Open Access

ORIGINAL ARTICLE

Efficacy of Scapulothoracic Joint Mobilization in Patients with Shoulder Impingement Syndrome

Muhammad Asad[1], Syed Imtiaz Shah[2], Husna Haroon[3], Danish Hassan[4], Muhammad Waseem Akhtar[4]

[1]Riphah International University
[2]Riphah International University
[3]The University of Lahore
[4]Riphah International University
[5]Doctors Hospital, Lahore

Keywords

Mobilization, Manual Therapy, Shoulder Pain

Author`s Contribution

[1] Main idea, manuscript writing
[2]Conception, synthesis,
[3] SPSS, Methodology
[4] Interpretation and discussion
[5] literature search

Article Info.

Received: Aug 8, 2017
Revised: Aug 18, 2017
Accepted: Aug 21, 2017

Conflict of Interest: Nil
Funding Sources: Nil

Address of Correspondence

Danish Hassan
danish.hassan009@gmail.com

Cite This article *as Asad M, Shah SI, Haroon H,Hassan D, Akhtar MW Efficacy of Scapulothoracic Joint Mobilization in Patients with Shoulder Impingement Syndrome. JRCRS .2017;5(1):33-36*

A B S T R A C T

Background: Shoulder joint pain is the third most common musculoskeletal problem with the prevalence of 26% in general population. It is believed that the mechanical compression of acromial structures between the coraco-acromial bony structures and the head of the humerus progress towards the development of shoulder impingement syndrome (SIS).

Objective: The aim of this study was to assess the short-term effect of scapular movements with mobilization in individuals with shoulder impingement syndrome.

Methodology: It was a quasi-experimental study design, in which total of 74 subjects with primary complaint of unilateral shoulder pain due to sub acromial impingement syndrome, who were referred to the department of physical therapy were recruited. This study was carried out at the Department of Physical Therapy, Defence National Hospital Lahore and Pakistan Society for Rehabilitation of Disabled Lahore. This study was completed in 06 months from April 2015 to October 2015. A total of 50 Subjects who fulfilled the inclusive criteria were allocated into two treatment groups A and B. Group A was treated with scapular and shoulder mobilization and group B was only treated with shoulder joint mobilization. Each group received 3 treatment sessions for one week. Outcomes of the treatment interventions were recorded through visual analogue scale, shoulder pain and disability index and shoulder range of motion before and at the end of the treatment session.

Results: There was significant improvement in pain (p value=0.00), disability (p value=0.00) and shoulder range of motion (p value=0.00) measured after treatment and at the end of 1 week of treatment across the treatment group. However, this improvement was greater in the group which was managed with both scapular and shoulder joint mobilization as compared to the group which was managed with shoulder joint mobilization only.

Conclusions: It is concluded that scapulothoracic joint mobilization along with gleno-humeral joint mobilization is more beneficial in minimizing pain and improving ROM in individuals with SIS than glenohumeral joint mobilization alone.

.

Introduction

Shoulder joint pain is the third most frequent musculoskeletal problem with the prevalence of 26% in general population.[1] It is believed that the mechanical compression of sub acromial structures between the coraco-acromial bony structures and the head of the humerus progress towards the impingement of shoulder joint.[1, 2] Most of the complaints of impingement syndrome start subtly and have persistent elements which progress

slowly in months.[3] However, initial stage of traumatic bursitis does not resolve completely and eventually progresses into the lesion of impingement. According to the literature search there is between 10 to 30% of the shoulder patients are referred to physiotherapy department after initial presentation of the shoulder impingement syndrome.[4, 5]

Recent literature tells us those scapular kinematic alterations like limited scapular upward rotation and posterior slanting, and increased scapular internal rotation in active arm elevation occur in shoulder impingement syndrome which cause the higher compressive forces on the tendons of rotator cuff muscle.[6-8] If correctional mobilization applied at the scapulothoracic joint then pain free function can be achieved and can increase the ROM at shoulder joint in SIS. So, the study was performed to check the effectiveness of scapulothoracic joint mobilization to correct such scapular kinematic alterations in patients with shoulder impingement syndrome. There are also several researches are being conducted world widely to check the effectiveness of scapulothoracic joint mobilization like Aytar A et all done a study on the scapular mobilization in individuals with SIS in 2015. The main purpose of their research work was to check out the effectiveness of scapular mobilization on function, discomfort and ROM in SIS. They included 66 subjects with SIS in the study and randomly divided into 3 treatment groups one group received scapular mobilization, second group received sham scapular mobilization, while the third group received supervised exercise along with TENS and hot fermentation in all groups. Treatment duration of all groups was 3 weeks including 9 intervention sessions. They checked the shoulder function with the short form of Disability of arm shoulder and hand (DASH), pain intensity with VAS and ROM with goniometer. The results of the study showed that there was not a great benefit of scapular glides for function of the shoulder, discomfort and range of motion with sham or supervised-exercise groups in subjects with SIS [9], Struyf F et al did a randomized clinical trial on the scapular motion treatment in 22 patients with SIS in 2013. The aim of their research was to compare the benefits of a scapular treatment with a control therapy in SIS. They assessed the self-reported shoulder disability, pain, positioning of scapula and muscle power of the shoulder girdle. The scapular based intervention included stretching of the muscles and training of the scapular muscles. The control therapy consists of stretching, muscle fibre friction, and eccentric training of rotator cuff muscle, the experimental group showed average betterment in pain at rest.[10] The purpose of this study was to assess the efficacy of scapulothoracic joint mobilization in subjects with SIS.

Methodology

It was quasi-experimental study design which was conducted in outpatient door of Physical therapy department of National Hospital Defence & Pakistan Society for Rehabilitation of Disabled Lahore. This study was completed in 06 months from April 2015 to October 2015. A total 74 patients were recruited in the study by using non-probability purposive sampling. The inclusive criteria of the study was both male and female subjects age between 18-65 years having the basic problem of unilateral shoulder joint pain. The exclusion criteria of the research was the discomfort in both shoulders due to any systemic disease such as carcinoma, rheumatoid arthritis or bone fracture, shoulder pain due to adhesive capsulitis, glenohumeral osteoarthritis and cervical radiculopathy and the subjects who were not willing to participate were also excluded from the study. After initial screening 50 patients who fulfilled the inclusive criteria were divided into 2 groups, the treatment group A received glenohumeral joint mobilization along with scapulothoracic joint mobilization while the control group B only received glenohumeral joint mobilization. Pre-and post-treatment values for pain, disability & shoulder range of motion were recorded trough VAS, disability through SPADI and ROM with goniometer. Pre-& post treatment values were analyzed though SPSS 19 version. Independent sample T test was applied to determine any significant change between the two treatment groups. Paired sample T test was used to analyses any significant difference between the treatment variables within each group. P value < 0.05 was considered to be significant.

Results

The baseline values of the treatment group was 6.05± 0.93 which change to 2.22 ± 0.76 (p-value < 0.01) after the treatment sessions with glenohumeral joint mobilization along with scapular mobilizations while the

baseline values of the control group 5.89 ± 1.13 which change to 3.14 ± 0.87 (p-value < 0.01) after the treatment sessions of gleno humeral joint mobilization alone. There was also a mean change of 35.84 in treatment group A as compared to 28.72 in treatment group B (Table 1). Shoulder ROM in the treatment group A showed marked improvement as compared to group B. The baseline values and final value for the shoulder abduction and flexion are reported in Table 2.

Discussion

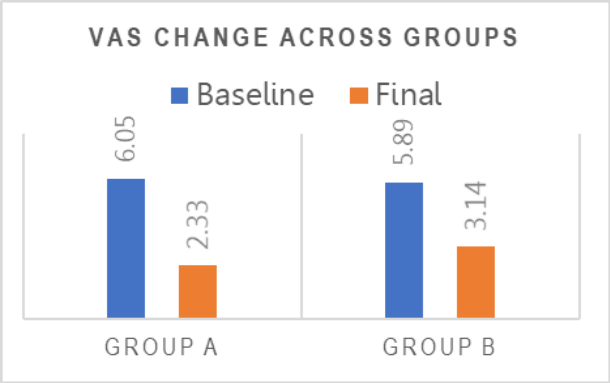
The study was conducted to investigate the effectiveness of glenohumeral mobilization with and with and without scapulothoracic mobilization in subjects with shoulder impingement syndrome. There was improvement in terms of increased ROM and decreased VAS and SPADI score in subjects that received combination of glenohumeral mobilization in combination with scapulothoracic mobilization as compared to glenohumeral mobilization alone with p value less than 0.01.

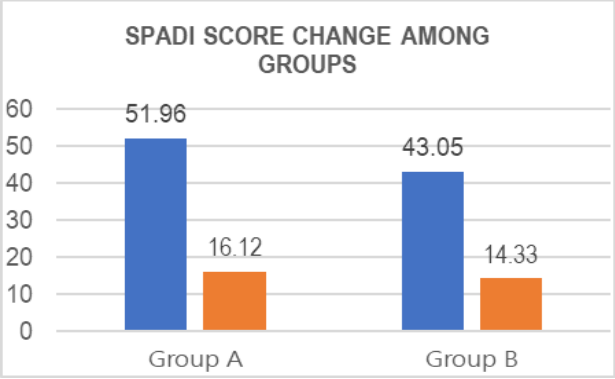
Table 1: Comparison of baseline and final value of VAS & SPADI score

Variables	Groups	Pre- Treatment mean ±SD	Post- Treatment mean ± SD	Within Group Change	P-Value
VAS	A	6.05 ± 0.93	2.33 ± 0.76	3.72 ± 0.28	< 0.01
	B	5.89 ± 1.13	3.14 ± 0.87	2.75 ± 0.22	< 0.01
SPADI	A	51.96 ± 6.01	16.12 ± 3.34	35.84 ± 4.40	< 0.01
	B	43.05 ± 5.80	14.33 ± 5.46	28.72 ± 5.00	< 0.01

Table 2: Comparison of baseline and final value of Shoulder Flexion & Abduction score

Measure	Group	Pre-Treatment mean ± SD	Post- Treatment mean ± SD	Within Group Change	P-Value
Shoulder Flexion	A	101.45 ˚ ± 11.64	139.96˚ ± 9.46	38.24˚± 8.84	< 0.01
	B	103.96˚ ± 9.46	121.69˚± 9.11	17.73˚± 4.46	< 0.01
Shoulder Abduction	A	78.25˚± 6.63	110.11˚± 8.00	31.86˚± 3.96	< 0.01
	B	82.69˚± 7.09	98.54˚ ± 12.91	15.85˚ ± 3.28	< 0.01





The results of our study are very much similar with the other studies done by other researcher's world widely like Douglas E. Conroy et al did a study on the joint mobilization as a part of comprehensive treatment for shoulder impingement syndrome in 1998. Their research revealed that joint glide and conservative treatment can decrease discomfort, increase mobility, and ADLs in subjects with SIS. The results of current study are also very much similar with the study which was conducted by Struyf F et al. They did a randomized clinical trial on the scapular motion treatment in 22 patients with SIS in 2013. They assessed the self-reported shoulder disability, pain, positioning of scapula and muscle power of the shoulder girdle. Their study proved that the scapular based intervention which included stretching of the muscles and training of the scapular muscles, gave betterment in the pain of shoulder joint as compare to control therapy which was consisted of stretching, muscle fibre friction, and eccentric training of rotator cuff muscle only.[10] The result of the current study are somewhat differed with the

research of Aytaret.al. They done a study on the scapular mobilization in individuals with SIS in 2015.The results of their study revealed that there was not a great benefit of scapular glides for function of the shoulder, discomfort and range of motion with sham or supervised-exercise groups in subjects with SIS.[9] The different studies investigating scapular kinematic abnormalities associated with glenohumeral joint instability is also increasing. Less scapular upward rotation or a significantly greater scapulohumeral rhythm ratio (indicative of a lesser scapular upward rotation component) in the subjects with instability was reported in these studies.[11-13] Lin and colleagues separated "stiff shoulders" into anterior and posterior stiffness at the glenohumeral joint. They found those with anterior glenohumeral joint tightness demonstrated greater scapular upward rotation and less posterior tilt as compared to the individuals in the group with posterior tightness.[14]

Conclusion

It is concluded that scapulothoracic joint mobilization along with glenohumeral joint mobilization is more beneficial in minimizing pain and improving ROM in individuals with Subacromial Impingement Syndrome than glenohumeral joint mobilization alone.

References

1. Lewis JS, Green AS, Dekel S. The aetiology of subacromial impingement syndrome. Physiotherapy. 2001;87(9):458-69.
2. Michener LA, Walsworth MK, Burnet EN. Effectiveness of rehabilitation for patients with subacromial impingement syndrome: a systematic review. Journal of hand therapy. 2004;17(2):152-64.
3. Chang WK. Shoulder impingement syndrome. Physical medicine and rehabilitation clinics of North America. 2004;15(2):493-510.
4. Van der Windt D, Koes BW, de Jong BA, Bouter LM. Shoulder disorders in general practice: incidence, patient characteristics, and management. Annals of the rheumatic diseases. 1995;54(12):959-64.
5. Kronberg M, BrostrÖm L-Å, NÉmeth G. Differences in shoulder muscle activity between patients with generalized joint laxity and normal controls. Clinical orthopaedics and related research. 1991;269:181-92.
6. Booyens RP. The short term efficacy of thoracic spinal manipulation on shoulder impingement syndrome 2015.
7. Reinold MM, Simpson II CD. Biomechanical implications in shoulder and knee rehabilitation. Physical Rehabilitation of the Injured Athlete E-Book. 2011:155.
8. Patterns M. Rehabilitation for Complex. Disorders of the Scapula and Their Role in Shoulder Injury: A Clinical Guide to Evaluation and Management. 2017:193.
9. Aytar A, Baltaci G, Uhl T, Tuzun H, Oztop P, Karatas M. The effects of scapular mobilization in patients with subacromial impingement syndrome: a randomized, double-blind, placebo-controlled clinical trial. Journal of sport rehabilitation. 2015;24(2):116-29.
10. Struyf F, Nijs J, Mollekens S, Jeurissen I, Truijen S, Mottram S, et al. Scapular-focused treatment in patients with shoulder impingement syndrome: a randomized clinical trial. Clinical rheumatology. 2013;32(1):73-85.
11. Illyés Á, Kiss RM. Kinematic and muscle activity characteristics of multidirectional shoulder joint instability during elevation. Knee Surgery, Sports Traumatology, Arthroscopy. 2006;14(7):673-85.
12. Ogston JB, Ludewig PM. Differences in 3-dimensional shoulder kinematics between persons with multidirectional instability and asymptomatic controls. The American journal of sports medicine. 2007;35(8):1361-70.
13. Ozaki J. Glenohumeral movements of the involuntary inferior and multidirectional instability. Clinical orthopaedics and related research. 1989;238:107-11.
14. Lin Jj, Lim HK, Yang JL. Effect of shoulder tightness on glenohumeral translation, scapular kinematics, and scapulohumeral rhythm in subjects with stiff shoulders. Journal of Orthopaedic Research. 2006;24(5):1044-51.