OUTCOMES OF MASSAGE AND ACUPRESSURE THERAPY IN TAKING CARE OF PATIENTS WITH SHOULDER-NECK STRAIN SYNDROME AT THE MILITARY INSTITUTE OF TRADITIONAL MEDICINE IN 2022

Dinh Duy Dung¹, Nguyen Dinh Nhan¹, Hoang Thi Xuan Huong², Pham Thi Thu Huong², Nguyen Ba Tam², Cao Sy Trung³ ¹Military Institute of Traditional Medicine; ²Phenikaa University; ³National Institute of Hematology and Blood Transfusion

ABSTRACT

Objectives: To describe the outcomes of massage and acupressure therapy in taking care of patients with shoulder-neck strain syndrome at the Military Institute of Traditional medicine in 2022. **Methods**: Cross-sectional descriptive design was performed on 170 patients. Treatment results were assessed by the following contents: pain level, cervical spine range of motion, and daily activity level. **Results**: the rate of patients with muscle spasticity in the neck and back on the first day of treatment was 91.2% and 82.65%, respectively; after 20 days of treatment were 24.12% and 6.77%, respectively. The difference was statistically significant with p < 0.05. After 20 days of treatment, most patients had mild pain $0 < VAS \le 2$ (74.2%). The amplitude of the cervical spine increased, and the range of motion of the cervical spine was improved (the rate of limitation of motion decreased from 15.33% to 0%). **Conclusion**: The therapy of massage and acupressure significantly affects patients with neck and shoulder pain.

Keywords: Massage and acupressure therapy, shoulder-neck strain syndrome, traditional medicine.

1. INTRODUCTION

Neck and shoulder syndrome (SNSS) is a group of clinical symptoms associated with cervical spondylosis with or without associated root, cervical, and/or cervical spinal cord dysfunction, and not associated with inflammatory disease [1]. The most common cause is cervical spondylosis with clinical presentation of pain in the neck, shoulder, and one hand, which may or may not be accompanied by some sensory and/or motor disturbances in the dominant region of the spine. Cervical spinal nerve

roots are affected. Cervical spondylosis causes compression on the roots and nerves, damaging the myelin-producing Schwann cells. Although SNSS is not life-threatening, it greatly affects the quality of life and is one of the leading causes of reduced or lost working capacity and work efficiency in adults [2].

Currently, SNSS is not only common in the elderly but also in people of working age. The cause is due to a sedentary lifestyle and related to working postures such as sitting, bending the neck for a long time,

Cor. author: Dinh Duy Dung	
Address: Military Institute of Traditional Medicine	
Email: dinhduydungtc8@gmail.com	

Received: Nov 14, 2022 Accepted: Feb 08, 2023 Published: Feb 09, 2023 or repetitive monotonous movements of the head, which requires adaptation and tolerance of the cervical spine [2], [3]. The treatment of SNSS is mainly symptomatic treatment and rehabilitation through a combination of medical treatment (with non-steroidal anti-inflammatory drugs, and muscle relaxants) and physical therapy (combined with infrared radiation therapy). external, ultrasound, electromagnetic waves, stretching the cervical spine...) [4]. Surgery is only considered when medical treatment is unsuccessful or nerve compression is evident clinically and/or in imaging studies [1], [2].

Massage and acupressure therapy has long been known as a method of effective pain relief due to the secretory, local and systemic response [5]. We conducted this study to evaluate the effectiveness of acupressure massage and help improve the treatment effectiveness, based on the development of massage and acupressure techniques as well as current procedures. applied at the Military Institute of Traditional Medicine. The objective of the study was to describe the outcomes of massage and acupressure therapy in taking care of patients with SNSS at the Military Institute of Traditional medicine in 2022

2. METHODS

2.1. Subjects, period, and setting of the study

The study was conducted at the Military Institute of Traditional Medicine during the period from October 2021 to March 2022 on subjects who met the following criteria:

- Patients over 30 years old, volunteer to participate in the study and sign a commitment to volunteer to participate in the study. - The patient has been diagnosed with SNSS according to the criteria of modern medicine and traditional medicine based on the following evidence:

+ Modern medicine includes 3 criteria: Neck pain (clinically manifested by neck pain); Cervical spondylosis (Diagnosis based on X-ray images with one or more images: subchondral bone thickening, joint space narrowing, new bone neoplasia (bone bridge, bone spur); Pain level according to VAS scale ≤ 6 points.

+ Traditional medicine: Cervical disease in the neck of the neck can be damaged by kidney failure combined with low wind and cold: the neck area is painful, stiff, and difficult to move; pain increases with cold, wind, rain, moisture; Fear of cold, cold feeling in the neck and neck, pain relieved by warm compress or massage. Thin or slightly viscous white tongue moss, edematous pulse.

*Exclusion criteria:

- Patients with cervical spondylosis with disc bulge/herniated disc in the cervical spine.

- Pregnant or lactating women.

- Patients with severe chronic diseases (liver failure, kidney failure, malignancy).

- The patient does not belong to the type of low-grade typhoid combined with kidney failure according to traditional medicine.

2.2. Research Methods

2.2.1. Research sample size and sample selection: Sample size: using the formula for calculating the sample size of a cross-sectional descriptive study.

$$n = Z^{2}_{(1-\alpha/2)} \frac{p(1-p)}{d^{2}}$$

n: required sample size.

 $Z_{1-\alpha/2} = 1.96$ with 95% confidence.

p is the proportion of subjects with good treatment results, choose p = 0.5 because no previous studies have been conducted yet.

d is the absolute error level, based on resources and p-values this study choose d = 0.08. Instead of the above formula, n = 150. An estimated 20% of patients refused to participate in the study. The final formula calculates 165 people. We studied over 170 patients.

Use the whole sampling method to select research subjects.

2.2.2. Research procedure

Step 1: Patients who met the selection criteria were invited to participate in the study. Patients signed informed consent to participate in the study.

Step 2: The patient was treated with massage and acupressure therapy for 21 days (3 weeks). The period for each treatment day was 30 minutes. The nurse directly follows the prescribed acupressure protocol and the pre-defined and consistent impact procedure in all patients.

Step 3: Treatment outcomes were monitored and evaluated on day 10 and day 21 after the intervention. The benchmark was the date of admission (D0) and the end of treatment (D20).

Step 4: Based on the results of treatment, made a plan for health education and guide patients to prevent disease.

2.2.3. Research instrument

- VAS pain score: The patient's subjective pain level was assessed by the VAS (Visual Analogue Scale) scale. The VAS scale was divided into 10 equal

segments with 11 scores ranging from 0 (totally painless) to 10 (severe, intolerable pain, possibly fainting) [6]. In this study, we actively selected patients with a VAS score ≤ 6 . Therefore, the classification and assessment of pain scores were described in the table below.

Table 1.	Classification of pain according
	to the VAS scale [6]

VAS score	Level	Point evaluation
VAS = 0 points	No pain	0 points
$0 < VAS \le 2$ points	Mild pain	1 point
$2 < VAS \le 4$ points	Moderate pain	2 points
$4 < VAS \le 6$ points	Severe pain	3 points

Table 2. Degree of limitation of range ofmotion of the cervical spine [7]

Level	The general range of motion score	Point evaluation
Unlimited	0 points	0 points
Mild limitation	1 - 6 points	1 point
Moderate limitation	7 - 12 points	2 points
Serious limitation	13 - 18 points	3 points
Limited	19 - 24 points	4 points

- Assess the degree of improvement in daily living limitation according to the Neck Disability Index (NDI): The Neck Disability Index questionnaire by Howard Vernon is a scale used to self-assess the degree of limitation caused by neck pain or neck trauma. The NDI questionnaire was first published in 1991 and was the first questionnaire for self-assessment of limitations caused by neck pain. The questionnaire has been translated into more than 20 languages and is widely used in research. The NDI questionnaire consists of 10 items, the maximum score is 50 points, and is evaluated as follows:

Table 3. Assessment of limitation	of
daily living (NDI)	

Raw score	Limit level	Redemption Points
0 - 4	Unlimited	0 points
5 - 14	Mild limitation	1 point
15 – 24	Moderate limitation	2 points
25 - 34	Serious limitation	3 points
35 - 50	Limited	4 points

The overall treatment outcome rating scale was based on the sum of the scores of 3 indexes: Pain level according to the VAS scale, the degree of limitation of cervical spine mobility, and the degree of limitation of daily activities according to the NDI questionnaire [7].

3. RESULTS

3.1. General information about the subjects

Most of the study subjects were female (80.6%). Nearly half of the patients were in the 50-59 age group (48.8%), followed by the 40-49 age group (38.2%) and over 60 years old (7.2%). The majority of SNSS patients belong to the group of mental workers (63.5%), and the rest belong to the group of manual workers (36.5%). There was no difference in the proportion of the group of mental workers in each gender (63.9% for men and 63.3% for women). Most of the patients had the disease from 1-3 months (45.9%) and less than 1 month (38.2%). Patients with disease duration from 3 to 6 months accounted for 11.2% and more than 6 months only accounted for 4.7%.

Table 4. Evaluation of the overalltreatment outcome

Point	Overall treatment outcomes
0 - 8 points	Very good
9 - 17 points	Good
18 - 26 points	Moderate
26 - 32 points	Poor

2.2.4. Data analysis

Data were entered using SPSS 20.0 software. Tests used in the study include Chi-square, percentage, and t-Test. With 95% confidence, the test was statistically significant at p < 0.05.

2.2.5. Ethical considerations

The subjects participated in the study completely voluntarily. Patients had the right to leave the study at any time for any reason. The study was approved by the Ethics Committee in Biomedical Research, Nam Dinh University of Nursing, and Phenikaa University. The study was approved by the Director of the Military Institute of Traditional Medicine.

3.2. Results of treatment of SNSS

	8		1 1		
Musala araa	Day D	0	Day I) ₂₀	D
Wiuscie ai ca	Frequency	%	Frequency	%	r
Neck	155	91.2	41	24.12	< 0.05
Nape	140	82.65	11	6.77	< 0.05
Around the neck area	53	31.3	6	3.56	> 0.05
Total	155	91.2	57	33.33	

Table 5. Changes in the rate of muscle spasticity

After 20 days of treatment, the patient's symptoms decreased as follows: the patient appeared muscle spasticity (33.33%); the patients have neck muscle spasticity (24.12%) and neck muscle spasticity (6.77%). The difference was statistically significant between groups in the neck and nape area (p < 0.05).

Table 6. Level of VAS score

VAS score	Mean ± SD	Min	Max
Day D ₀	3.56 ± 1.44	1	6
Day D ₂₀	1.73 ± 1.11	0	4

Before treatment, the patient's mean VAS score was 3.56 ± 1.44 ; After 20 days of treatment, the patient's mean VAS score was 1.73 ± 1.11 .

Dance of motion	Mean	-	
Range of motion	Day D ₀ (degree)	Day D ₂₀ (degree)	р
Bend down	22.58 ± 6.85	31.27 ± 7.12	< 0.05
Face up	29.60 ± 6.32	41.23 ± 6.61	> 0.05
Tilt left	25.76 ± 7.49	33.47 ± 9.36	> 0.05
Tilt right	27.15 ± 7.45	33.74 ± 9.60	> 0.05
Turn left	30.82 ± 7.19	41.78 ± 8.80	< 0.05
Turn right	29.95 ± 7.23	39.98 ± 8.75	< 0.05

Table 6. Changes in cervical spine range of motion

The results showed that after treatment, the patient's cervical spine range of motion was significantly improved

Limit movement	Day I) ₀	Day D	20	D
Linin movement	Frequency	%	Frequency	%	1
Unlimited	0	0	26	15.33	> 0.05
Mild limitation	36	21.00	121	71.15	< 0.05
Moderate limitation	108	63.67	23	13.52	< 0.05
Serious limitation	26	15.33	0	0	< 0.05

Table 7. Changes in the degree of limitation of cervical spine movement NDI

After treatment, all patients had an improvement in the degree of limitation of cervical spine activity. Patients with a serious degree of cervical spine restriction decreased from 15.33% before treatment to 0% after treatment, the change was statistically significant with p < 0.05. The mild and moderate limitation of cervical spine restriction before treatment was 21.0% and 63.67%, respectively, while the rate after treatment was 71.15% and 13.52%, respectively. Changes were statistically significant in both groups with p < 0.05.

Effective treatment	Day I	D ₀	Day I) ₂₀	n
	Frequency	%	Frequency	%	h
Very good	11	6.69	48	27.85	< 0.05
Good	51	30.07	89	52.77	< 0.05
Moderate	108	63.35	33	19.38	> 0.05
Poor	0	0	0	0	

Table 8. Overall treatment outcome

Before treatment, the treatment outcome of patients was mostly at a moderate level (63.35%). After treatment, the percentage of patients with very good treatment results increased from 30.07% to 52.77% and the good level increased from 6.69% to 27.85%. The difference in the treatment group with very good and good on days D_0 and D_{20} were statistically significant with p<0.05. There were no patients with ineffective treatment.

Table 9	9. Side	effects	of	massage and	acupressure	therapy
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Side offects	Day D	0	Day D ₂₀		n
Side effects	Frequency	%	Frequency	%	Ь
Skin bruises	0	0	16	9.41	
Skin abrasions	0	0	6	3.52	> 0.05
Skin irritation	19	11.2	4	2.4	
Skin itching	0	0	4	2.4	

Patients treated with massage and acupressure therapy may experience some side effects on the body. There were 16 patients with skin bruises, 6 patients with skin abrasions, 4 patients with skin irritation, and 4 patients with skin itching after 20 days of treatment. However, the above difference was not statistically significant (p > 0.05).

4. DISCUSSION

- Change in muscle spasticity: At the time after 20 days of treatment, the proportion of patients with muscle spasticity in the neck and nape positions decreased sharply. The difference between before and after treatment in the position of muscle contraction in the neck and nape was statistically significant (p < 0.05). The patient showed muscle spasticity in the neck and nape of the neck on day 20 with a rate of 24.12% and 6.77%, respectively. The results of the above study were similar to the research results of Dang Truc Quynh using the remedy "Cat can thang" combined with electro-acupuncture on 30 patients with shoulder pain due to cervical spondylosis. After 3 weeks of treatment, the rate of patients with muscle spasticity in the neck area decreased from 100% to 23.3%; the rate of patients with muscle contraction in the shoulder and neck area decreased from 80% to 16.7%, the rate of patients with muscle contraction, in general, decreased from 100% to 53.3% [7].

Acupressure and massage have long been used as a method to soothe pain and relieve muscle spasms. Overworked muscles will lead to fatigue and muscle spasms, causing edema and reduced muscle endurance. Massage and acupressure help increase muscle endurance, and blood circulation, and increase the elasticity of the muscles, leading to increased working ability and muscle endurance. In acupressure massage, mainly massage, rubbing, and rubbing movements are used to affect the skin and muscles. These are soft procedures, that increase the temperature of the skin and muscles, increasing circulation, and blood circulation to help relieve pain and reduce muscle spasms effectively. At the same time, the acupoints used in the study include body acupressure points and local acupoints that have the effect of relieving pain, opening the meridians, and eliminating rheumatism and cold.

- Mean of VAS score: Many authors believe that, with SNSS patients, pain is the earliest clinical symptom that causes patients to be hospitalized for treatment. Pain is the most frequent and common symptom in patients with SNSS. In our study, the VAS scale was used, which is a very commonly used scale to assess the pain level of patients. The VAS scale was divided into 11 points from 0 (totally painless) to 10 (severe, intolerable pain, possibly fainting). The results of table 3.5 showed that before treatment, the mean VAS score of the patient was 3.56 ± 1.44 ; After 20 days of treatment, the patient's mean VAS score was 1.73 \pm 1.11. Thus, the treatment of the patient was completely effective. After treatment, most patients were completely pain-free or have mild pain. The improvement of pain level, and the percentage of patients with pain reduction was related to the duration of treatment. According to traditional medicine, pain is caused by the blockage. The method of acupressure massage has the effect of activating the meridians, so it has an analgesic effect. Our study also showed this effect. The above results are similar to the study of Dinh Thi Thuan in 2016. The study conducted pulsed electric treatment combined with acupressure massage on 30 patients with neck and shoulder pain due to cervical spondylosis. The mean VAS score of the study group decreased significantly from 5.33 ± 1.40 to 1.47 ± 1.14 [8]. Research by Chu Tien Nam in acupressure massage combined with cervical spine stretching also showed the mean VAS score before treatment was 5.89 ± 1.64 after treatment, the average VAS score was 2.36 ± 1.23 [9], studied by Truong Van Loi (2007), in which the mean VAS score is 6.81 ± 1.21 points [3].

We believe that acupressure is one of the

reflex treatment methods. The characteristic of this method is that depending on the area of the skin that is stimulated, it can reasonably adjust the level of impact on the skin, muscle, blood vessels, and nerve receptors. In the study of author Chu Tien Nam [9], the method of stretching the cervical spine was used in combination. Stretching the spine has the effect of relaxing muscles, and reducing intradiscal pressure, the stretching force along the spine will act on many different points of the spine, causing the vertebrae to expand, thereby releasing compression, and relieving the patient's pain.

In addition, the study of Nguyen Thi Tham [11] used the infrared method, cervical spine stretching combined with therapeutic exercise on 58 patients within 20 days, and evaluated the results at the time 10 days and 20 days of treatment. The results showed that: before treatment. the majority of patients had moderate or severe pain (89.7%) after 10 days, and the majority of patients had little pain (43.1%) or no pain (22.4%); and after 20 days of treatment, the majority of patients had no pain (70.7%) [11]. Nguyen Tuyet Trang's study using the implantation method on 30 patients compared with a control group of 30 patients using the electroacupuncture method showed the mean VAS score at the time before and after 30 days of treatment. Outcomes of treatment were respectively as follows: electroacupuncture group (5.78 \pm 1.28 and 1.53 \pm 0.84); the group of thread implant $(6.33 \pm 1.15 \text{ and } 1.80 \pm 0.73)$, and there is no difference between the two groups [12].

All of the above treatments were effective in improving the severity of VAS pain. However, the above studies using interventional methods such as infrared and implantation methods should only give different treatment results. Nguyen Tuyet Trang's research was conducted for a longer time (specifically 30 days), so it will give better treatment effects.

- Change in cervical spine range of motion: In addition, a limited range of motion of the cervical spine is also a symptom of patients with SNSS. Along with the improvement in pain level, the patient's cervical spine range of motion was also significantly improved. The range of motion of the cervical spine of the patient was assessed through the following movements: bend down, face up, tilt left, tilt right, turn left, and turn right. Most of the patients with SNSS had limited range of motion of the cervical spine as follows: bend down 22.58 \pm 6.85, face up 29.60 \pm 6.32, tilt left 25.76 \pm 7.49, tilt right 27.15 \pm 7.45, turn left 30.82 \pm 7.19, turn right 29.95 ± 7.23 . After 20 days, the patient's range of motion of the cervical spine also improved. Thus, acupressure massage, in addition to reducing pain, also improves the range of motion of the cervical spine of the patient. The daily activities of the body require the normal functioning of the joints. The limitation of joint range of motion, especially the range of motion of the cervical spine will bring negative limitations to the patient's daily activities.

- Change in the degree of limitation of cervical spine movement NDI: The study results showed that the patients in the study at the time of D_0 had limited movement from little to much. SNSS not only affects the health but also reduces the quality of life, and affects the daily activities as well as labor and society of the patient. Treatment of shoulder and neck pain caused by cervical spondylosis, in addition to finding and solving the cause, also needs to focus on treating symptoms and helping the patient to take care of themselves and participate in community and social activities. On the

first day of treatment, there were 36 patients (21%) with limited mobility and no patient without limitation of movement. After 20 days, the number of patients with limited mobility was 121 patients (71.15%) and there were 26 patients with no limitation of movement (15.33%). The average number of patients with limited mobility decreased from 108 patients before treatment (63.67%) to 23 patients (13.52%) at time D_{20} . The difference in NDI scores in the group of patients with moderate and low mobility limitation at D_0 and D_{20} was statistically significant (p < 0.05). There are 26 patients with seriously limited mobility at the time of D_0 , but by the time of D_{20} , this number is 0. When compared with the author Nguyen Tuyet Trang [12], after 30 days of treatment, in both the electroacupuncture and thread implant groups, there were no patients who did the unlimited movement. Thus, our acupressure massage method is more effective in improving cervical spine mobility in daily life than electroacupuncture alone or implantation.

Evaluation of the overall treatment outcome was based on the total score of 3 indicators: pain level according to the VAS scale, degree of limitation of cervical spine mobility, and degree of limitation of daily activities according to the NDI questionnaire. On the first day of treatment, the overall treatment outcome of the patients was mainly at a moderate level (63.35%). After 20 days of treatment, the patients had an improvement in their overall treatment level. There were 48 patients (27.85%) at a very good level, and 89 patients (52.77%) at a good level. The difference between D_0 and D_{20} in each group was statistically significant (p < 0.05). At the same time, the difference in the evaluation of the overall treatment effect between the two groups at the time of 20 days of treatment was also statistically significant (p < 0.05).

The above results showed that acupressure massage brings good treatment effects for patients with SNSS. Acupressure massage is the movement through the use of dexterity and strength of the hand to act on the skin, muscles, and joints of the patient for disease prevention, treatment, and health promotion. For patients with SNSS, acupressure massage is a therapy that helps blood circulation, increases endurance, relaxes muscles, relieves pain at the same time, and helps to improve the range of motion of the cervical spine through it. improve the patient's daily living functions.

The role of acupressure massage in the treatment of neck pain has been confirmed by many researchers such as Luu Thi Hiep [13], Dang Truc Quynh [7], and Nguyen Tuyet Trang [12]. However, because the general disease effectiveness assessment in our study and the above authors is not similar, it is not possible to make a specific comparison of the effectiveness of acupressure massage in the treatment of SNSS compared to the above with previous studies.

5. CONCLUSION

Effective in reducing muscle spasticity: the proportion of patients with muscle spasticity in the neck and back on the first day of treatment was 91.2% and 82.65%, respectively; after 20 days of treatment 24.12% and 6.77%, respectively. The difference was statistically significant (p < 0.05).

Pain relief effect: VAS score of patients on the first day of treatment is mainly moderate pain $2 < VAS \le 4$ (74.3%), after 20 days of treatment most patients have mild pain $0 < VAS \le 2$ (74.2%), the difference in VAS score group from 0 - 2 and 2 - 4 between 2 groups D₀ and D₂₀ has statistical significance (p < 0.05). Effectively improved cervical spine range of motion: cervical spine amplitude increased, improved range of motion from 15.33% limited to 0%; 63.67% moderate limitation to 13.52% and 21% mild limitation to 71.15%. Changes were statistically significant in both groups (p<0.05).

General treatment outcome: after 20 days of treatment, the group of patients with very good results increased from 6.69% to 27.85%; the group of patients with good results increased from 30.07% to 52.77%. The difference between the effect before and after treatment in the 2 groups was statistically significant (p < 0.05).

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