

COMPARISON OF EFFECTIVENESS OF PHONOPHORESIS AND TENS ON SHOULDER PAIN AND DISABILITY IN PATIENTS WITH TYPE 2 DIABETES MELLITUS

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Abstract

Background: Diabetes has been considered as an risk factor for shoulder pain . Diabetes mellitus affects the musculoskeletal system , it has been studied by numerous authors. The most common musculoskeletal problem due to diabetes is Adhesive capsulitis or frozen shoulder. Aim of study was to comparison of effectiveness of Phonophoresis and TENS on shoulder pain and disability in patients with type 2 Diabetes mellitus. Methodology : Experimental study design in which 30 individual having diabetes participated, who were selected randomly. Special tests like empty can test, scratch test and speed test were done to rectify the condition. Pre and post intervention NPRS, SPADI scales were used for assessment of pain and disability respectively. Results : Mean Age of group A was 55.47 for group B was 58.8 Duration of Diabetes for group A 12.46 and group B was 13.13 The mean of SPADI for group A pre= 46.5 and post=39.4 paired t test was p value 0.001. Group B Spadi for group B pre=51.6 and post=41.27. The P.value was 0.001 using student t test. The mean of NPRS for group A pre= 8.6 and post=5.6 the p value was 0.001 and for group B pre=8.86 and post=5.53. the P.value was 0.001 using wilcoxon sign rank test. Man whitney U test p value was 0.001. Unpaired t test for SPADI between group A and Group B was p value 0.018 Conclusion: Both Phonophoresis and TENS are equally effective in improving shoulder pain and disability in patients with diabetes.

Keywords: Diabetes, SPADI , NPRS, Shoulder , Pain, Phonophoresis, TENS

Introduction

The musculoskeletal complications of diabetes are usually neglected in the clinical consultation. Hyperglycemia, insulin levels and genetic variations have been involved in the pathogenesis of musculoskeletal abnormalities seen with diabetes. Several musculoskeletal conditions are seen exclusively with diabetes where as others are seen more frequently.¹

Severe Impairments in Upper extremity is very common in diabetic patients, leading to complaints of pain and disability. Diabetes affects the musculoskeletal system in many ways of which involvement of the shoulder is one of the frequently.¹

Diabetes has been considered as a risk factor for shoulder pain. Diabetes mellitus affects the musculoskeletal system, it has been studied by numerous authors. The most common musculoskeletal problem due to diabetes is Adhesive capsulitis or frozen shoulder.²

In Patients suffering with diabetes, shoulder problems are a major reason for disabling manifestation of musculoskeletal dysfunctions. A study done in Brazil states that a high prevalence of shoulder pain and dysfunction exists in the population with type 2 diabetes, with greater prevalence among women and the elderly.³

Previous researches have shown that there is a higher prevalence rate of shoulder impairments in patients with diabetes as compared with general medical patients¹. Adhesive Capsulitis and rotator cuff impairment are the most common shoulder disorders. Medical Management includes use of NSAIDs to reduce pain and inflammation with the anti-inflammatory effect into the joint. Shoulder pain leads to decreased quality of life and increase disability in activities of daily living.⁴

Conservative management (oral NSAIDs and standardized physical therapy) is proved effective in improve pain and strength in frozen shoulder patients with diabetes. Also Transcutaneous electrical stimulation (TENS) can significantly increase range of motion more than heat combined with exercise and manipulation in physical therapy treatment.⁵

Hence in this study we aimed at comparison of effectiveness of Phonophoresis and TENS on shoulder pain and disability in patients with type 2 Diabetes mellitus

Materials and Methodology-

Experimental study design for diabetic patients in and around Pune was selected.

Permission was taken from institutional ethical committee. Different centers were approached and permission was obtained prior to study. Explanation of the experiment was given to the patient. Patients willing to give consent to participate in the study were included.

The inclusion criteria includes patients with painful shoulder movement for at least for 1 month, patients diagnosed with soft tissue injuries at the shoulder joint and patients with positive SPADI. The exclusion criteria includes patients with fractures, dislocations or open wounds in and around the shoulder, Subjects with bony changes on radiological investigations, Inflammatory arthritis confirmed any laboratory changes.

Total 30 individuals with diabetes with shoulder impairments were selected randomly. Prior to study pre intervention assessment was done using SPADI, NPRS and data was collected. Pilot study was conducted and errors were resolved. Patient were treated according to the treatment protocol. Participants were randomly allocated. Patients were divided into 2 groups. Group A was treated with phonophoresis using sodium diclofenac. The treatment was given for 10 min. Group B was treated with conventional TENS. It was given for 10 min for duration of 10 days. After the study post intervention assessment was done using SPADI, NPRS. Data was collected and statistically analyzed.

Results

Out of 30 participants, 16 were male and 14 were female. The 30 individuals were divided into two groups equally. 15 participants were treated with phonophoresis using sodium diclofenac and the other 15 with Conventional TENS. Assessment was done with NPRS and SPADI scales was done. Mean Age of group A was 55.47 for group B was 58.8 Duration of Diabetes for group A 12.46 and group B was 13.13 The mean of SPADI for group A pre= 46.5 and post=39.4 paired t test was p value 0.001. Group B Spadi for group B pre=51.6 and post=41.27. The P.value was 0.001 using student t test. The mean of NPRS for group A pre= 8.6 and post=5.6 the p value was 0.001 and for group B pre=8.86 and post=5.53. the P.value was 0.001 using wilcoxon sign rank test. Man whitney U test p value was 0.001. Unpaired t test for SPADI between group A and Group B was p value 0.018

Discussion

This study was supported by the research of Van der heijden GJ et.al 1993 conducted the study on the effect of ultrasound in the treatment of musculoskeletal disorders concluded that the use of ultrasound in muscular skeletal disorders is based on empirical experience, but is lacking firm evidence from well designed controlled studies.^[6]

This study is also supported by Yesim Kurtais Gursel et.al 2004 studied to assess the effectiveness of ultrasound over placebo intervention when added to other physical therapy interventions and exercise. The phonophoresis with sodium diclofenac is effective in reducing pain and increasing range of motion. This study is supported by Isabel Herrera -lasso, Mario H cardiel.^[7]

The empirical evidence suggests that certain physical therapy techniques and electrotherapeutical modalities like ultrasound and TENS are strongly recommended for pain relief, improvement of ROM, and functions of shoulder in patients with adhesive capsulitis, .⁸

A study done had 50 patients with adhesive capsulitis divided into 2 groups with Group A treated by therapeutic heating modalities followed by therapeutic exercises and gentle rhythmic stabilization manipulation. Whereas Group B treated by prolonged pulley traction accompanied by transcutaneous nerve stimulation. Group B demonstrated much greater improvement than Group A.⁹

Adhesive capsulitis also termed frozen shoulder is a common Musculoskeletal condition characterised by spontaneous onset of pain, progressive restricted range of the shoulder and disability. Hence Electrotherapy modalities, which aim to reduce pain and improve function via an increase in energy (electrical, sound, light, thermal) into the body, are often delivered as components of a physical therapy intervention.⁸

Conclusion : Both Phonophoresis and Conventional TENS are equally effective in improving shoulder pain and disability in patients with diabetes.

References:

1. Kharroubi AT, Darwish HM. Diabetes mellitus: The epidemic of the century. World journal of diabetes. 2015 Jun 25;6(6):850.
2. Bhawna¹ NK, Kundu ZS. Prevalence of shoulder pain among adults in Northern India. Asian Journal of Health and Medical Research (AJHMR) Volume 2, Issue 2, June, Page No.18-22, 2016
3. Czelusniak P, Walczak TG, Skare TL. Shoulder pain and dysfunction in 150 type 2 diabetes mellitus patients. Arquivos Brasileiros de Endocrinologia & Metabologia. 2012 Jun;56(4):233-7.
4. Hsu CL, Sheu WH. Diabetes and shoulder disorders. Journal of diabetes investigation. 2016 Sep;7(5):649.

5. Page P, Labbe A. Adhesive capsulitis: use the evidence to integrate your interventions. North American journal of sports physical therapy: NAJSPT. 2010 Dec;5(4):266.
6. Browne DL, McCrae FC, Shaw KM. Musculoskeletal disease in diabetes. Practical Diabetes International. 2001 Mar 1;18(2):62-4.
7. Shah KM, Clark BR, McGill JB, Mueller MJ. Upper extremity impairments, pain and disability in patients with diabetes mellitus. Physiotherapy. 2015 Jun 1;101(2):147-54.
8. Page MJ, Green S, Kramer S, Johnston RV, McBain B, Buchbinder R. Electrotherapy modalities for adhesive capsulitis (frozen shoulder). Cochrane Database of Systematic Reviews. 2014(10).
9. Rizk TE, Christopher RP, Pinals RS, Higgins AC, Frix R. Adhesive capsulitis (frozen shoulder): a new approach to its management. Archives of physical medicine and rehabilitation. 1983 Jan 1;64(1):29-33.