Short-term Outcome of Oral Prednisolone in the Management of Primary Adhesive Capsulitis.

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ABSTRACT

Objective: To determine the short term outcome of oral Prednisolone in the management of primary adhesive capsulitis in terms of pain relief and improvement in shoulder range of motion.

Methods: This descriptive study was carried out in Orthopedic Department District Head Quarter Hospital(DHQ) Teaching Hospital Kohat Development authority(KDA) Kohat from 23rd July 2020 to 23rd December 2021. All adults patients with primary adhesive capsulitis fulfilling the inclusion criteria were treated with 30 mg oral prednisolone in tapering dose for 3 weeks. The intensity of pain was assessed using Visual Analogue Scale(VAS) and shoulder range of motion(ROM) was measured with goniometer at 3 weeks and compared with pre treatment values.

Results: In this study 46 patients were included. Female were 28 (60.87%) while males were 18 (39.13%). Average age was 52.35±6.48 years. Non-dominant and dominant shoulders were affected in 27(58.70%) and 19(41.30%) patients respectively. The mean pre treatment VAS significantly improved from 8.23±3.2 to 1.97±1.1 post treatment.($p<0.05$) A significant improvement in shoulder flexion, abduction, internal rotation and external rotation was documented.($p<0.05$)

Conclusion: Significant short term pain reduction and improvement in shoulder range of motion was documented with oral Prednisolone in patients with primary adhesive capsulitis.

Keywords: Frozen shoulder, Oral Prednisolone, Primary Adhesive Capsulitis.

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INTRODUCTION

Adhesive Capsulitis also called Frozen Shoulder affects 2% to 5% of the general population and about 30% of insulin-dependent diabetics.[1-3] It occurs more in females in their fourth and sixth decades of life and usually affecting the non-dominant shoulder while bilateral involvement occurs in 10 to 40% of cases.[4,5] Adhesive Capsulitis is classified into primary (idiopathic) and secondary types.[4] The primary Adhesive Capsulitis occurs without an obvious cause whereas secondary is linked to trauma, shoulder surgery, cervical disc disease, prolonged immobilization, hyper or hypothyroidism, diabetes, ischemic heart disease and stroke.[6,7] Clinical features are marked by spontaneous onset of shoulder discomfort and progressive global tightness of the shoulder joint leading to considerable disability.[8,9] The disease usually passes through three clinical stages. The first is the painful stage characterized by slow onset of shoulder pain worst at night and lasts for 2 to 9 months. The second is the stiffening or frozen stage lasting for 4 to 12 months and is characterized by slow progression of stiffness and difficulty in routine activities. The third is the thawing stage of 5 to 12 months duration and is marked by gradual recovery.[10] Adhesive Capsulitis is generally a self-limiting condition, however permanent residual disability occurs in about 10% of cases. [11] Adhesive capsulitis has been managed by different modalities like benign neglect, rest, physical therapy, NSAIDs, extracorporeal shock wave therapy, oral and intra-articular corticosteroids, manipulation under anesthesia and arthroscopic or open release of capsular contracture.[12,13]

The objective of our study was to determine the short term outcome of oral Prednisolone in the management of primary adhesive capsulitis in terms of pain relief and improvement in shoulder range of motion

METHODS

We conducted this descriptive study in Orthopedic Department District Head Quarter Hospital(DHQ) Teaching Hospital Kohat Development authority(KDA) Kohat from 23rd July 2020 to 23rd December 2021. All cases of primary frozen shoulder aged >20 years of both gender who were not relieved with NSAIDs and physiotherapy for six weeks were included. Guidelines of the Dutch College of General Practitioners[14] that is painful and limited passive glenohumeral mobility, lateral (external) rotation restricted more than abduction and medial rotation were used to diagnosed adhesive capsulitis. We excluded cases with secondary frozen shoulder, recurrent and bilateral frozen shoulder, history of previous oral or intra-articular corticosteroid injections, history of gastritis, any contraindications to oral corticosteroids and other concomitant shoulder pathology. The study was approved by hospital Ethical and Research Committee. Written informed consent was taken from all the cases and all aspects of the treatment were explained. For exclusion of secondary cases, detailed history, thorough clinical examination, x-rays of the affected shoulder and routine investigations were performed. Baseline VAS pain score and range of motion (forward flexion, abduction, internal and external rotation) were recorded. Oral Prednisolone (tab.Deltacortil 5mg®Pfizer) were prescribed for 3 weeks in tapering dose as follows; 30mg for 1st week, 20mg for 2nd week and 10mg for 3rd week in 2 divided doses. Oral Paracetamol for pain and a proton pump inhibitor were given for one and three weeks respectively. Home-based physiotherapy that consisted of pendulum exercises and range of motion exercises for ten minutes twice a day as tolerated was taught. After 3 weeks, VAS pain score and range of motion were calculated.

We analyzed our data with SPSS version 24. Frequencies and percentages were used to represent qualitative variables while mean and standard deviation was used to represent quantitative variables. Pre treatment and post treatment VAS and shoulder ROM was compared and P value was calculated with paired sample t test. P value of < 0.05 was considered significant. Data was presented in graph and table where necessary.

RESULTS

We treated 46 patients of primary adhesive capsulitis with Oral Prednisolone. Majority(60.87%,n=28) of our patients were females while male patients were 18 (39.13%). The mean age of our study participants was 52.35±6.48 years(range 40 to 68 years) . Non-dominant and dominant shoulders were affected in 27(58.70%) and 19(41.30%) patients respectively. In our study 26 (56.52%) patients were in stage 1 of adhesive capsulitis while 20 (43.48%) were in stage 2 of the disease. Average duration of the disease was 13.57±3.09 weeks**.** Mean VAS before treatment was 8.23±1.32 and after treatment it was 1.97±1.74($p<0.05$) at 3 weeks as shown in graph I. A significant improvement of shoulder ROM ($p<0.05$)was documented at 3 weeks post treatment as shown in table I.No major complication was reported.

Graph I. Mean Pre-Treatment and Post-Treatment pain assessment (VAS)

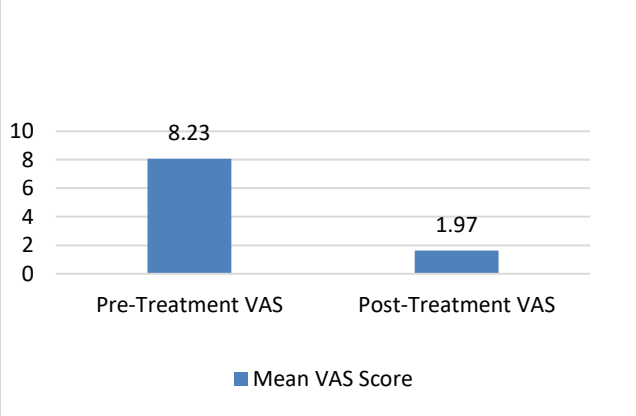

Table I: Comparison of pre treatment and post treatment shoulder range of motion.

Range of Motion (degrees)	Tre-treatment	Post-treatment	*P* value
Flexion	115.11±8.54 (range 100-129)	144.63±10.10 (range 120-160)	<0.001
Abduction	106.85±8.55 (range 92-123)	142.04±9.09 (range 117-157	<0.001
Internal Rotation	36.93 ±3.55 (range 29-42)	53.14±7.14 (range 35-63)	<0.001
External Rotation	44.69±5.46 (range 32-54)	64.14±9.45 (range 41-77)	<0.001

DISCUSSION

The results of our studies are supported by literature. Similar to the other studies, we noted female predominance (28 vs 18) in our study.[1,15,16]. Average age of our patients was 52.35±6.48 years similar to that reported in the literature.[17,18] As compared to dominant side, non-dominant side was more often involved as pointed out by other authors.[16,17].

Because of the controversial etiopathogenesis of adhesive capsulitis no treatment protocol has been universally standardized.[19,20] Oral steroids were first used in 1950s and they have been shown to reduce pain and improve function of the shoulder.[21-23] In our study we had documented that at 3 weeks decrease in average VAS pain score and improvement in range of flexion, abduction, internal and external rotation were statistically significant after short course of oral prednisolone ($p<0.001$). Early benefits with oral steroid were also reported in previous trials.[24,25] Compared to oral corticosteroid intra-articular steroid injection combined with physiotherapy exercises provided rapid recovery as shown by Widiastuti-Samekto[26]. However patients in this study were in phases 2 and 3 of the disease while our patients were in phase 1 and 2. Similarly Canbulat N[27] reported that oral steroid combined with Pregabalin got long-lasting beneficial effects in early stages of primary adhesive capsulitis. Furthermore, some authors have recommended oral steroids instead of NSAIDs as the first line of treatment for adhesive capsulitis. They suggested that oral steroids are more useful in getting pain relief in the freezing phase of frozen shoulder.[28] Adverse effects of oral prednisolone were insignificant in our series which is similar to the reports of previous trials.[24,25,29] Severe gastric problem however have been reported by some authors with oral steroids.[26] The reason for gastric safety in our patients was probably the addition of a proton pump inhibitor to the treatment and exclusion of patients with history of gastritis from our study.

Our study had few limitations. The design of our study was descriptive.Our sample size was small and our follow up period was short.Further studies are therefore recommended to verify the safety and efficacy of oral Prednisolone in the management of primary adhesive capsulitis.

CONCLUSION

Significant short term pain reduction and improvement in shoulder range of motion was documented with oral Prednisolone in patients with primary adhesive capsulitis.

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