



Original article

Efficacy of Post thermotherapy Maitland mobilization compared to the Active mobilization exercises in improving the Shoulder function and pain in Periarthritis: A simple randomized clinical control trail

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ABSTRACT

Introduction: Periarthritis Shoulder is a syndrome defined in its purest sense as idiopathic painful restriction of shoulder movement that results in global restriction of the gleno-humeral joint. The objective of the study is to investigate the efficacy of Post thermotherapy Maitland mobilizations compared to the active mobilizations exercises in improving the shoulder function and pain in periarthritis. **Materials and Methods:** The present study included 34 patients who are diagnosed with periarthritis. All patients were randomly and equally categorized for group A (n=17) and Group B (n=17) and they were received Thermotherapy Maitland Mobilization and Active mobilization respectively. The shoulder function in the form of Hand behind back and pain were measured using ordinal scale and Shoulder Pain and Disability Index (SPADI) scale. **Results:** Statistical analysis was done using paired t-test and Independent t-test. The results of the study showed significant improvement in shoulder function in the form of Hand Behind Back function and Pain in Group A compared to Group B ($p < 0.05$). **Conclusion:** The Post thermotherapy Maitland Mobilization has been proven more effective and beneficial in improving shoulder function in the form of Hand Behind Back and relieving pain over the active mobilization exercises in Periarthritis.

KEYWORDS: Maitland mobilization, Thermotherapy, Periarthritis Shoulder, Hand behind back function

INTRODUCTION

Primary Periarthritis of Shoulder is a term used to describe an insidious onset of pain and movement restriction in the gleno-humeral joint [1, 2]. The shoulder is a complex anatomical structure that allows movement in many planes and is crucial for activities of daily living. Decreased shoulder mobility is a serious clinical finding [3]. The various synonyms for Periarthritis Shoulder are frozen shoulder, pericapsulitis, scapula-humeral periarthritis, humero-scapular fibrositis, and periarthritis, stiff and painful shoulder [4].

Primary Periarthritis of Shoulder affects from 2% to 3% of the general population, females are slightly affected more than males and is seen commonly at age of 40-70 years. Bilateral involvement occurs in 10% to 40% cases [5]. Periarthritis Shoulder is a syndrome defined in its purest sense as idiopathic painful restriction of shoulder movement that results in global restriction of the glenohumeral joint [6]. Although Periarthritis Shoulder is generally considered

to be a self-limiting condition that can be treated with physical therapy [7,8] to regain the normal extensibility of the shoulder capsule, passive stretching of the shoulder capsule in all planes of motion by means of mobilization techniques has been recommended [9,10].

The international Maitland Teachers Association (IMTA) defines the Maitland concept as a process of examination, assessment, and treatment of neuro-musculoskeletal disorder by manipulative physiotherapy [11,12]. As mentioned above, the capsulitis is challenging for therapeutic as well as rehabilitation purposes. The purpose of the study is to evaluate the efficacy of the Post thermo-therapeutic Maitland mobilization in the rehabilitation of the Periarthritis Shoulder when compared to the active mobilization exercises. The main objective of the study is to compare the effectiveness of Post thermotherapy Maitland mobilization on shoulder function and pain in periarthritis over active mobilization exercises.

MATERIALS AND METHODS

We recruited 34 patients diagnosed with periarthritis by medical practitioners at Alliance physiotherapy and Rehabilitation center, Kepala Batas, Penang, Malaysia, and were randomly divided into two equal groups of 17 each. The inclusion criteria were patients with a medical referral of Periarthritis Shoulder, age range 35 to 55 both sexes and patients with Unilateral involvement were included. Exclusion Criteria were individuals who were complaining of shoulder pain because of cervical pathologies, post-traumatic stiffness of the shoulder, or acute shoulder injury and shoulder problem associated with Diabetes.

Methods

After taking consent and thorough initial assessment, Group A, Experimental group (n=17) were given Thermotherapy and Maitland mobilization and Group B, control group (n=17) were given active mobilization exercises.

Procedure

The experimental group was given Thermotherapy in the form of hot packs with taking care to avoid scalds for a period of 15-30 minutes over the shoulder joint and later the Maitland mobilization is given. A grade IV small oscillatory movement of Gleno-humeral joint, sterno-clavicular, Acromio-clavicular and Scapulo-thoracic joints were given as follows

1. Gleno-humeral Joint –Antero-posterior and Inferior glides -30 bounds
2. Scapulo-thoracic joint –cephalic, caudal, Medial and lateral glides -10 bounds

3. Sterno-clavicular joint-Caudal, Cephalic, Antero-posterior and Postero-anterior glides-15 bounds
4. Acromio-clavicular Joint-caudal, Cephalic, Antero-posterior and Postero-anterior glides -15 bounds

The control Group were given active mobilization exercises in the form of Pendular exercises (10minutes), Active shoulder Range of Motion exercises(10 minutes), and active assisted exercises (10 minutes) for a total period of 30 minutes.

The outcome measures in each group were measured by Shoulder Pain and Disability Index (SPADI) scores and Ordinal Scale pretest and Post test respectively.

Statistical analysis

This study is to investigate the effect of post thermotherapy Maitland mobilization before and after treatment in Group A (experimental group) and active mobilization exercises in Group B (control group) all the data was expressed as Mean, Standard deviation and was statistically analyzed using paired 't' test and independent 't' test to determine the statistical difference among the parameters at 0.5% level of significance.

RESULTS

The pre test mean value of SPADI in Group A 70.73 ± 11.46 and Ordinal scale is 2.23 ± 1.98 and the post test mean values of Group A are SPADI 19.26 ± 3.78 with t value for SPADI is 22.59 and P value < 0.05 , and for ordinal scale is 7.41 ± 1.54 t value 10.5 and P value is < 0.05 . (Table 1)

Table 1: Comparison of Pre and Post test values of SPADI and Ordinal scales in Group A and Group B

Variables	Group A				Group B			
	SPADI		ORDINAL SCALE		SPADI		ORDINAL SCALE	
	Mean with Standard Deviation	P value	Mean with Standard Deviation	P value	Mean with Standard Deviation	P value	Mean with Standard Deviation	P value
Pretest	70.73 ± 10.92	< 0.05	2.23 ± 1.98	< 0.05	70.26 ± 11.46	< 0.05	3.9 ± 1.79	< 0.05
Post test	19.26 ± 3.78	< 0.05	7.41 ± 1.54	< 0.05	41.8 ± 6.47	< 0.05	5.64 ± 1.76	< 0.05

The pretest mean value of SPADI in Group B is 70.26 ± 11.46 and ordinal scale is 3.9 ± 1.79 and post test mean values of SPADI is 28.8 ± 6.06 with t value and P value < 0.05 and for Ordinal scale is 5.64 ± 1.76 , t value is 8.25 P value is < 0.05 . The independent t test is done to calculate the significance of difference in SPADI and Ordinal scale results between Group A and Group B. The

mean of differences of SPADI scores between pretest and post test in Group A is 51.86 ± 8.74 and the mean of differences in Group B is 41.8 ± 6.47 with t value 3.58 ($p < 0.05$). The mean of differences of Ordinal scale between pretest and post test in Group A is 2.74 ± 0.53 and the mean of differences in Group B is 1.18 ± 0.75 with t value 4.51 ($p < 0.05$) (Table 2)

Table 2: Comparison of Pre test and Post test mean differences in SPADI and Ordinal scale in Group A and Group B

Mean Difference	SPADI			ORDINAL SCALE		
	Mean Difference with Standard Deviation	t Value	P value	Mean Difference with Standard Deviation	t Value	P value
Pre test	51.86±8.74	3.58	<0.05	2.74±0.53	4.51	<0.05
Post test	41.8±6.47			1.18±0.75		

Thus from above statistical data of SPADI and ordinal scale, Group A is significantly different from Group B with $p < 0.05$, i.e. 95% of significance, Hence The results of the

DISCUSSION

Conventional mobilization techniques used to increase the range of motion required for hand-behind back[13]. It is already proved that active and active assisted exercises used to break the adhesions and improve the circulation. These exercises can improve shoulder functional activities [14, 15].

Maitland's mobilization also used to increase hand-behind back function. But it is purely specific one, because each and every patient undergone a detailed assessment to find out the cause of restriction[16]. So, treating the cause and getting the improvement is always better than just giving general mobilization.

Some authors stated in their study that Mobilization reduces pain due to neurophysiologic effects on the stimulation of peripheral mechanoreceptors and the inhibition of nociceptors[17]. The activation of apical spinal neurons as a result of peripheral mechanoreceptor by the joint mobilization produces presynaptic inhibition of nociceptive afferent activity[18-20].

Hughes J [21] stated that the conventional mobilizing exercises are cost effective for periarthritis, but required a long rehabilitative process. This study's results were matched with Nicholson [22] experiment which is compared treatment with Maitland mobilization and active exercises, in 20 patients with periarthritis shoulder. After 2 weeks of treatment, he found that the passive abduction range improved significantly in the Maitland group.

Research Limitations

One of the major limitations of this study was the different characteristics of subjects in the experimental and control groups may create potential bias in the outcomes. Therefore, our results should be interpreted with caution. A Study can be done by taking the large samples into consideration.

CONCLUSION

In summary, Post thermotherapy Maitland mobilization is found to be more effective and beneficial in improving shoulder function and alleviating pain in periarthritis over the shoulder active mobilization exercises.

study showed significant improvement in Hand Behind Back function and Pain in Group A compared to Group B.

ACKNOWLEDGEMENT

First of all, our thanks to God that we work together to complete this work. Our Sincere thanks to Dato Zainuddin Wazir, President, Allianze University College of Medical Sciences to give such a platform to perform our research work. We also thank to Dr Azmi Khan, Head of Physiotherapy, Allianze University College of Medical Sciences, for his endless support and kind cooperation for Data Collection. We extend our sincere thanks to our Colleagues in Research Team 1 (Especially Mr. GowriShankar) and Research Team 3 for their unending support and valuable suggestions for this research work. Finally, we pay our sincere and generous thanks to our patients who came for treatment and follow up the instructions.

Conflict of interest: We do not have anything to declare.

Source of funding: This research received no specific grant from any funding agency in the public, commercial, Or not-for-profit sectors.

Ethical Approval

I here with certify that the research has been approved by the AUCMS research ethics committee, and all investigations and treatment procedures were in accordance to the protocol and followed ethical and humane principles of research. A written consent for participation has been obtained for this study.

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