



Case Report

Outcome of novel based physiotherapy rehabilitation protocol in adhesive capsulitis in type-2 diabetes mellitus

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ABSTRACT

Adhesive capsulitis is also known as frozen shoulder, it is characterized firstly by initially painful and later by progressive restricted active and passive glenohumeral joint range of motion and with spontaneous complete or nearly complete recovery over a varied period of time. First line treatment management are nonsteroidal anti-inflammatory drugs along with many manual physiotherapy exercises are effective in adhesive capsulitis. A 48-year-old male comes to physiotherapy department of AVBRH with complaint of pain in right shoulder. He felt pain while performing routine activity like combing hair, writing on board. He was diagnosed with as adhesive capsulitis following type 2 Diabetes Mellitus. Patient was treated 5 days per week for 4 weeks. Key Exercise of rehabilitation were range of motion, strengthening exercises with open-chain proprioceptive activities. In his case report it is concluded that Novel based physiotherapy rehabilitation protocol in Adhesive capsulitis following type 2 Diabetes Mellitus helps in early acceleration of reduction of pain, improvement in ROM, muscle strength and functional activities.

Keywords: Physiotherapy Rehabilitation Protocol, Adhesive Capsulitis, Strengthening, Frozen Shoulder.

Received – 10-06-2021, Accepted- 05-01-2022

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INTRODUCTION

Adhesive capsulitis is also known as frozen shoulder, it is characterized firstly by initially painful and later by progressive restricted active and passive glenohumeral joint range of motion and with spontaneous complete or nearly complete recovery over a varied period of time. It is very complicated to diagnose early stage of Adhesive capsulitis [1]. The path etiology of Adhesive capsulitis is complex and multifactorial with both genetic and environmental factor, which plays an important role [2]. Adhesive capsulitis can be primary or secondary. 1 Primary: the onset is generally idiopathic, 2 secondary: it results from a known cause of predisposing factor or surgical event [3]. Rehabilitation protocol categorized into four phases from immediate protection phase to advance strengthening exercises [4]. This case study is discussed to provide a rehabilitation protocol on Adhesive capsulitis. A 48-year-old male comes to physiotherapy department of AVBRH with complaint of pain in right shoulder. He felt pain while performing routine activity like combing hair, writing on board. He is a teacher by occupation. He felt relieved by analgesic or during rest. He was diagnosed with frozen shoulder which is also known as adhesive capsulitis. It is a condition characterized by stiffness and pain in the shoulder joint. The condition occurs more commonly in people

with diabetes and in people who've kept their arm immobilized for a long period of time. The shoulder is a very complex joint that is crucial to many activities of daily living. Decreased shoulder mobility is a serious clinical finding. A global decrease in shoulder range of motion is called adhesive capsulitis, referring to the actual adherence of the shoulder capsule to head. Rehabilitation was given accordingly.

In this case report, Novel based physiotherapy rehabilitation protocol in Adhesive capsulitis in Type-2 Diabetes Mellitus used to find effect on pain, ROM, strength and functional impairment to achieve early recovery of patient functional activities.

Patient and observations

A 48-year-old, teacher by occupation resident of Wardha presenting with chief complaint of pain in right shoulder, pain during writing on board. Patient was referred for the investigation of MRI. Patient was referred to physiotherapy with complaint on intense pain in right shoulder and difficulty to raise upper extremity from shoulder and weakness in the arm. Pain was sharp shooting, aggravated by movement and relieved at rest. Intensity of pain on numerical pain rating scale was 9. Patient had no previous significant medical or surgical history. Patient is regular smoker and occasionally alcoholic. Patient's nutritional level is poor.

Clinical findings

Written consent was taken from patient. Patient was explained about physical examination and intervention. On general examination patient was moderate, oriented to time, place and Cooperative. Patient was hemodynamically stable, afebrile with BP was 120/80 mmHg, plus rate was 75 Beats per minute, Respiratory rate was 18 breath per minute. Patient had no finding of cyanosis, icterus, clubbing, edema. On observation posture of patient was normal with no significant changes in skin and no significant deformity, swelling or oedema. On palpation tenderness was present with no significant muscle spasm and scar. Muscle strength assessment was taken and compared on both upper limbs based on medical research council and positive findings were (1/5: shoulder flexors. 1/5: shoulder abductor, 1/5: external rotation). Sensation was normal.

Therapeutic intervention

Physiotherapy rehabilitation protocol was executed every week with different therapeutic exercise. Short term goal was Patients education, to reduce pain and tenderness, improve Range of motion and muscle strength of right upper limb. Long Term goal was to improve endurance and restore functional Activities of daily living. Patient was rehabilitated till 22 weeks for six days a week. In every week intervention was specified

Table 1. Detailed rehabilitation was given below

Motion	Pre- interventional ROM		Post- interventional ROM	
	Active ROM	Passive ROM	Active ROM	Passive ROM
Shoulder flexion	25°	30°	160°	170°
Shoulder extension	50°	55°	60°	60°
Shoulder abduction	20°	20°	150°	160°
Shoulder adduction	45°	45°	45°	45°
Shoulder internal rotation	60°	70°	70°	70°
Shoulder external rotation	25°	25°	80°	85°

Table 2. Detailed rehabilitation was given below

Phase (week wise) Goal	Therapeutic exercise
Phase I: Immediate postsurgical phase (Week 1-4)	
Precaution	No active ROM of shoulder Maintain arm in abduction sling for 5 weeks No lifting of objects or body weight No shoulder motion behind back
To reduce pain and tenderness	Cryotherapy, application of ice pack on left shoulder for 8 – 10 minutes Interferential therapy 4PV was applied on shoulder for 10 minutes to reduce referred pain (Figure 2)

Follow up

Patient was followed after 22 weeks and examination was done. Patient reported normal functional activities without complain of pain or restricted range of motion. On examination after 22 week patient had complaint range of motion and 4th grade of muscle strength on right arm. Patient returned to his job without any functional limitation.

Table 3. Rehabilitation Plan

To improve range of motion	Begin scapula isometrics (5sec hold ,10 sec relax, 10 repetitions ,2 sets) Pendulum exercises (10×2) Passive ROM till patient tolerance level , flexion , abduction, external and internal rotation in scapular plane Active ROM to elbow, wrist, finger (10×2) 1-5 rest interval in between the exercise
Phase II: Protection phase (week 4-10)	
To reduce pain	Cryotherapy, application of ice pack on left shoulder for 8 – 10 minutes
To improve ROM	Week 4-5 week: Initiate active assisted ROM exercises, Flexion in supine position (AAROM) with uninvolved extremity, external & internal rotation by cane (10×2) Progressive passive ROM until full ROM achieved but pain free Gentle Anterior and posterior glides of glenohumeral joint mobilization Week 6-8: continue (AAROM) Rotator cuff isometric Active ROM to elbow, wrist, finger (10×2)
Phase III: Intermediate phase (10-14 week)	
To improve ROM and muscle strength	Active range of motion (10×2) Started strengthening program to shoulder muscle with Thera band (10×2) Avoided empty can abduction exercise Initiate light functional activities
Phase IV: Advanced strengthening exercises (week 16-22)	
To improve endurance and functional activities	ROM and self-scapular stretching exercises Progressive strengthening exercises(10×2) open-chain proprioceptive activities

DISCUSSION

Physiotherapy rehabilitation protocol are useful in Adhesive capsulitis as increase the lost range of motion by performing the dynamic exercise or upper extremity exercise. Adhesive capsulitis is a common, sometimes painful, but ultimately self-limiting, condition that is usually managed in the primary care setting with a combination of analgesics, injection and physiotherapy [5]. In this case report key aim of rehabilitation was to reduce pain and tenderness and to improve lost range of motion [6]. Exercise are given to strengthen the arm and restore patient functional activities at home and work [7]. To release the contracted capsule arthroscopic has been advocated [8]. The manipulation is done under anesthesia is required in Adhesive capsulitis in diabetic patients [9]. To control the progression of disease Arthroscopic is preferred in early stages. Synovitis is an essential factor in development of frozen shoulder.

CONCLUSION

It is concluded that Novel based physiotherapy rehabilitation protocol in Adhesive capsulitis following type 2 Diabetes Mellitus helps in early acceleration of reduction of pain, improvement in ROM, muscle strength and functional activities.

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How to cite this article

Mohini Gadge, Swapna Jawade, Om C. Wadhokar, Chaitanya A. Kulkarni, Waqar M. Naqvi, 2022. Outcome of novel based physiotherapy rehabilitation protocol in adhesive capsulitis in type-2 diabetes mellitus. J. Med. P'ceutical Allied Sci. V 11 - S 1, Pages - 289 - 291. doi: 10.55522/jmpas.V11S1.1312.