and Grade IV. The description of Kellgren-Lawrence grading system of knee osteoarthritis is:

Grade I: Unlikely narrowing of the joint space, possible osteophytes

Grade II: Small osteophytes, possible narrowing of the joint

Grade III: Multiple, moderately sized osteophytes, definite joint space narrowing, some sclerotic areas, possible deformation of bone ends.

Grade IV: Multiple large osteophytes, severe joint space narrowing, marked sclerosis and definite bony end deformity⁶.

This study was an effort to determine the role of intra-articular corticosteroid injections in pain management during physical rehabilitation of moderate to severe cases of knee osteoarthritis, and rationale behind was the increasing incidence of knee osteoarthritis and emerging scope of rehabilitation combined with intra-articular corticosteroid injections in its management.

MATERIAL AND METHODS

This randomized control trial was conducted

at out-patient department of Rheumatology and Rehabilitation, Fauji Foundation Hospital Rawalpindi from June 2011 to February 2012. Approval from the hospital ethical committee was obtained and informed consent was taken from all participants before enrollment.

The study included 60 patients with moderate to severe knee osteoarthritis. All patients were randomly selected by using probability simple random sampling technique, and randomly placed into two groups A and B through flip a coin method. The intra-articular corticosteroid injections were administered into 30 patients, including 22 female and 08 male, followed by a 2 weeks physical rehabilitation program. The 40-80 mg methylprednisolone with 2 cc bupivacain was administered through suprapatellar approach and no local and systemic complication was noted. In group B all 30 patients, 19 female and 11 male, underwent through a 2 weeks physical rehabilitation program. The visual analog scale (VAS) was used to assess the intensity of pain and was measured at the start and at completion of the 2 week treatment program.

The physical rehabilitation was common in both groups and includes isometric quadriceps muscle strengthening exercises at 50 contractions per session, twice a day for two weeks. The visual analog scale (VAS) was used to assess the intensity of pain and was measured at the start and completion of the treatment duration. The data was analyzed by SPSS version 20 and non-parametric Wilcoxon Sign Test was applied to calculate the *p* value at 95% level of significance.

RESULTS

There are 60 cases in the study; 30 in each treatment groups A and B, there was no drop out. Mean age of the patients in group A was 56.25 and group B it was 58.75 years. Majority of

Table-1: Description of pain intensity pre and post treatment in group A and B.

Groups	Before treatment	After treatment	<i>p</i> -value
Group A (n=30)	3.40 ± 0.61	2.53 ± 1.13	0.006
Group B (n=30)	3.35 ± 0.67	3.14 ± 1.11	0.271

patients in both the groups were between 44-77 years of age.

The pain intensity was calculated in group A (p -value=0.007) and group B (p -value=0.009) as baseline at start of study. The pain intensity was measured at the completion of treatment for group A (p -value=0.006) and B (p -value=0.271) (Table-1).

DISCUSSION

The American College of Rheumatology Subcommittee for guidelines on osteoarthritis recommends intraarticular corticosteroids injections for chronic knee pain in osteoarthritis particularly in patients with chronic inflammation. They also recommend the use of intraarticular corticosteroid injections for short term pain management used as single dose and followed by quadriceps strengthening exercises⁷.

Seth and colleagues conducted a clinical trial and compared corticosteroids with hyaluronic acid injections for the treatment of osteoarthritis of the knee. They concluded that corticosteroid injections are effective in the short term pain management in chronic patients of knee osteoarthritis⁸.

Arroll conducted a meta-analysis on corticosteroid injections for osteoarthritis of the knee and analyzed the available research studies on cochrane controlled trials register, Medline, and Embase. He concluded that the evidence supports the short term effectiveness of corticosteroid injections for pain management in osteoarthritis of the knee. The significant improvement was shown from 2-24 weeks from different long term research studies⁹.

Brosseau and colleagues gives their recommendation at Ottawa Panel on evidence-based clinical practice guidelines for the management of osteoarthritis in adults who are obese or overweight. They analyzed the research literature available on MEDLINE, EMBASE, SPORTDiscuss, SUM, Scopus, CINAHL, AMED,

BIOMED, PubMed, ERIC, the Cochrane Controlled Trials, and PEDro. They recommend that the corticosteroid injections provide short term relief in pain management for patients with severe knee osteoarthritis¹⁰.

The Royal Australian College of General Practitioners published guideline for the non-surgical management of hip and knee osteoarthritis in July 2009. They recommended the corticosteroids injections for short term pain relief in painful, swollen joint in chronic patients of knee and hip osteoarthritis, while administered directly into the joint cavity. The guidelines of the Royal Australian College of General Practitioners are supported by many research studies¹¹⁻¹³.

CONCLUSION

The study concluded that intra-articular corticosteroid injections combined with physical therapy management are more effective in pain management during physical rehabilitation of moderate to severe cases of knee osteoarthritis as compared with physical therapy alone.

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