

TO COMPARE THE EFFECT OF ULTRASOUND AND SHORT WAVE DIATHERMY IN MANAGEMENT OF PAINFUL SHOULDER ALONG WITH EXERCISES

Shilpa Jain¹

¹Assistant Professor, SBSPGI of Biomedical Sciences & Research, Dehradun

Charu Sharma²

²Assistant Professor, SBMN College of Physiotherapy, BMU

INTRODUCTION

Painful shoulder is an inflammatory disorder of the shoulder joint involving the capsule and soft tissues surrounding it. The problem of painful shoulder can start after an injury or strain or may sometimes develop more gradually without obvious trigger. It is a condition that affect the ability to move the shoulder around. There is stiffness and pain in the shoulder joint, which reduces normal movement in the shoulder joint. Recovery can be slow and symptoms usually last for a long time, although for some people it can be much faster than this.

It can occur equally in the right & left shoulders, and it makes no difference which is your dominant hand. According to hauzeurjb periarthritis is the most common presentation of painful shoulder. According to Condiotto et al in 2002 oct. The time-course covered by the original definition of scapulo-humeral periarthritis suggested by Duplay through the more recent term of subacroy impingement syndrome coined by Need, follows the identification of the pathogeneticmechanisms leading to chronic subacromial impingement and degenerative tears of the rotator cuff. The Authors recall the functional-anatomic development evolution of the shoulder and the disequilibrium between thedepressor and the

elevator muscles which may promote the chronic friction against the acromion.

Maheshwari et.al, Periarthritis shoulder is a disease of unknown aetiology where the gleno humeral joint becomes painfull and stiff because of loss of resilience of the joint capsule, possibly with adhesions between it's fields. It produce pain and stiffness of the shoulder in early stages, the pain is worst at night and the stiffness is maximum in external rotation, then abduction and then internal rotation in the decreasing order of the shoulder.Later, the pain is present at all times and all the movements of the shoulders are severely limited.Often, there can be is a history of preceedingtrauma.The disease is commons in diabetes.

According to Apley, The term periarthritis shoulder should be reserved for a well defined disorder characterized by progressive pain and stiffness of the shoulder which usually resolved spontaneously after about 18 months. The cause remains unknown. The histological features are reminiscent of dupuytren's disease, with active fibroblastic proliferation in the rotator interval, anterior capsule and coracohumeral ligament.(bunker and anthjopny,1995).

The condition is particularly associated with diabetesdupuytren's disease, hyperlipidaemia, hyperthyroidism, cardiac disease and

hemiplegia. It occasionally appears after recovery from neurosurgery.

It is mostly occur in aged 40-60yrs, may give a history of trauma. After trivial, followed any aching in the arm and shoulder. Pain gradually increases in diversity and often prevent sleeping on the affected side/ after several months. It begins to subside, built it does so stiffness becomes an increasing problem, continuity for another 6-12 months after pain has disappeared. Gradually moment is regained, but it may not return to normal and some pain may persist

Stages of Periarthritis shoulder

Painful freezing stage

this is the most painful stage motion is restricted this painful stage typically last for 1 to 4 months.

Frozen month

During this stage pain usually goes up and the stiffness worsens. This change last for 5 to 8 months

Thawing stage

This stage is gradual and steady improvement in range of motion over a lengthy period of time this stage last for 6 to 12 months.

The entire time frame of periarthritis shoulder may last as long as a year while it is extremely rear from this problem to last longer than a year it may last long as three years also according to some authors

Aims and Purpose of the Study

To compare the effects of ultrasound and short wave diathermy in management of painful shoulder along with exercise.

Painful shoulder patients are given both ultrasound and short wave diathermy. So I was

curious about which one of them gives better results in patients painful shoulder.

To conduct a comparative evaluation of ultrasound and short wave diathermy in the management of painful shoulder along with exercises.

Aim is to find out weather ultrasound short wave diathermy is more effective and painful shoulder.

- Relieve pain
- To compare effectiveness
- To prevent further progression
- To limit complication associated with the complication
- To maintain range of motion.
- To relieve patients from depression by improving their ADL
- To make people aware that there are electro therapeutic modalities and physiotherapy techniques which can prevent them from being deformed and regain their lost moments.

Significance of the study

There is a rush of sedentary work in daily life which cause excessive stress for shoulder region due to overuse, injuries, bad poster and also result in neutral involvements.

Here electrotherapeutic modalities along with other techniques reduces pain.

Hypothesis

Alternate hypothesis: Efficacy of ultrasound is better than short wave diathermy in the management of painful shoulder.

Null hypothesis: Effect of ultrasound and short wave diathermy is equally effective in management in painful shoulder.

Operational Definition

Painful shoulder:-

Painful shoulder is inflammatory disorder of shoulder joint involving the capsule and soft tissue surrounding it.

Ultrasound:-

It is a electrotherapeutic modality which produces ultrasonic waves through the quartz crystal.

Short wave diathermy:-

It is a deep heating modality which promote healing and reduces pain.

Research Design and Methodology

Nature of the Study

It is a comparative study to check the effectiveness of ultrasound and shortwave diathermy for the treatment of painful shoulder.

SELECTION CRITERIA

INCLUSION CRITERIA:-

- 1) Age group 40- 60 years.
- 2) Complaining of pain in the shoulder joint.
- 3) Restriction of ROM at the shoulder joint.

EXCLUSION CRITERIA:-

Any injury around the shoulder, stroke or neurological problem.

No cervical radiating pain pathology coming to the shoulder joint.

SAMPLE AND METHOD OF SELECTION

14 patient ages between 40-60(non – diabetic patient) are selected and divided into two equal groups in a method of convenience sampling. The subject of this study were taken from Delhi Physiotherapy &slimming center in Ramesh Nagar, and Hindu Rao Hospital.

GROUP 1:-

7 patient being given ultrasound and Physiotherapy exercises.

GROUP 2:-

7 patient been given short wave diathermy and Physiotherapy exercises.

TIME DURATION:-

For ultrasound :-

Intensity- 0.75w/ sq cm

Time duration- 7-12 minutes

Given along the anterior and superior portion of the joint capsule.

For short wave diathermy

Duration- 15 minutes

Placement of electrodes- Patient supine lying and anterior- posterior placement of bad in relation to the shoulder joint.

Patient told to feel mild heat during treatment session.

Variables of the study

Dependent variables:

- PAIN
- ROM

Independent variables:

- Ultrasound
- Short wave diathermy

Material and instrument used

- Plinth
- Stool
- Ultrasound machine
- Short wave diathermy
- Aqua Sonic gel
- Goniometer

METHODOLOGY-

Electrotherapy modality treatment was given & exercises everyday for 3 weeks. Intensity of short wave diathermy was based on each patient's tolerance. But all patients were advised that they should feel just comfortable warmth

Group 1- was given ultrasound at 0.5 w/sq cm for 7-12 minutes.

Group 2- was given SWD at comfortable warmth for 15 minutes.

Both group are given exercise once daily. Treatment should given for total time duration of three weeks.

Exercise given are

- Codman, pendulum exercise
- Finger ladder exercise
- Shoulder wheel exercise
- Shoulder pulley exercise
- Wand exercise
- Shoulder glides were performed

- Active shoulder movements in all directions.
- Active assisted movements in all direction.
- Passive movements within bearable limits.

RELIABILITY AND VALIDITY

Instrumental validity

Goniometer- ROM of shoulder joint was measured by goniometer. It is the preferred instrument for measuring ROM.

Smith and Walker demonstrated intra -tester reliability ($r=90$) and inter- tester reliability ($r= 70$).

VAS- it is always reliable.

Tester's reliability

Procedure used for the measurement of the responses was conducted once and hence, this procedure was intra reliable.

Procedural reliability

Procedure used in the study is reliable and was used previously by many researchers.

Data analysis

This chapter deals with the analysis , interpretation of data collected on the visual pain along scale and goniometer 14 subjects divided into two equal groups ,Was put into several suitable statistical analysis in order to verify the investigation of the study.

This characteristics of the data presides through tables .pre and post scores of visual pain analog scale and goniometer was analyzed by using mean and standard deviation presented in the tables

1. Mean $\bar{x} = \sum x/n$
2. Standard deviation. $S_d = \sqrt{(\sum x^2/n) - \bar{x}^2}$

	Group 1			Group 2		
	No.	Mean	S.D	Mean	S.D	Mean diff
VAS	7	5.71	1.603	5.57	1.9	0.14
Rom						
Flex	7	98.57	12.82	102.85	7.56	4.28
Abduct	7	75	13.23	85.71	4.49	10.71
Latrot	7	38	7.72	45.71	5.34	7.71

Table 4.1

		Pre test			Post test	
	No	Mean	S.D	Mean	S.D	Mean diff
Vas	7	5.71	1.603	5	1.41	0.71
Rom						
Flex	7	98.57	12.82	115.71	10.97	17.14
Abd	7	75	13.32	105.71	9.32	30.71
Lat rot	7	38	7.72	57.14	6.36	19.14

Table 4.2

			Pre test		Post test	
	No.	Mean	S.D	Mean	S.d	Mean diff.

Vas	7	5.57	1.9	5.14	1.77	0.43
Rom						
Flex	7	102.85	7.56	112.86	7.56	10.01
Abd	7	85.71	4.49	99.29	7.87	13.58
Lat rot	7	45.71	5.35	56.46	3.78	10.75

Table 4.3

		Group 1		Group 2		
	No	Mean	S.D	Mean	S.D	Mean diff
VAS	7	5	1.41	5.14	1.77	0.14
RoM						
Flex	7	115.71	10.97	112.86	7.56	2.85
abd	7	105	9.32	99.29	7.87	5.71
lat rot	7	57.14	6.36	56.46	3.78	5.29

Table 4.4

Result

This study was done on 30 patients group into two secrets groups with 15 patients in each.

Group 1- patients are given ultrasound

Group 2-patients are given short wave diathermy

from the study done it is observed that ultrasound is more effective in painful shoulder .

OLX ultrasound is more effective on basis of goniometer scale and v a s scale.

Discussion

This study has produced following findings

Group 1 (ultrasound)- showed more significant improvement in pain level between pre and post in interventions. The percentage difference in pain between pre and post was 12.43%. There was also significant increase in range of motion in group 1 between pre and post. The percentage difference in range of motion between pre and post was flexion 14.82%, Abduction 29.05%, Lat rotation 33.49%

Group 2 (short wave diathermy) showed no more significant improvement in pain level between pre and post intervention. The percentage difference in pain between pre and post for 7.01 percent.

There was also no more significant increase in range of motion in group 2 as compared to group 1 between pre and post. The percentage difference in range of motion between pre and post was flexion 8.1% abduction 13.67% lat rotation 19.04%.

The main aim of this study was to compare the effect of ultrasound and short wave diathermy. Range of motion and patient with painful shoulder. All the patient in the ultrasound treatment group had significantly greater shoulder range of motion more pain relief and higher functional course than the patient in short wave diathermy group at the end of study

The magnitude of the mean changes in the dependent variables affected by the ultrasound was more than SWD

All the patient in ultrasound treatment group has significantly better than SWD at the end of 3 weeks of treatment.

Pain is a major contributor factor to the disability in the patient with painful shoulder. Hence it is understandable that ultrasound which affected greater pain reduces in this study also brought about greater range of motion. It appears therefore that ultrasonic can be appropriately substituted for SWD in the management of painful shoulder.

When ultrasound waves are applied to the soft tissue the energy that is absorbed was both thermal effect increasing the extensibility of the soft tissue and blood flow and decreasing tissue stiffness muscle spasm hand pain. High intensity ultrasound may cause local tissue damage if it is excessive, and this is the main potential side effect. The non thermal effects provide rotational for the use of ultrasound therapy in patient with painful shoulder. Practical recommendation for the dose and frequency of ultrasound treatment are varied and controversial. The dose can be where it while connecting the frequency intensity and cube of regiment and by changing the timing and duration of treatment. The lowest dose that achieve the required effect should be used.

For painful shoulder disorder police and continuous ultrasound at the frequency of 3 megahertz for 3 to 10 minutes daily or on alternate days for top 2 12 . ultrasound in all the use of high frequency sound waves

which penetrates deep into the tissue (4 to 10cm[1.6 to 4 inches]) and produce thermal mechanical chemical and biological effects. That may be used to treat limited range of motion caused by muscle shortening and fibrosis, skin or subcutaneous tissue scaring.

The result of my studies suggest that a short term program of ultrasound along with some physiotherapy exercise is well tolerated by patient with active disease. Here the pain proposes to break a adhesion and decreasing pain with its micro massage effect. Ultrasound in physiotherapy exercise for the more patient in the program statistically significant improvement of range of motion and reduce of pain after completion of exercise program. Several study have already show the benefit of ultrasound in well control painful shoulder. There are some evidence that the intermittent cycle of inter particular pressurized during exercise might increase the synovial blood floor does reducing inflammation and pain.

According to the study then by zancan et all also show dead ultrasound play an important role in treatment of painful shoulder.

Me.robriec also suggest that the use the timing of its application and combination with other forms of therapy do not correspond in all respect of assumption made.

According to Nykanen m he studied on pulse ultrasound is better in treatment of painful shoulder.

LIMITATION OF THE STUDY.

- This study was done on small sample size of 15 patient group.
- The duration of treatment given to patient was less.

FUTURE SCOPE OF STUDY

Further study can include comparing the starter to other electrotherapeutic modalities and other forms of treatment and looking at the effects obtained.

Also symptomatic and subjects at risk such as those with the history of trauma to the shoulder region such as false or muscular pathological changes due to contusions or strains can be included .

- To compare the effectiveness of other electrotherapeutic modalities. Perfect look
- To compare thermotherapy versus cryotherapy.
- To study the combined effectiveness of stretching and splintage along with ultrasound and short wave diathermy.

CONCLUSION

The main conclusion from the studies that ultrasound along with physiotherapy exercise is better than short wave diathermy and exercise in the treatment of painful shoulder.

On the basis of result of this study we suggest that patients with painful shoulder should be encouraged physiotherapy exercise along with ultrasound for improvement in ROM and reducing pain.



References

1. Shield Nora, Gormley John, o hare Neil. December 2005 short wave diathermy, a review of existing clinical trails advance in physiotherapy vol 7 page 170-175
2. Brain.I. hazelman – adden brooks hospital. Ultra sound effect
3. B I Hazelman ' on painfullstiff shoulder'
4. J Maheswari. Essential Orthopaedicsthird edition
5. Ginnka et al. August 1997 they studied on the randomised controlled clinical trial of a treatment of shoulder pain.
6. Zankan a ' Telethamographic effect and the compressive clinical assessment of the treatment of shoulder periarthritis is using ultrasound.
7. Kezbanyigister and MintazeKerem.. in November 2004 “ the aim of there study was investigated effect of lotophorosis in patient with adhesive capsulitis.
8. Rahman et al. June 2007 studded on the therapeutic effect of ultrasound in painful shoulder.
9. Mykanen m et al. pulsed ultrasound treatment of the painful shoulder a randomised, double blind, placebo controlled study.xd 6*
10. Hauzejrb. (service de rhematologychu short tilmen) in 2004 sep give definition.
11. Cordiotto 2002 Oct. definition
12. Maricevia et al they studied ur treatment of painful shoulder.

13. Judith Falconer . 22 Feb 1990 therapeutic ultrasound in treatment of muscular skeleton condition of shoulder.