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Physiotherapy Management of Frozen Shoulder Dextra E.C Dextra Shoulder Osteoarthritis Case

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ABSTRAK

Frozen Shoulder (FS) adalah gangguan pada bahu secara umum yang ditandai dengan peningkatan nyeri secara bertahap dengan langsung dan terbatas. Pergerakan dari adanya rentang gerak sendi glenohumeral. Patofisiologi Frozen Shoulder relatif dengan jelas sebagai proses patologis. Penelitian menggunakan studi *case report* yang dilaksanakan di Praktik Mandiri Fisioterapi Magetan. Penyebab terjadinya Frozen Shoulder masih belum diketahui, namun ada faktor lain yang memicu terjadinya frozen shoulder diantaranya patah tulang pasca operasi sehingga terjadinya keterbatasan gerak pada bahu, penyakit tertentu, cedera pada otot sekitar Tujuan Penelitian ini adalah untuk mengoptimalkan Kemampuan Gerak pada Penderita Frozen Shoulder. Fisioterapi berperan dalam mengoptimalkan gerak aktif anak dengan menggunakan intervensi berupa modalitas infrared, *myofacial release*, mobilisasi scapula, aproksimasi, GTO release, contrac relax streaching, dan kompres es. Setelah dilakukan terapi selama 3 kali T1-T3 terdapat peningkatan serta perubahan pada kekuatan otot dengan pengukuran kekuatan otot dengan MMT, nyeri dengan NRS, LGS dengan goniometer, dan kemampuan fungsional dengan SPADI Index.

Kata kunci: *Frozen Shoulder, MMT, LGS, Nyeri, SPADI Index*

ABSTRACT

Frozen Shoulder (FS) is a common shoulder disorder characterized by a gradual increase in pain that is direct and limited. Movement of the glenohumeral joint ranges of motion. The pathophysiology of frozen shoulder is relatively clear as a pathological process. The study used a case report study conducted at the Praktik Mandiri Fisioterapi Magetan. The cause of Frozen Shoulder is still unknown, but there are other factors that trigger the occurrence of frozen shoulder including postoperative fractures resulting in limited movement of the shoulder, certain diseases, injuries to surrounding muscles. The aim of the research is to optimize the movement ability in Frozen Shoulder Patients. Physiotherapy plays a role in optimizing children's active movements using interventions in the form of infrared modalities, myofacial release, scapular mobilization, approximation, GTO release, contract relax stretching, and ice packs. After being treated for 3 times T1-T3 there was an increase and change in muscle strength by measuring muscle strength by MMT, pain by NRS, LGS by goniometer, and functional ability by SPADI Index.

Keywords*: Frozen Shoulder, MMT, LGS, Pain, SPADI Index*

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I. INTRODUCTION

Frozen Shoulder is one of the most common challenging clinical disorders that presents to the orthopedic surgeon. This is a disease characterized by a significant decrease in active and passive range of motion (ROM) occurring in the glenohumeral joint accompanied by pain. The prevalence rate of Frozen Shoulder is 2%–5%, and it is more common in women. Along with increasing comorbidities and changes in lifestyle, the incidence of Frozen

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Shoulder is increasing. However, the pathogenesis of Frozen Shoulder has not been extensively investigated and is still unknown. According to research so far, Frozen Shoulder can be divided into three phases: inflamed or painful shoulder that starts with progressive loss of motion, pain that gradually subsides, stable stiffness with equal active and passive ROM, and thawing (gradual increase in movement and resolution) with symptoms. (Cho et al., 2019). In Frozen Shoulder, one of those affected is Adhesiva Capsular which is primary or secondary. Primary (or idiopathic) adhesive capjuangitis can occur spontaneously without special trauma. Secondary adhesive capsulitis is frequently observed after periarticular fracture dislocations of the glenohumeral joint including repair of the rotator cuff muscles and shoulder arthroplasty. The incidence of Adhesiva Capsulitis in the general population is about 3% to 5% but is as high as 20% in patients with diabetes. Adhesiva capjuangitis is often considered a self-limiting disease that lasts between 1 and 3 years. However, various studies have shown that between 20% and 50% of patients continue to progress over the long term. In this patient population, both non-operative and operative interventions are necessary to achieve effective functional ability. (Le et al., 2017).

II. RESEARCH METHODOLOGY

The research method used a case report study which was carried out at the Magetan Physiotherapy Clinic in Mr. K is 79 years old with a medical diagnosis of Frozen Shoulder e.c Osteoarthritis Shoulder Dextra. This Study Used Case Taking Test in Praktik Mandiri Fisioterapi Magetan. The Time of the research was carried out at the Praktik Mandiri Fisioterapi Magetan Independents Pratice once a week for 3 weeks. The patient has undergone therapy 3 times by providing physiotherapy interventions in the form of infrared, myofacial release, scapular mobilization, approximation, GTO Release, contract relax stretching, and ice packs. The above intervention in the form of myofacial release can improve the viscoelastic properties of the upper trapezius muscle and thus improve the biomechanics of the shoulder movement, thereby reducing pain and improving function. Intervention in the form of infrared produces a feeling of warmth which can increase superficial tissue vasodilation, so that it can accelerate etabolism and cause a reflex effect on sensory nerve endings. The therapeutic effect is to reduce pain. Intervention in the form of scapular mobilization is given to prepare for adding ROM and increasing ROM. Intervention in

the form of approximation is given to stimulate the muscles around the joint to contract which maintains the position of the joint. Intervention in the form of GTO Release is given to relax the muscles and lower the muscle tendons. Interventions in the form of contract relax stretching are given to increase LGS in the shoulder joint, increase the length of soft tissue, and relax spasmodic muscles. Intervention in the form of ice packs is given to reduce pain so that the patient's functional abilities can improve.

III. RESULT

In this study provided 7 physiotherapy interventions to patients for 3 weeks with a total of 3 meetings. The aim of this intervention is to optimize the patient's ability to perform active movements. After the administration of physiotherapy interventions, an evaluation of muscle strength and functional ability was carried out using the SPADI Index.

Region	Movement	Mark T1	Mark T2	Mark T3
Shoulder Dextra	Flexor	3	3	3
	Extensor	3	3	3
	Abductor	3	4	4
	Adductor	3	4	4
	Exorotator	3	3	3
ss	Endorotator	3	3	3

Movements	Mark (T1)	Mark (T2)	Mark (T3)
Tenderness	1/10	1/10	1/10
Immovable Pain	5/10	4/10	3/10
Motion Pain	7/10	6/10	5/10

Table 1 : Evaluation Muscle Of Strength (MMT)

Table 2 : Evaluation of pain testing (NRS)

	Movement	Mark (T1)	Mark (T2)	Mark (T3)
Shoulder Dextra	*Flexor-Ekstensor*	S: 35°-0°-135°	S: 35°-0°-135°	S: 35°-0°-135°
	Abduction-Adduction	F: 120°-0°-60°	F: 120°-0°-60°	F: 120°-0°-60°
	Abd / Add Horizontal	T: 25°-0°125°	T: 25°-0°125°	T: 25°-0°125°
	Exorotator-Endorotator	R: 70°-0°-65°	R: 70°-0°-65°	R: 70°-0°-65°

Table 3 : Evaluation of LGS Examination (Goniometer)

No	Activity Type	T1	T2	T3
1	In Tough Conditions	10	9	7
2	When Lying Down on The Affected Side	4	4	4
3	Grabbing Something on a High Shelf	8	7	6
4	Touch The Back of The Neck	7	6	5
5	Pushing with Sore Hands	2	2	2
Score		31	28	24

Table 4 : Evaluation of Functional scale (SPADI Index) Pain Scale

No	Activity Type	T1	T2	T3
1	Washing Hair	8	7	6
2	Back Rub	7	6	5
3	Put on Clothes	9	9	9
4	Wear a shirt with buttons on Front	5	5	5
5	Wearing Pants	4	4	3
6	Place Objects on High Shelves	9	8	7
7	Carrying Objects Weighing 4,5 kg	7	7	7
8	Take Something from Back Pocket	8	8	8
Score		57	54	50
Score (Total value / 130 x 100 = ...%)		68 %	63 %	56 %

Table 5 : Evaluation of Functional Scale (SPADI Index) Disability Scale

VI. DISCUSSION

4.2 UNDERLYING PROCESS FROZEN SHOULDER ATTACHED

4.1 EVALUATION OF MUSCLE STRENGTH (MMT)

Table 1 is an evaluation of muscle strength measurements using MMT (Manual Muscle Testing) after the administration of physiotherapy interventions, the results obtained from T1-T3 on T1 flexor muscles (3), extensors (3), abductors (3), adductors (3), exorotation (3)), endorotation (3). On T2 the muscles flexor (3), extensor (3), abductor (4), adductor (4), exrotation (3), endorotation (3). At T3 the muscles flexor (3), extensor (3), abductor (4), adductor (4), exrotation (3), endorotation (3). From the results of evaluating muscle strength for 3 times of therapy every Tuesday and Friday from T1-T3 there was a minimal increase in abductor and adductor muscle strength in patients, this is in line with previous studies which explained that patients who had frozen shoulder had significant increases in muscle strength. which is a little due to the age conditions of patients who have stepped on to the elderly (Xu et al., 2022)

a. EVALUATION OF PAIN TESTING (NRS)

Table 2 is an evaluation of pain measurements using the NRS (Numerical Rating Scale) after the administration of physiotherapy interventions, the results obtained from T1-T3 on T1 silent pain (1/10), tenderness (5/10), motion pain (7/10). At T2 silent pain (1/10), tenderness (4/10), motion pain (6/10). At T3 silent pain (1/10), tenderness (3/10), motion pain (5/10). This is in line with previous studies which explained that patients who experienced frozen shoulder pain experienced in these patients experienced a significant increase due to routine exercises from the patients themselves at home. (Iqbal et al., 2020)

b. EVALUATION OF LGS EXAMINATION (GONIOMETER)

Table 3 is an evaluation of LGS measurements using a Goniometer after the administration of physiotherapy interventions, the results obtained from T1-T3 can be seen in the table that the increase in LGS in these patients has not increased the range of motion of the joints, this is in line with previous studies due to the little activity of the patient at home and seen from condition of patients who are elderly (elderly) (Rajalaxmi et al., 2021)

c. EVALUATION OF FUNCTIONAL SCALE (SPADI INDEX)

Tables 4 and Table 5 are evaluations of functional abilities with the SPADI Index after the administration of physiotherapy interventions obtained from T1-T3 on the T1 pain scale obtained 31 results, T2 obtained 28 results, T3 obtained 24 results. For the disability scale at T1 obtained 57 results, T2 54 results were obtained, 50 results were

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obtained for T3, and the total SPADI values at T1-T3 were T1 (68%), T2 (63%), T3 (56%). This is in line with previous research that the increase in functional ability in patients increases due to the reciprocity of the muscle strength itself and the body's ability to receive stimuli from outside the body. (Mohamed et al., 2020)

VII. INTERVENTION TECHNOLOGY

A. INFRARED (IR)

Infrared produces a feeling of warmth which can increase superficial tissue vasodilation, thereby facilitating metabolism and causing a reflex effect on sensory nerve endings. The therapeutic effect is to reduce pain (Tsai & Hamblin, 2017).

Preparation of tools and places: make sure the place is safe and comfortable

Management: patient's position tilted to the left side, then remove it in the area that will be given infrared. Using non-luminous infrared with a distance of 50 cm on the shoulder with a duration of 15 minutes. Aims to increase blood circulation to the tissues, especially the muscles in the shoulder.

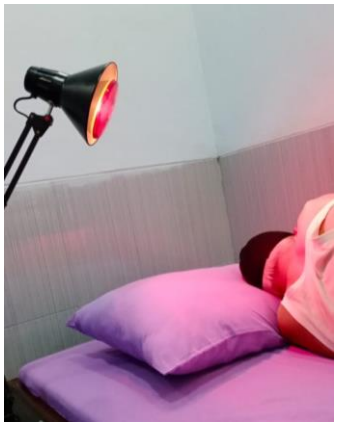

FIGURE 1. INFRARED (IR) PROVISION RESOURCE: PERSONAL DOKUMENTATION

B. MYOFASCIAL RELEASE

Myofascial release can improve the viscoelastic properties of the upper trapezius muscle and thereby improve the biomechanics of shoulder movement, thereby reducing pain and improving function (Lara-Palomo et al., 2021)

Patient position: sitting or prone

Movement: the physiotherapist holds the upper trapezius muscle and applies pressure on the thumb on the spasm

Intensity: Movements such as pressing upwards or downwards without moving the thumb position are carried out for 1-5 minutes.

FIGURE 2. MYOFASCIAL RELEASE PROVISION RESOURCE : PERSONAL DOKUMENTATION

C. MOBILITATION OF SCAPULA

Purpose: To prepare for ROM additions and ROM upgrades

Management: The patient is in a lying position on the bed, then the therapist is thorough fixation on the scapula to the inferior angle and handling on m. right triceps. Next, the therapist moves antero-posteriorly with elbow extension. This exercise is performed 10 repetitions (1-2 sets) (Duzgun et al., n.d.).

D. APROKSIMASI

Purpose: To stimulate the muscles around the joint to contract which maintains the joint position. **Treatment:** The patient is in a lying position on the bed. Then the therapist fixation on the glenohumeral joint and handling on the triceps then physiotherapy actively assisted in moving the shoulder abduction. This exercise is done 5 times and is held at the end of the movement and then repeated (1-2 sets) (Jung & Choi, 2019)

FIGURE 3. APROKSIMATION PROVISION RESOURCE : PERSONAL DOKUMENTATION

E. Muscle Energy Technique (GTO Release)

Purpose: To relax muscles and degrade muscle tendons

Management: The patient lies in bed, then the therapist fixes the glenohumeral joint and handles the Golgi Tendon Organ m. latissimus dorsi. Then, the therapist releases on the GTO in the opposite direction on the muscle fiber m. latissimus dorsi. This movement is repeated 5 to 10 times (Iqbal et al., 2020b)

FIGURE 4. GTO RELEASE PROVISION RESOURCE : PERSONAL DOKUMENTATION

F. Contrac Relax Streching (CRS)

Goals: increase LGS in the shoulder joint, increase the length of soft tissue, and relax spasmodic muscles

Management: The patient is in a lying position on the bed, then the therapist provides isometric resistance to the opposite (antagonist) muscle for 3-5 counts. Then relax and give stretching to the LGS which is experiencing limitations (flexion, abduction, internal rotation, and external rotation). Exercise is done with 3-5 reps (Parmar et al., 2020)

FIGURE 6. CRS EXERCISE RESOURCE : PERSONAL DOKUMENTATION

G. ICE COMPRESS

Purpose: to reduce pain

Management: The patient is in a lying position on the bed. Then the therapist places a cold pack which is placed on the joint capsule area and then covered with a towel. This ice compress is given for 15 minutes. In research (Rasooli et al., 2020) revealed that applying ice for 10 minutes can reduce pain

FIGURE 6. ICE COMPRESS

VIII. CONCLUSION

Based on research that has been conducted on patients with a diagnosis of Frozen Shoulder e.c Osteoarthritis Shoulder by providing physiotherapy interventions in the form of infrared, myofacial release, scapula mobilization, approximation, GTO release, contract relax stretching, and ice packs. There is an increase and change in muscle strength with measurements of MMT, Pain with NRS, LGS with Goniometer, and Functional Ability with SPADI Index.

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UNDERLYING PROCESS