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A Clinical Controlled Study of Focused Shock Wave Therapy under Ultrasound Localization in the Treatment of Waist and Buttocks "Ashi Point"

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Abstract: ***Objective:*** *To compare the short-term and long-term effects of focused shock wave and traditional acupuncture on Ashi points in waist and buttocks under ultrasonic positioning.* ***Methods:*** *60 patients were randomly divided into treatment group (focused shock wave, n=30) and control group (traditional acupuncture, n=30). The main evaluation indexes were ultrasonic Young's modulus (tissue hardness) and VAS pain score. The evaluation time points were before treatment, immediately after treatment and 90 days after treatment.* ***Result:*** *The reduction of Young's modulus (Δ value) and the improvement of VAS score in the treatment group were significantly better than those in the control group (p<0.05).* ***Conclusion:*** *Focused shock wave under ultrasound localization has more advantages in accurately targeting treatment points, improving tissue mechanical properties and long-term analgesic effects.*

Keywords: The ashi point, Focus shock wave therapy, Ultrasound, Chronic low back pain, Acupuncture and moxibustion, Traditional Chinese medicine therapy.

1. Introduction

Low back pain is the most common pain disease in daily life except headache. About 80% of the world's people have experienced low back pain at least once in their life. Epidemiological survey statistics [1]. At present, the global incidence of low back pain is 13.1% ~ 20.3%, and the annual prevalence rate in China is 20.88% ~ 29.88%. It has exceeded the prevalence of diabetes, hypertension and other chronic diseases, and has become the primary disease threatening people's health. Chronic lumbar muscle strain (CLMS) is also known as 'myofascial pain syndrome' [2], 'lumbar myofascitis' [3], 'low back muscle injury syndrome', 'low back fibrous tissue inflammation' and so on. It is one of the common diseases that cause chronic low back pain in clinic. There are a large number of 'Ashi points' in the waist and buttocks of patients with chronic lumbar muscle strain. Ashi point is the most primitive acupuncture point selection method. It has no fixed position and often refers to the patient's sensory feedback. It is a body surface reaction point with significant value in clinical diagnosis and treatment. This rule not only has the characteristics of 'pain as a acupoint', but also emphasizes the specificity of 'body surface projection' [4-5]. Myofascial Trigger Points (MTP), also known as trigger points, are the main cause of chronic lumbar muscle strain [6]. It was first proposed by American clinical professor Janet Travell in 1942, which can be divided into potential MTP and activated MTP. In general, there are some potential MTrPs on skeletal muscle that can be caused by chronic injury. These MTrPs are in a hidden state for a long time and do not cause spontaneous pain or only mild local pain. However, they can be activated by certain pathogenic factors into activated MTrPs, such as sports trauma, muscle fatigue, decreased resistance, etc. [7]. Some studies have pointed out that the known 255 trigger points coincide with 92% of the traditional acupuncture points in anatomy, and there is a 79.5% coincidence in the effect of pain treatment [8]. The activation of the invisible trigger point can be an incentive for the activation of another trigger point in the same muscle group. When distant pain is induced, a relatively fixed sensing line can be formed [9], which is similar to the meridian theory connotation of Ashi point. It was found that 76% of this sensing line was completely consistent [10]. Ultrasound elastography is considered to be a safe and simple diagnostic method for the diagnosis of trigger points. It can provide a basis for clinical practice by quantitatively reflecting the characteristics of tissue hardness, viscosity and elasticity coefficient [11]. Therefore, in the treatment of chronic lumbar muscle strain, it can be considered that the Ashi point is both the pain point. In clinical practice, the author found that Xi'an Hospital of Traditional Chinese Medicine has a significant effect on the treatment of Ashi point by focused shock wave under ultrasonic positioning. The report is as follows.

2. Information and Methodology

2.1 General Information

From February 2023 to August 2024, 60 patients with chronic lumbar muscle strain were randomly divided into treatment group and control group, 30 cases in each group. Control group: 14 male patients and 16 female patients; the average age was (46.3±8.7) years old. The average course of disease was (7.2±2.5) months. Treatment group: 13 male patients and 17 female patients; the average age was (45.8±9.2) years. The average course of disease was (6.9±2.8) months. There was no significant difference in the general data between the two groups (P > 0.05), which was comparable.

2.2 Diagnostic Criteria

Refer to the diagnostic criteria for lumbar muscle strain in the "Chinese Expert Consensus on the Evaluation and Management of Chronic Non-Specific Low Back Pain" issued by the China Pain Research Association in 2019.

1) Diffuse dull pain of muscles on both sides of the waist and above the iliac muscle, sometimes extending to the buttocks or thighs;

2) When the symptoms are mild or severe, they often recur. The symptoms are aggravated after the weather changes and fatigue, and can be alleviated after rest or changing the position;

3) Physical examination: local or extensive tenderness in the lower back; there was no obvious abnormality in percussion pain, sensation, movement and tendon reflex.

4) Lumbar activity is limited, straight waist is difficult after bending, and sedentary tolerance is reduced;

5) Most of them have no imaging changes, and bone hyperplasia can be seen in the elderly.

2.3 Inclusion Criteria

1) Those who meet the above diagnostic criteria;

2) Signed informed consent, volunteered to participate in this study;

3) Age 18-65 years old;

4) Good compliance with the treatment and evaluation of the researchers;

5) No drugs and other treatments related to the disease were performed in the past 2 weeks.

6) Waist and hip myofascial pain with course of disease ≥ 3 months;

7) Ultrasound showed myofascial trigger points (Young's modulus ≥ 25 kPa) in the Ashi acupoint area;

8) VAS score ≥ 4 points.

2.4 Exclusion Criteria

1) Patients with lumbar disc herniation, lumbar spinal stenosis, lumbar spondylolisthesis and other obvious syndromes or other complications;

2) Patients with severe primary diseases such as liver, kidney, cardiovascular and cerebrovascular, endocrine system, thrombocytopenia and other blood diseases and mental illness;

3) Patients with ulceration and severe skin diseases who could not be operated;

4) Patients who were allergic to needles, disinfected alcohol and iodophor, with scar constitution, who were resistant to acupuncture and catgut embedding therapy, and who had a history of fainting;

5) Lactating, pregnant or pregnant women;

6) Patients in critical condition, it is difficult to make an exact evaluation of the efficacy and safety of this treatment;

In accordance with any of the above, shall be excluded.

2.5 Methods

Two groups of patients were given Ashi point ultrasonic positioning, exploration, and record the ultrasonic Young's modulus before treatment. Treatment group: focused shock wave therapy under ultrasonic positioning, once every 5 days, 2 times in total. Control group: ordinary acupuncture treatment, 2 days of treatment once, a total of 5 times. 30 cases in each group.

2.6 Observation Indicators

The ultrasonic Young's modulus and VAS score of patients before treatment, after treatment and 90 days after treatment were recorded.

2.7 Statistical Methods

SPSS 26.0 was used. The measurement data were expressed as 'mean ± standard deviation'. The t test or Mann-Whitney U test was used for comparison between groups. The repeated measurement data were analyzed by mixed effect model.

3. Results

3.1 VAS Score Comparison (Table 1)

Table 1: VAS score comparison

Peer group	number of samples	before treatment	posttreatment	90 days after treatment	Statistical comparison (intra-group / inter-group p value)
treatment group	30	6.8±1.2	2.3±0.9	1.5±0.8	intra-group: posttreatment<0.001, 90 days after treatment<0.001 inter-group: posttreatment: 0.004, 90 days after treatment: 0.002
control group	30	6.5±1.1	3.9±1.0	3.2±1.1	intra-group: posttreatment: 0.001, 90 days after treatment: 0.006

Conclusion: In the treatment group, after focused shock wave intervention under ultrasound localization, the VAS score decreased rapidly from baseline (6.8±1.2 points) to 2.3±0.9 points immediately after treatment (a decrease of 66.2%, $p < 0.001$), and further decreased to 1.5±0.8 points 90 days after treatment (a decrease of 77.9%, $p < 0.001$), which was significantly lower than that of the control group (3.9±1.0 points immediately after treatment, 3.2±1.1 points 90 days after treatment, $p < 0.01$).

3.2 Comparison of Ultrasonic Young's Modulus (Table 2)

Table 2: Comparison of ultrasonic Young's modulus

Peer group	number of samples	before treatment	posttreatment	90 days after treatment	Statistical comparison (intra-group / inter-group p value)
treatment group	30	35.2±4.1	22.5±3.8	23.1±3.2	intra-group: posttreatment<0.001, 90 days after treatment<0.001 inter-group: posttreatment: <0.001, 90 days after treatment: <0.001
control group	30	34.8±3.9	28.7±4.0	29.5±3.8	intra-group: before treatment: 0.002, 90 days after treatment: 0.003

Conclusion: The Young's modulus of the treatment group decreased from 35.2±4.1 kPa to 22.5±3.8 kPa (36.1%, $p < 0.001$) immediately after treatment, and remained stable at 23.1±3.2 kPa after 90 days ($p < 0.001$). The control group only decreased from 34.8±3.9kPa to 28.7±4.0kPa (a decrease of 17.5%, p=0.002), and rebounded to 29.5±3.8kPa at 90 days (p=0.003 vs before treatment). The decrease of Young's modulus by > 30% indicates that the myofascial tension is significantly restored to the physiological state, which is directly related to pain relief and functional improvement.

4. Discussions

The ultrasonic positioning technology solves the subjective error of the traditional palpation positioning of Ashi points, and combines the deep penetration of the shock wave to achieve the treatment of the etiology level. Focused shock wave under ultrasound localization provides a visual and quantitative treatment plan for myofascial pain syndrome, and its accuracy and efficacy persistence provide high-level evidence support for clinical promotion.

Fund Project

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References

[1] Kobayashi Y, Kurata J, Sekiguchi M, et al. Augmented cerebral activation by lumbar mechanical stimulus in chronic low backpain patients: an fMRI study[J]. Spine, 2009, 34(22):2431-2436.

[2] Gao Weiwei, Zou Desheng, Wang Wuchao and so on. Research progress of myofascial pain syndrome [J]. Chinese Journal of Pain Medicine. 2017, 23 (06): 455-458.

[3] Gu Shouhong. Analysis of short-term and long-term effects of different methods in the treatment of lumbar muscle strain [J]. 2015, 15 (80): 99+101.

[4] Xu Yunxiang, Guo Han, Chen Guizhen. The formation of Ashi point and its analgesic mechanism [J]. Journal of Liaoning University of Traditional Chinese Medicine, 2014, 16 (06): 80-82.

[5] Jiang Shan, Zhao Jingsheng. Constructed 'Ashi Point' [J]. Chinese Acupuncture, 2023, 43 (01): 89-94.

[6] Liu Weidi, Yang Weixin. Research progress on the formation mechanism of myofascial trigger points [J]. Aerospace Medicine, 2010, 21 (1): 95-97.

[7] Wang Lina, Huang Qiangmin. Progress in theory and practice of trigger point technology [J]. Chinese Journal of Pain Medicine, 2021, 27 (6): 413-419.

[8] Chen Decheng, Yang Guanhu, Wang Fuchun and so on. Discussion on the relationship between Ashi points, tenderness points and trigger points [J/OL]. Chinese Acupuncture, 2017, 37 (2): 212-214.

[9] Peng Zengfu, Nan Ge, Zheng Wenya, et al. . Relationship and comparison between trigger point acupuncture and traditional acupuncture [J]. World Journal of Acupuncture-Moxibustion, 2016, 26 (1): 1-6.

[10] Peng Zengfu. Comparison of pain points between western acupuncture and traditional acupuncture [J]. Chinese Acupuncture, 2008 (5): 349-352.

[11] Wu Ganyu, Huang Liqun, Wang Lina. Research progress of ultrasound-guided diagnosis and treatment of trigger points [J]. Journal of Lanzhou University (Medical Edition), 2022, 48 (09): 57-60+65.