

STATISTICAL MEDICAL ANALYSES

**Evaluation of the effectiveness of acupuncture treatment in frozen shoulder**

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**Abstract**

Frozen shoulder also goes by the name adhesive capsulitis. These terms are used to describe a syndrome of stiff and painful shoulder. The condition is characterized by notable restriction of both active and passive shoulder movement, without the presence of known shoulder disorder and absent radiographic findings. In the research are included 168 patients, 91 female and 77 male. The patients were treated for frozen shoulder in the Center from 2019 to 2022. In all patients was achieved positive effect and were successfully treated with the acupuncture treatment, with certain number of treatments. In the fire-needle acupuncture treatment was used Ashi i.e. trigger point located on the Spleen meridian, 2 cun from Sp20 (Zhourong). In the normal acupuncture treatment were selected the points: Li15 (Jianyu), Li14 (Binao), Lu1 (Zhongfu), Lu2 (Yunmen), Li11 (Quchi), Si10 (Naoshu), Si9 (Jianzhen), Si14 (Jianliao). Frozen shoulder is a condition that does not require many treatments and is quickly treated with acupuncture. Most effective method for frozen shoulder is fire-needle acupuncture. 1 to 5 treatments are required to achieve complete results. Most common age group is between 41 and 60 and most affected are computer workers.

**Key words** - acupuncture, traditional chinese medicine, shoulder, capsulitis

**Introduction**

Frozen shoulder also goes by the name adhesive capsulitis. These terms are used to describe a syndrome of stiff and painful shoulder. The condition is characterized by notable restriction of both active and passive shoulder movement, without the presence of known shoulder disorder and absent radiographic findings.

The frozen shoulder patients can be divided in two groups: primary and secondary. The primary group has three phases:

Phase 1 - Painful, marked by a slow progression of spreading shoulder pain, which can last up to 9 months.

Phase 2 - Stiffening, marked by progressive loss of range of motion, limited abduction, external and internal rotation, which can last 4 to 20 months.

Phase 3 - Thawing, marked by gradual motion improvement, which can last 5 to 26 months.

The secondary group of patients usually had an event before starting the frozen shoulder symptoms, such as: malignancy, cardiac diseases, upper extremity trauma, surgery, immobilization, stroke, Parkinson disease, drugs, metabolic or endocrine diseases and other.

Frozen shoulder symptoms are: pain in the shoulder, stiffness, discomfort, inability to sleep on the affected side, restricted external rotation and glenohumeral elevation and other. An independent risk factor for developing frozen shoulder is diabetes mellitus.

In the pathophysiology of frozen shoulder are involved inflammatory, Immune and fibrotic changes, including inflammation in the joint capsule, fibrosis and adhesions of the synovial lining, formation of collagenous tissue around the joint and contraction and thickening of the glenohumeral joint capsule.

The conservative treatment for frozen shoulder includes physical therapy, nonsteroidal anti-inflammatory drugs, glenohumeral or subacromial intra-articular injections. Indications for surgery are limited glenohumeral motion and constant shoulder periscapular pain. [1]

Acupuncture as part of the Traditional Chinese Medicine (TCM) is an effective and safe treatment for treating frozen shoulder. There are two types of acupuncture used in the treatment with normal and fire needle. The needles are inserted on trigger points or meridian points around the front and back shoulder area, the upper arms, elbows and hands. [2]

According to Traditional Chinese Medicine (TCM), frozen shoulder falls under the group of diseases called Bi syndrome or painful locomotor disorders, which are characterized by blockage of Qi and blood flow. A deficient Yin energy can lead to pathogenic factors of cold, wind, and dampness get easily into the body. Blocked Qi and blood energy and stasis in the channels leads to pain and stiffness in the muscle, joints, bones and tendons. If the body doesn't get enough movement, in this case the shoulder joint, the Qi doesn't circulate through it and leads to stagnation i.e. stiff and painful joints. [3]

The acupuncture treatment helps in reducing inflammation, regulates the blood flow in the body and blood vessel control, reduces the pain, promotes relaxation, decreases the shoulder stiffness, enhances local microcirculation, improves the range of motion and mobility. [2] [4]

The aim of the study is to show that acupuncture is a safe and effective treatment option that can decrease the degree, severity and length of recovery of frozen shoulder.

Material and methods

in the research are included 168 patients, 91 female and 77 male. All patients were treated in a Center for Traditional Chinese Medicine and acupuncture 'Tong Da Tang' in Skopje, RN Macedonia. The patients were treated for frozen shoulder in the Center from 2019 to 2022. In all patients was achieved positive effect and were successfully treated with the acupuncture treatment, with certain number of treatments. The number of the treatments was different for all the patients and depending on age, gender, duration of disease, working status, symptoms, etc. The main symptoms were pain in the shoulder and limited movement.

Inclusion criteria - present pain for at least 1 month, restriction in both active and passive movement, present pain at night, positive abduction test (pain) at 60 degrees and 90 degrees.

Exclusion criteria - major shoulder surgery or injury, fracture or other associated disease.

The patients were treated with fire-needle and normal acupuncture. The duration of the fire-needle treatment was 5-10 minutes. The duration of the normal acupuncture was 45-60 minutes. 0.25x25mm dimension needles were used in the treatment, made by Wuijiang City Medical Health Material Co., Ltd. In the fire-needle acupuncture treatment was used Ashi i.e. trigger point located on the Spleen meridian, 2 cun from Sp20 (Zhourong). In the normal acupuncture treatment were selected the points: Li15 (Jianyu), Li14 (Binao), Lu1 (Zhongfu), Lu2 (Yunmen), Li11 (Quchi), Si10 (Naoshu), Si9 (Jianzhen), Si14 (Jianliao).

Results and discussion

Out of 168 treated patients, 91 are female and 77 male. The patients were divided into five age groups. Most of the patients (91 patients, 41 women and 60 men) were on age between 41 and 60. The results are presented in table 1.

Table 1. Age groups

Age groups	Men	Women	Total
<20	1	2	3
21-40	22	6	28
41-60	50	41	91
61-80	18	27	45
>80	/	1	1

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As per previous research, most affected patients with frozen shoulder are aged 40-60 years. Women are more frequently affected than men. [1]

Before coming to the clinic and starting the acupuncture treatments, some patients tried other medical options but without successful results. 66 patients didn't use any kind of treatment, 60 patients received non-steroidal anti-rheumatic therapy and 42 patients physical therapy. The results are presented in table 2.

Table 2. Other previous therapies used

Type of therapy	Number of patients
No therapy	66
NSAIDs	60
Physical therapy	42

According to the type of therapy applied in the clinic, patients were treated with acupuncture with normal needles and fire needles and combined. Most of the patients (138 patients) received fire needle treatment, 5 patients normal needle acupuncture and 25 patients combined treatments with normal and fire needle. The results are presented in table 3.

Table 3. Type of applied treatment

Type of acupuncture treatment	Number of patients
Fire needle acupuncture	138
Normal needle acupuncture	5
Combined treatment	25

According to the number of therapies done, a very few sessions were needed to achieve positive results and release the pain and other symptoms. 153 patients received 1-5 treatments, 13 patients needed 6-10 treatments and 2 patients more than 10 treatments. The same results are presented on table 4. After the certain number of treatments, an effect was achieved in all patients, without pain, with full flexion and abduction and free and unlimited movements in the shoulder joint

Table 4. Number of treatments received

Number of treatments	Number of patients
1-5	153

6-10	13
>10	2

According to which shoulder is more affected, a division was made between men and women and left and right shoulder. Most patients (99 patients) had a problem with the right shoulder. The results are presented on table 5.

Table 5. Division according to location of pain

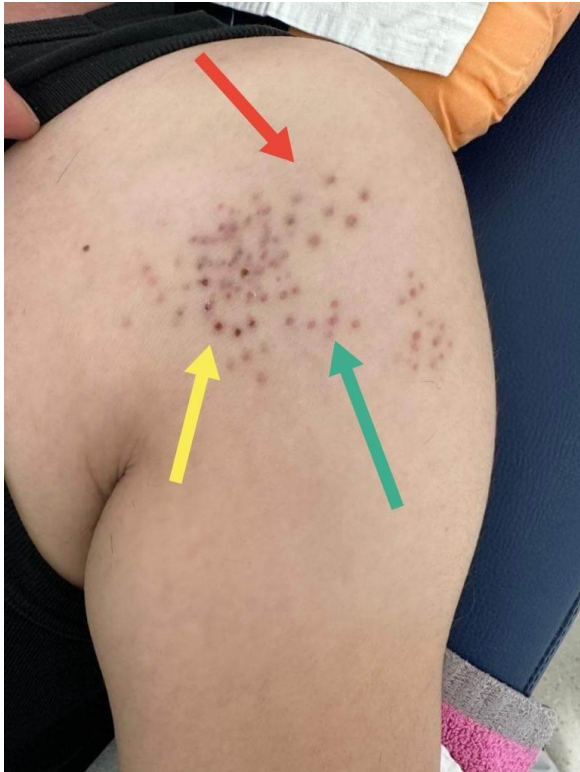
	Women	Men	Total
Left shoulder	31	38	69
Right Shoulder	60	39	99

According to work/profession, the most numerous were computer workers - 98, physical workers such as construction workers and farmers - 40 and other professions - 30 patients. The same results are presented on table 6.

Table 6. Division according to work/profession

Work/profession	Number of patients
Computer workers	98
Physical workers	40
Other	30

In all patients was done shoulder abduction test. 78 patients had positive abduction test (pain) at 60 degrees and 90 patients at 90 degrees. Positive signs are painful feeling before 90° of abduction of the shoulder and decreased range of motion.



*Picture 1. Skin regeneration after fire needle therapy*

On picture 1 is presented the skin regeneration after fire needle therapy. The green arrow shows skin regeneration after 3 weeks of treatment. The red arrow shows skin regeneration after 2 weeks of treatment. The yellow arrow shows skin regeneration after 1 week of treatment. The skin regeneration depends on many factors - age, pigmentation, diabetes, etc. Whether scars will remain or not, depends on the pigment of the skin.

The treated points are very sensitive to palpation and cause specific pain, therefore they are called trigger points. The points are usually located where the muscles and nerves meet. These points can be felt like muscle knots or small lumps and may be caused by muscle tension, stress, overused muscles, injury or poor posture.

The point Li15 is located on the deltoid muscle. The Si9-Si14 points on the Small Intestine meridian are located on the infraspinatus and supraspinatus muscles. Lu1 and Lu2 are located down the arm on the biceps and triceps muscles. The aim of needling these points is to restore the local blood flow blocked by the muscle spasms, improve the range of motion and reduce the pain. When the needle is placed on the trigger point, the muscle becomes soft, elongated and more relaxed [2] [5]

The outcomes in this research article are very positive and satisfying and support and encourage the effectiveness of acupuncture treatment in the management of frozen shoulder.

## **Conclusion**

Frozen shoulder is a condition that does not require many treatments and is quickly treated with acupuncture. Most effective method for frozen shoulder is fire-needle

acupuncture. 1 to 5 treatments are required to achieve complete results. Most common age group is between 41 and 60 and most affected are computer workers..

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### **Conflict of interest**

The author have declared that no competing interests exist.

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### **Statement of Informed Consent**

Written informed consent was obtained from the patients for their anonymized information to be published in this article.

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