

Effects of Phonophoresis on Supraspinatus Tendinitis in Abducted Position and Adducted and Internally Rotated Position of College Men

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Abstract

The purpose of the study was to analyse the effects of phonophoresis on supraspinatus tendinitis in abducted position and adducted and internally rotated position of college men. Ten college sports men with clinically diagnosed supraspinatus tendinitis in acute state were selected for this study. Their age was between 20 – 25 years and all of them were males. The subjects were randomized into two treatment groups of five each. One of the groups (G1) underwent phonophoresis treatment in abducted position and the other one (G2) underwent phonophoresis treatment in adducted and internally rotated position. Pain due to acute supraspinatus tendinitis was found to be relieved earlier by the phonophoresis in adducted & internally rotated than phonophoresis in abducted position.

Key Words: Phonophoresis, Supraspinatus Tendinitis, Abduction, Adduction, internal rotation

Introduction

Physiotherapy in the sports field has great potential to play a vital role in the prevention of injury, treatment, training and developing a particular skill for an athlete in the specialized field. Proper diagnosis, choosing the appropriate modalities and applying the perfect methods are the pillars of the successful treatment. So choosing the appropriate modality is the key to produce good results.

One of the most common overuse injuries that occur in the upper limb is supraspinatus tendinitis (*Frank, 1986; Ciullo, 1992; David, 1992; Kerstina et al, 1994; Wilder & Sethi, 2004*). Supraspinatus tendon plays a vital role in all sports and games. Supraspinatus tendinitis is caused by repeated stress or over use injury. In severe cases supraspinatus injury badly hits sports activities and affects the sports men career.

Phonophoresis has been suggested by early studies to enhance the absorption of analgesics and anti-inflammatory agents (*Bare et al, 1996; Kassar et al, 1996*). *Singh et al (2002)* compared the efficacy of iontophoresis and phonophoresis with diclofenac sodium (1%) in the treatment of shin splints. Evaluation of results showed that both iontophoresis and phonophoresis were effective in introducing the medication deep into the periosteum and adjacent musculo-tendinous structures. More recent, better-controlled studies have consistently failed to demonstrate that phonophoresis increases the rate of absorption or the extent of absorption over placebo. Several reviews stated that more research is needed to ascertain optimal techniques and conditions for safe and efficacious utilization of physical modalities including phonophoresis; and there is a need for additional research to establish clinical effectiveness and determine optimal treatment parameters

for the physical agents (e.g., phonophoresis) used most frequently to alleviate pain. In a review on factors that influence the quality and effectiveness of ultrasound and phonophoresis treatment, *Goraj-Szczypiorowska and colleagues (2007)* noted that although phonophoresis is commonly used among physical therapists, doubts persist as to the relevance and effectiveness of this method. Despite its popularity, the issue of conditions underlying the effectiveness of phonophoresis treatment has still not been adequately addressed.

The present study was conducted to investigate the effects of phonophoresis on supraspinatus tendinitis in abducted position and adducted and internally rotated position of college men.

Material and Methods

Ten college sports men with clinically diagnosed supraspinatus tendinitis in acute state were selected for this study. Their age was between 20 –

25 years. The subjects had symptoms for over various periods ranging between one to two weeks. The subjects were randomized into two treatment groups of five each. First group (G1) underwent phonophoresis treatment in abducted position and the second group (G2) underwent phonophoresis treatment in adducted and internally rotated position. Visual analogue scale was used to assess the progress of the treatment. Visual analogue scale is a widely used subjective evaluation and measurement of intensity of pain. Analysis of covariance was used in the study.

Results and Discussion

Table – 1 illustrates the statistical results of the effects of phonophoresis in abducted and phonophoresis in adducted & internally rotated groups on pain due to acute supraspinatus tendinitis and ordered adjusted means and difference between means of the groups.

Table: Computation of analysis of covariance of per test, post test and adjusted post test on pain for phonophoresis in abducted position group sand phonophoresis in adducted & internally rotated position groups

Means	G1	G2	Mean Diff	Source of Variance	Sum of Squares	df	Mean Square	F ratio
Pre test means	6	6.2	0.2	B	0.1	1	0.1	0.17
				W	4.8	8	0.6	
Post test means	2.8	1.2	1.6	B	6.4	1	6.4	32
				W	1.6	8	0.2	
Adjusted Post test means	2.84	1.24	1.6	B	14.4	1	14.4	84.7
				W	1.22	7	0.17	
Mean gains	3.2	5	1.8					

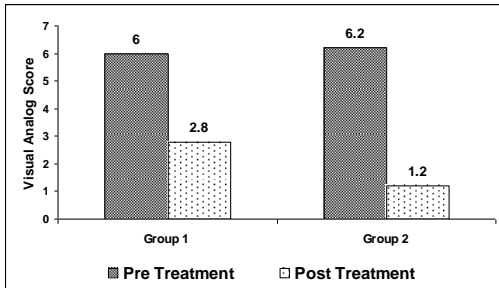
G1: Phonophoresis in abducted position group, G2: Phonophoresis in adducted & internally rotated position group

'F' value at 0.05 level for df 1 and 8 is 5.32, for df 1 and 7 is 5.59

The results show the pretest mean of VAS pain score was 6 for phonophoresis in abducted position and 6.2 for phonophoresis in adducted & internally rotated group and the mean

difference was 0.2. The obtained F ratio of 0.17 was insignificant at 0.05 level for the degrees of freedom 1 and 8, as the table F ratio was greater than the obtained F ratio. The post test means of the

phonophoresis in abducted group was 2.8 and phonophoresis in adducted and internally rotated group was 1.2 and the mean difference was 1.6. The obtained F ratio of 32 was significant at 0.05 level after the degrees of freedom 1 and 8 as the table F ratio was lesser than the obtained F ratio.



The adjusted post test means were 2.84 for phonophoresis in abducted group and 1.24 for phonophoresis in adducted and internally rotated group and their mean difference was 1.6. The obtained F ratio of 84.7 was significant at 0.05 level for the degrees of freedom 1 and 7 as the table F ratio was lesser than the obtained F ratio. The mean gain for phonophoresis in abducted group was 3.2 and phonophoresis in adducted and internally rotated group was 5.

The findings of the study showed that phonophoresis caused significant reduction of pain of acute supraspinatus tendinitis in the Group that underwent phonophoresis treatment in adducted and internally rotated position.

Conclusion

Pain due to acute supraspinatus tendinitis was relieved earlier by the phonophoresis in adducted & internally rotated than phonophoresis in abducted position.

References

Bare, A.C., McAnaw, M.B., Pritchard, A.E. et al. 1996. Phonophoretic delivery of 10% hydrocortisone through the epidermis of humans as determined by serum cortisol concentrations. *Phys Ther.*, **76(7)**: 738-749.

Ciullo, J. V. 1992. *Shoulder Injuries in Sports Evaluation, Treatment and Rehabilitation*, Human Kinetics: US.

David, R. C. 1992. *Sports Injury Assessment and Rehabilitation*. New York: Churchill Livingstone.

Frank, P. A. 1986. *Upper Extremity Injuries in Athletes*, St. Louis: The C.V. Mosby Company.

Goraj-Szczypiorowska, B., Zajac, L., Skalska-Izdebska, R. 2007. Evaluation of factors influencing the quality and efficacy of ultrasound and phonophoresis treatment. *Ortop. Traumatol. Rehabil.*, **9(5)**: 449-458.

Kassan, D.G., Lynch, A.M., Stiller, M.J. 1996. Physical enhancement of dermatologic drug delivery: Iontophoresis and phonophoresis. *J. Am. Acad. Dermatol.*, **34(4)**: 657-666.

Kerstina, O., Robyn, G. A., Birgitta, J., Anita, A., Skerfving, S. 1994. An assessment of neck and upper extremity disorders by questionnaire and clinical examination. *Ergonomics*, **37(5)**: 891 – 897.

Singh A., Sethy G.B., Sandhu J.S. and Sinha A.G.K. 2002. A comparative study of the efficacy of iontophoresis and phonophoresis in the treatment of shin splints. *Physiotherapy*, **1(1)**: 17-20.

Wilder, R. and Sethi, S. 2004. Overuse injuries: tendinopathies, stress fractures, compartment syndrome, and shin splints. *Clinics in Sports Medicine*, **23(1)**: 55-81.