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Treatment of the frozen shoulder by combination of cervical adjustment, ultrasonic therapy and muscle stretching

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Kim Sung-Hui, Song Chol

Pyongyang Medical College, Kim Il Sung University, Pyongyang, Democratic People's Republic of Korea

Abstract

Background: Physical therapy is an intervention commonly used in the treatment of subjects with frozen shoulder symptoms. The purpose of this study was to determine the influence and treatment efficiency of combination therapy of cervical adjustment, ultrasonic therapy and stretching on the frozen shoulder.

Material/Methods: We studied 39 patients (male 22, female 17) who had frozen shoulder and divided them into test group (20, male 12, female 8) and control group (19, male 10, female 9).

Results: The result of combination therapy of cervical adjustment, ultrasonic therapy and stretching was higher than control group, in study group 95.0%, in control group 78.9%.

Keywords: frozen shoulder, cervical adjustment, ultrasonic therapy, stretching

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Corresponding author

Kim Sung-Hui
email: ryongnam22@yahoo.com

INTRODUCTION

Frozen shoulder is an important rehabilitation disease since it has high incidence and causes disability in many people.

Frozen shoulder, or adhesive capsulitis, is a condition caused by impaired soft tissues and the articular capsule of the shoulder. It commonly occurs in people aged 40 to 65 years, and it's more likely to appear in females than in males.4

Frozen shoulder is a disease whose main symptoms are pain and dysfunction and in spite of classical treatment, result is not satisfactory. The treatment modalities used today usually begin with nonoperative measures including anti-inflammatory medications, injections, and physical therapy. However, it has been reported that a substantial subset of patients, up to 30%, do not improve with these measures.5 Although physical therapy is an intervention commonly used in the treatment of subjects with frozen shoulder symptoms, the effectiveness of physical therapy intervention has been limited.2

The treatment strategy for frozen shoulder must include multiple, sequential goals to restore the ROM in the shoulder, alleviate pain, enhance muscle strength, and regain functionality.3

We have made research to determine the influence and treatment efficiency of combination therapy of cervical adjustment, ultrasonic therapy and stretching on the frozen shoulder.

MATERIAL AND METHODS

In the study group the limited mobility site was determined through cervical palpation and corrected by traction, flexion, rotation and then stretching was done. The stretching was done as following: the patient lifts the painful arm as high as possible and doctor find the painful points, presses the exact point and resists the patient's arm while the patient maintains the lifted arm for 10 seconds.

The patient breaths in deeply through the nose and breaths out through the mouth and flexes the shoulder forward and backward and repeats that action 3-5 times.

And then ultrasonic therapy was applied with the strength of 0.8~1.2W/㎠ on the painful site for 10- 15 minutes by moving.

The control group was treated by manual technique of the shoulder joints.

The manual technique therapy was done as following: stroking of the neck, shoulder, arm for 10 minutes, rubbing for 10 minutes and depression on the acupoints(LI15, GB2, TE14, LU1, SI11, LI11 and Ashi point) and passive movements of shoulder joints for 10 minutes.

Evaluation criteria

Recovery : Complete disappearance of the symptoms with normal functions of the shoulder joint ;

Remission : Apparent amelioration of pain and great improvement of the shoulder movement ;

No change : No improvement after treatment.

RESULTS

Change of subjective symptoms

Table 1 shows the change of subjective symptoms in patients with frozen shoulder.

Table 1. change of subjective symptoms (n=39)

Classification			Rest pain	Night pain	Obdormition	Pain during exercise
Test group (n=20)	Before treatment		15	14	18	20
	After treatment	recovery	6	4	5	5
		remission	8	9	11	13
		no change	1	1	2	2
	Ratio (%)		93.3	92.9	88.9	90.0
Control group (n=19)	Before treatment		14	12	16	19
	After treatment	recovery	5	4	5	4
		remission	8	6	8	12
		no change	1	2	3	3
	Ratio (%)		92.9	83.3	81.3	84.2

Rehabilitation ratio of subjective symptoms were improved in test group than control group ($p>0.05$).

Change of range of motion(ROM)

Table 2 shows the change of range of motion.

Table 2. Change of ROM ($\overline{X} \pm SE$, °)

Classification			Forward elevation	Abduction	Backward elevation
Test group (n=20)	Before treatment		90.2±12.9	88.7±9.7	15.8±3.5
	After treatment	5day	98.4±13.2*	96.5±9.8*	18.6±3.2*
		10day	123.5±11.9*	113.6±11.3*	24.4±4.1*
		15day	146.5±12.5*△	132.2±13.5*△	28.3±4.2*△
Control group (n=19)	Before treatment		94.7±12.7	89.4±8.8	16.3±3.6
	After treatment	5day	98.3±12.9*	94.7±9.4*	20.3±3.7*
		10day	120.8±11.5*	110.3±11.6*	22.7±4.4*
		15day	138.2±12.6*	124.3±9.3*	25.3±4.2*

△;p<0.05 (compare with control group) *;p<0.05 (compare with before treatment)

Rehabilition ratio of ROM was significantly higher in Test group than in control group (p<0.05).

Change of Nerve Conduction Velocity (NCV)

Table 3 shows the change of nerve conduction velocity of nervus medianus.

Table 3. Change of NCV ($\overline{X} \pm SE$, mV/s)

	Healthy side	Painful side	
		Before	After
Test group(n=20)	57.7±2.2	50.5±1.73	56.2±1.91*△
Control group(n=19)	57.8±1.75	50.3±1.68	54.8±1.63△

△;p<0.05 (compare with control group) *;p<0.05 (compare with before treatment)

NCV was significantly improved after treatment (56.2±1.91m/s) in test group than in control group (54.8±1.63m/s) and before treatment (50.5±1.73m/s) in test group (p<0.05).

Total Score

Total score is shown as table 4.

Table 4. Total score

	recovery	remission	No change	Ratio(%)
Test group (n=20)	8	11	1	95.0*
Control group(n=19)	4	11	4	78.9

*;p<0.05 (compare with control group)

Total ratio was significantly higher in test group (95.0%) than control group (78.9%) (p<0.05).

DISCUSSION

Patients with frozen shoulder typically present with signs and symptoms of impingement syndrome, in which the primary patient complaint is a limited range of motion (ROM) and the secondary complaint is pain.1

The cervical adjustment releases the neural depression due to cervical incomplete dislocation and enables to keep the biomechanical balance of spine. Ultrasonic therapy decreases the muscle tone by vibration of cells in the tissue, which produces “subtle massage” action. The muscle stretching facilitates the rehabilitation process, which decreases muscular tense and improves blood circulation by the mechanical stretching of the muscle.

The combination therapy of cervical adjustment, ultrasonic therapy and stretching alleviated the pain, improved the ROM in the shoulder and enhanced the muscle strength.

The result of combination therapy of cervical adjustment, ultrasonic therapy and stretching was higher than control group, in study group 95.0%, in control group 78.9%.

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