

Case Report

“DIAGNOSTIC REASONING AND PHYSIOTHERAPY TREATMENT FOR A 65 YEARS OLD FEMALE WITH LEFT SIDED FROZEN SHOULDER”

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Abstract

Introduction: Frozen shoulder is a self-limiting condition that affects daily activities. Early diagnosis and treatment is essential for better prognosis. Accurate diagnosis largely depends on reasoning skills of physiotherapy practitioners.

Methods: Case study.

Intervention: In this case, pattern recognition was used as diagnostic reasoning and posterior to anterior and caudal mobilization techniques to decrease pain and improve range of motion. Beside, theraband was to strengthen muscle strength of shoulder as well.

Results: After application of 12 sessions of treatment, patient showed improvement in pain at VAS by 5 cm, improvement in passive ROMs by 20°, 10° and 25° in consequently in abduction, medial rotation and lateral rotation, improvement in SPDI by 42% and muscle power improved by Grade I in abductors, medial rotators and lateral rotators.

Conclusion: Reasoning process helps physiotherapist for correct diagnosis and application of evidence based physiotherapy intervention showed significant improvements in symptoms after frozen shoulder.

Keywords: Diagnostic reasoning, Physiotherapy and Frozen shoulder

Introduction:

Frozen shoulder (FS) is a condition characterized by a painful, gradual loss of both active and passive glenohumeral movement. This limitation is resulting from progressive fibrosis and contracture of the glenohumeral joint capsule [1]. However, the exact pathological reasons for FS are still unknown and it is considered as idiopathic and FS shoulder with definite risk factor is known as secondary FS.

There are three stages of FS. Stage I (painful stage) is mainly characterized by pain usually lasting 2–9 months. In Stage II (frozen stage) pain gradually subsides but stiffness is marked lasting for 4–12 months. In Stage III (thawing phase) pain resolves and improvement in range of motion (ROM) appears [2].

Case Description

Mrs. X was 65 years old female with right hand dominant housewife. The patient complained of aching pain at rest and sharp pain during active movement of right shoulder especially during reaching activities, feels difficulties to sleep on the affected side. Pain was also around shoulder and often radiates to elbow. For these problems, patient was thought a case of supraspinatus tendinitis and patient received medication as well as electrotherapy for 12 days; 4 sessions per week of totaling 3 weeks as per physiatrist advice. Patient was not improving and was referred to me for my consultation. On assessment, I found main problem of the patients was right shoulder pain and movement limitation. Exact area of pain was anterior aspect of right shoulder joint and acromioclavicular area. Pain was constant in nature where aggravating factors were reaching something on a high self, wearing jumper, combing hair and carrying heavy objects. In contrast, ease factors includes hanging the right shoulder. She had history of hypertension for and diabetes mellitus for 5 years and taking medication for them. She has been suffering from this pain for last 6 months.

On objective examination which includes general observation focusing on right shoulder in hiking position and asymmetry in both shoulder level. On the other hand, local observation, it was found that left shoulder joint both active and passive is normal and right shoulder joint as follows:

Table 1: Comparison of Range of Motion of Left Shoulder

Active Range of Motion (ROM)	Passive Range of Motion (ROM)
Flexion- 140°	Flexion- 145°
Extension- 35°	Extension- 40°
Abduction- 110°	Abduction- 120°
Adduction- 45°-	Adduction- 45°
Medial Rotation- 50°	Medial Rotation- 60°

Lateral Rotation- 30°	Lateral Rotation- 35°
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Resisted isometric movement was normal, pain intensity was 7 cm in a 10 cm Visual Analogue Scale (VAS), end feel was firm. On neurological examination, sensory was intact on both sides, motor examination compared with left side. Right side shoulder muscles were grade- 5 whereas left side abductor, lateral rotator and medial rotator was grade-4. Accessory movement especially AP gliding, PA gliding and Longitudinal cephalad movement was painful. Few special tests were performed and found negative results such as cervical compression and distraction test empty can test, Yeager's test, drop arm test. In contrast, LAM test was found positive in the right shoulder.

Diagnostic Reasoning:

In order for the diagnosis, few red flags were checked for such as history of weight loss or abdominal discomfort/swelling, fever, loss of shoulder rotation suggests dislocation. The presence of a significant sensory or motor deficit suggests a neurological lesion and tumor in the apex of lungs [3]. Besides, few yellow flags were also examined such as depression about prognosis, fear avoidance beliefs, pain syndromes and lack of family/community Support as she was not progressing [4].

As patient showed positive in LAM test, it indicates that patient is suffering from right shoulder adhesive capsulitis. By reviewing the symptoms of patients the case was diagnosed confirmed as frozen shoulder [5].

Using Clinical reasoning for diagnosis:

As I am a physiotherapist, I am familiar with this type of cases earlier. I carefully listen to patient's complaints and develop a possible hypothesis that patient might develop frozen shoulder of left shoulder in the light of my previous experience. Then I used my non-propositional knowledge to intersect the symptoms and used previous example in this case.

There was a bit of confusion to me that patient had tenderness in anterior aspect of left shoulder which sometimes refers to as supraspinatus tendinitis. By finding negative empty can test straight forward I went to LAM test and which was found positive on right shoulder and diagnosis was concluded as frozen shoulder in left shoulder. Hereby, I used pattern recognition

to narrow down the diagnosis. Pattern recognition is required to generate hypothesis and hypothesis testing provides the means by which those pattern are refined, proved reliable and new pattern are learned. There are four characteristics of pattern recognition: knowledge, categorization, efficiency and accuracy [6].

Interventions

The case was given following physiotherapy interventions for 12 sessions with having 3 sessions per week for 4 weeks:

1. Patient education on activity modifications/basic functional activities
2. Another important point is that capsular fibrosis causing capsular shortening and resulting in global limitation of ROM. Hence, I went through the evidence to give more concentration on shoulder mobilization.
3. I applied posterior joint mobilization to improve external rotation of shoulder joint with 10 reps in each set and total 2 sets and 2 minutes rest between sets. Posterior directed mobilization is more effective than anterior directed mobilization to improve external rotation.
4. I found there is minor improvement internal rotation and abduction. Then, I went through critically appraised paper and found that caudal mobilization was found to be effective than AP mobilization in improving abduction ROM. Finally, I introduced it in my practice with 10-15 glides of grade 3 and 4 of Maitland Mobilization for 5-6 times. Total duration lasted for 20 minutes.
5. Upper body cycle Ergo meter: 50 rep. per minute.
6. ROM exercise/stretch: 5 - 15 seconds, passive, AAROM to AROM, low load, prolonged
7. Strengthening:
 - Theraband: 5 directions, 3 sets of 12 repetitions [7,8].

Figure 1: Comparison of ROM before and after treatment



Medical treatment	Rotation before	Treatment	Medial Rotation after treatment
			
Abduction before treatment	Treatment	Abduction after treatment	
			

Figure 2: Theraband exercise to improve muscle strength

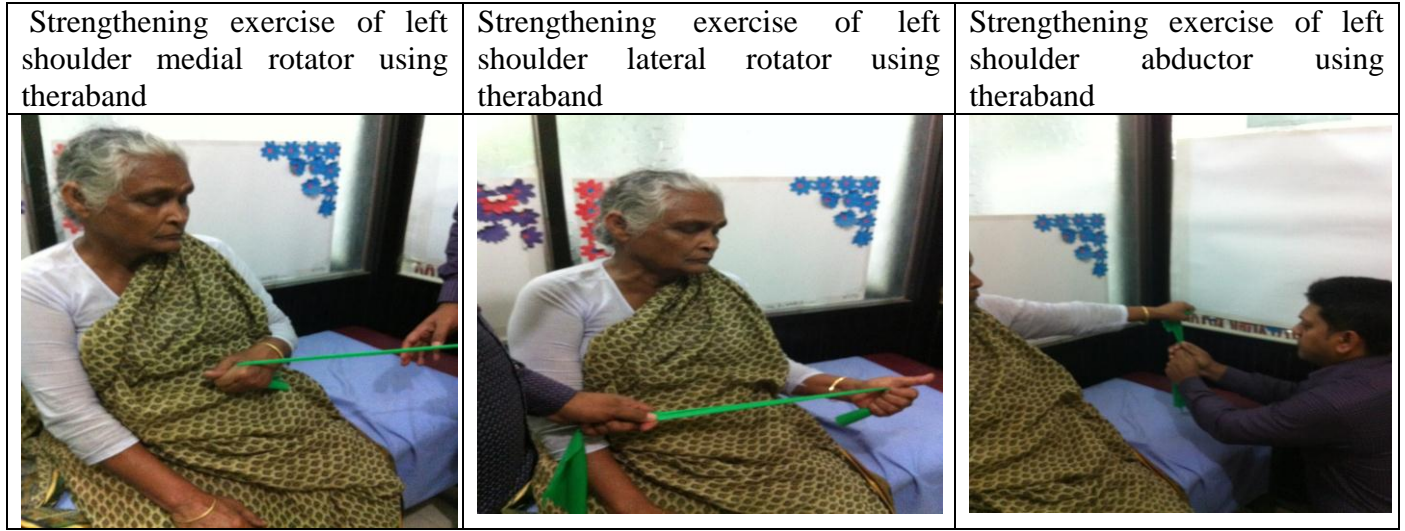


Table 2: Outcome of Pain, ROM, Muscle Strength and Disability on left shoulder

Variables	Tools for Measurement	Pre-test Score	Post-test Score	Comments
Pain	VAS Scale	7 cm	2 cm	Pain decreases by 5 cm in a 10 cm VAS scale
Passive ROM	Universal Goniometer	Flexion- 145°	Flexion- 160°	Improves by 15°
		Extension- 40°	Extension- 45°	Improves by 05°
		Abduction- 120°	Abduction- 140°	Improves by 20°
		Adduction- 45°	Adduction- 45°	Similar
		Medial Rotation- 60°	Medial Rotation- 70°	Improves by 10°
		Lateral Rotation- 35°	Lateral Rotation- 60°	Improves by 25°
Muscle Strength	Manual Muscle Testing	Flexor: Grade-V	Flexor: Grade-V	Similar
		Extensor: Grade-V	Extensor: Grade-V	Similar
		Abductor:	Abductor:	Improves by

		Grade-IV	Grade-V	Grade-I
		Adductor: Grade-V	Adductor: Grade-V	Similar
		Medial Rotator: Grade-IV	Medial Rotator: Grade-V	Improves by Grade-I
		Lateral Rotator: Grade-IV	Lateral Rotator: Grade-IV	Improves by Grade-I
Disability	Shoulder Pain and Disability Index (SPDI)	80%	38%	Improves by 42%

Discussion

In this case study, patient showed reduction of pain and disability. Besides, improvement of ROM and muscle strength was observed after correct diagnosis using appropriate reasoning process. However, specific directed mobilization techniques in the affected gleno-humeral joint can minimizes pain, disability plus improve ROM and muscle strength which was extracted from current best available evidence.

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