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Therapeutic Effect of Ultrasound-Guided Intra-Articular Injection for the Treatment of Frozen Shoulder

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Abstract

To observe the clinical efficacy of ultrasound-guided intra-articular injection for the treatment of frozen shoulder. Methods: Forty-six cases of scapulohumeral periarthritis were randomly divided into observation group and control group. The control group was treated with traditional shoulder pain and drug injection. The observation group was combined with ultrasound-guided intra-articular drug injection in the control group. After 6 months of follow-up, the clinical efficacy and visual analogue scale (VAS) of the two groups were compared. Results: The total effective rate of the observation group was 91.3%, which was significantly higher than that of the control group (78.3 %) (P<0.05). At 1 week, 1 month, and 6 months after treatment, the VAS scores of the two groups were significantly lower than those before treatment (P<0.01). The VAS scores of the observation group were significantly or significantly lower than the control group (P<0.05, P). <0.01). Conclusion: Ultrasound-guided intra-articular drug injection combined with shoulder pain point injection for the treatment of frozen shoulder is better than simple shoulder pain.

Keywords

Frozen shoulder; ultrasound guidance; intra-body injection.

1. INTRODUCTION

Periarthritis of the shoulder is common in middle-aged and elderly people. It is often treated with massage, acupuncture, physiotherapy and shoulder pain points. In recent years, the application of drug injection methods in the shoulder joint cavity guided by imaging technology has further expanded the treatment of frozen shoulder. From January 2016 to December 2018, we used the method of ultrasound-guided intra-articular drug injection to treat frozen shoulder on the basis of traditional shoulder pain medication. The effect was satisfactory. The analysis report is as follows.

2. OBJECTIVES AND METHODS

2.1. Object

Forty-six cases of scapulohumeral periarthritis admitted to our hospital were randomly divided into observation group and control group. There were 10 males and 13 females in the observation group; the age ranged from 43 to 69 years, with an average of 51.5 years. There were 11 males and 12 females in the control group; the age ranged from 41 to 68 years, with an average of 52.5 years. There were no significant differences in gender, age, and duration of disease between the two groups (P>0.05), which were comparable. The patient obtained informed consent from the study and was approved by the Ethics Committee of our hospital.

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2.2. Method

(a). The control group was treated with traditional shoulder pain point drug injection, and the pain point injection dose was 10 ml, combined with postoperative exercise. Drug preparation: lidocaine hydrochloride injection 5 ml (containing lidocaine hydrochloride 0.1 g, Shijiao Yinhu Pharmaceutical Co., Ltd., batch number 10615011141) + vitamin B12 injection 2 ml (including vitamin B12 1 mg, Sinopharm Group Rongsheng Pharmaceutical Co., Ltd. production, batch number 1504509-c11) + vitamin B6 injection 2 ml (containing vitamin B12 1 mg, produced by Shan Dongming Pharmaceutical Group Co., Ltd., batch number 1412083) + dexamethasone palmitate injection 1 ml (Containing dexamethasone palmitate 4 mg, manufactured by Mitsubishi Pharmaceuticals Guangzhou Co., Ltd., batch number V108). (b). Observation group: On the basis of the control group, ultrasound-guided intra-articular drug injection was used. Ultrasound examination of the shoulder joint was performed using a SIEMENS S2000 ultrasound system (area array probe, frequency 9 MHz), and shoulder joint puncture was performed under ultrasound guidance. Select the best puncture point and puncture angle about 2 cm below the shoulder joint, and make a mark on the body surface. Conventional disinfection, after the needle enters the shoulder joint cavity, there is no blood pumping back (the patient with joint fluid effusion can see the effusion entering the syringe), ensuring that the needle is located in the joint cavity, and then injecting 10 ml of the above mixture, while injecting Real-time ultrasound observation of the widening of the joint cavity gap (Figures 1-3). After 6 months of follow-up, the clinical efficacy and visual analogue scale (VAS) of the two groups were compared.

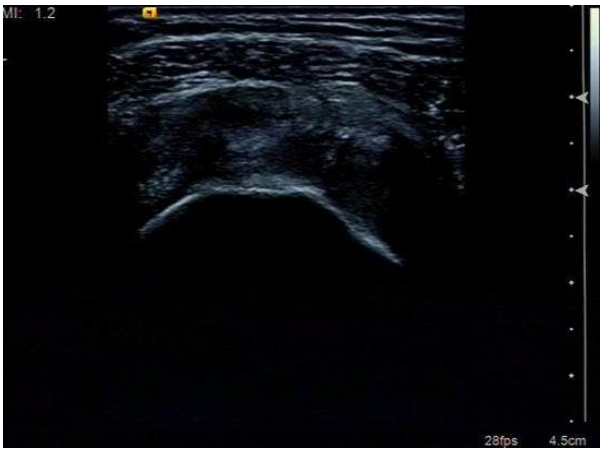

Figure 1. Periarthritis of the shoulder joint

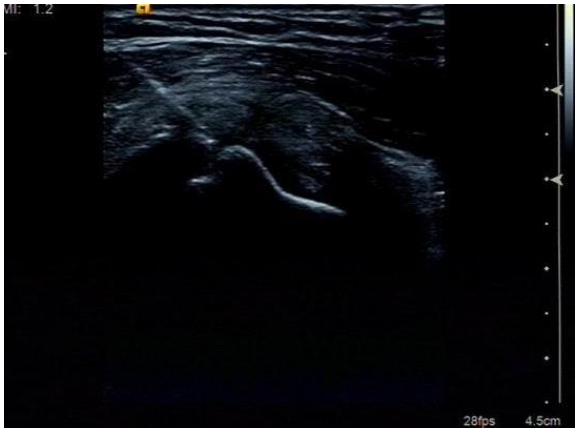

Figure 2. Ultrasound-guided puncture successful sonogram

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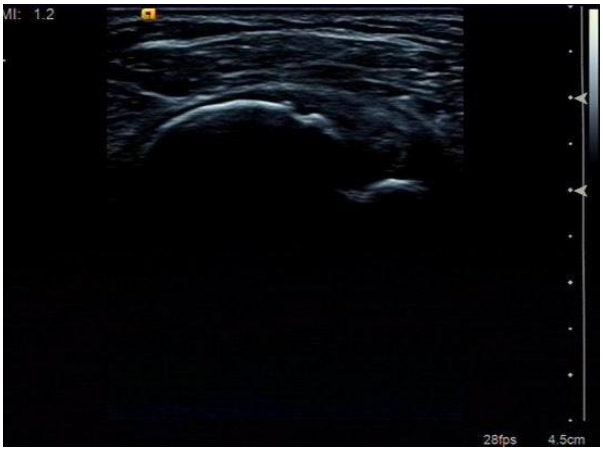

Figure 3. Sonogram of drug injection after shoulder joint cavity

2.3. Efficacy Assessment Criteria

(a). Significant effect: major symptoms such as shoulder pain disappeared or disappeared; (b). Effective: major symptoms such as shoulder pain have been alleviated, and the number, extent and duration of pain episodes have improved significantly; (c). Invalid: The main symptoms such as shoulder pain are unchanged or even worse before and after treatment.

2.4. Statistical Processing

Statistical analysis was performed using SPPS 18.0 software. The count data were analyzed by $\chi 2$ test, and the measurement data were analyzed by t test. $P<0.05$ was considered as significant difference.

3. RESULT

3.1. Comparison of Clinical Effects Between the Two Groups

After 6 months of follow-up, the total effective rate of the observation group was 91.3%, which was significantly higher than that of the control group (78.3 %) ($P<0.05$). As shown in Table 1.

Table 1. Comparison of clinical efficacy between the two groups (%)

Group	Number of cases	Significant effect	Effective	Invalid	Always effective
Control group	23	11 (47.8)	7 (30.4)	5 (21.7_	18 (78.3)
Observation group	23	18 (78.3)	3 (13.0)	2 (8.7)	21 (91.3)*

Note: Compared with the control group, *$P<0.05$

3.2. Comparison of VAS Scores Before and after Treatment in Both Groups

At 1 week, 1 month, and 6 months after treatment, the VAS scores of the two groups were significantly lower than those before treatment ($P<0.01$). The VAS scores of the observation group were significantly or significantly lower than the control group ($P<0.05$, $P<0.01$). As shown in table 2.

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Table 2. Comparison of VAS scores before and after treatment in both groups (score, $\bar{x}$ ±s)

Group Number of cases	Before treatment	1 week after treatment	1 month after treatment	6 months after treatment
Control group 23	8.37±1.01	3.95±1.32**	3.25±1.05**	3.02±1.10**
Observation group 23	8.53±0.93	2.32±1.21**△	1.73±1.00**△	1.02±0.75**△△

Note: Compared with before treatment, **P<0.01; compared with the control group, △ P<0.05, △△P<0.01

4. DISCUSS

Periarthritis of the shoulder was first known as the scapula-sacral joint inflammation. Later, some scholars proposed "freezing shoulders" to describe the pain of the shoulders and affecting the symptoms of sleep and joint stiffness. In 1954, Neviaser proposed "adhesive bursa". "Inflammation" to describe the disease. Periarthritis of the shoulder is a chronic aseptic inflammation caused by damage to the soft tissue around the shoulder joint. The onset of the disease is slow, the course of the disease is generally within 1 year, and the longer one can reach 1 to 2 years. The external rotation of the shoulder joint, abduction and extension are limited. The course of the disease is usually divided into three stages: (a). Pain period, 10 to 36 weeks, the initial symptoms are shoulder pain and stiffness, especially at night, the patient may have no obvious history of trauma, and is not sensitive to non-hormonal analgesic drugs; (b). In the adhesion period, 4 to 12 months, the pain symptoms gradually eased in this period, but the shoulder joint stiffness still exists, the pain in the shoulder activity is aggravated, the range of the tibia activity is significantly decreased, and the external rotation almost disappears; (c). During the remission period, from 12 to 42 months, the range of shoulder joint activity gradually expanded spontaneously, and the recovery time generally exceeded 30 months.

At present, there are various methods for clinical treatment of frozen shoulder. Traditional pain point injection therapy has the advantages of simplicity, economy, and the like, and is widely used in clinical practice. However, under non-visible conditions, the injection of the lesion depends on the experience of the surgeon, such as the level of understanding of the disease and the degree of mastery of the anatomical location of the surgical site, etc., not only the difference in efficacy, but also its safety has been worrying. . When the periarthritis of the shoulder develops into the adhesion phase, there are not only the aseptic inflammation and tissue adhesion of the ligament around the shoulder joint, the attachment point of the tendon, and the bursal, but also the same pathological changes in the joint cavity. Therefore, simply Injection treatment of muscle and tendon attachment points can only solve the lesions outside the joint cavity and is ineffective for intra-articular lesions. Ultrasound intervention technology is used in the detection and guidance of ultrasound equipment to complete various needle biopsy, joint cavity angiography and treatment operations. It has good curative effect, minimally invasive and painless, easy to operate and low cost. With the advent of high frequency probes, the industry has begun to apply this technology to treat muscle and joint diseases. On the basis of traditional shoulder pain medication, we used ultrasound-guided intra-articular drug injection to treat frozen shoulder. The results showed that the total effective rate of the observation group was 91.3%, which was significantly higher than that of the observation group. In the control group, 78.3 %; at 1 week, 1 month, and 6 months after treatment, the VAS score of the observation group was significantly or significantly lower than that of the control group. It is suggested that ultrasound-guided intra-articular drug injection combined with shoulder pain point drug injection for the treatment of frozen shoulder is better than simple shoulder

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pain. Intra-articular injection of drugs can directly act on the lesions, eliminating the aseptic inflammation of the soft tissue in the joint cavity. The liquid tension of the injected drug can directly separate the tissue adhesion in the joint cavity. Intraoperative ultrasound intervention can guide the needle into the shoulder joint cavity accurately, and observe the widening of the joint cavity gap in real time while injecting the drug. We believe that compared with traditional pain point injection therapy, ultrasound-guided drug injection in the shoulder joint cavity not only has a significant improvement in efficacy and safety, but also has low cost of ultrasound examination and is conducive to promotion, so it has broad application prospects.

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