Effect and nursing study of traditional Chinese medicine preparation huayu zhitong powder in the treatment of distal radius fracture

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Abstract: This paper aims to discuss the effect of traditional Chinese medicine preparation Huayu Zhitong powder in the treatment of distal radius fracture. In this paper, 200 patients with distal radius fracture were randomly divided into treatment group and control group. Patients in treatment group orally took Huayu Zhitong powder, while patients in control group were treated with traditional Shangke Jiegu tablets with traditional Chinese medicine composition. After fixed in a cast plaster, patients in the two groups were supervised the disappearance time of pain by adopting NRS (Numerical rating scale) from scale 0 to 10. Besides, they returned at day 5 and day 8 respectively, and then they were observed the swelling affected part. At day 14, day 28, and day 56 after reduction they respectively took an x-ray. Then they would be graded according to the growth of osteotylus and the clinical effects were evaluated based on the grade. Finally, the treatment group worked better in relief effect than the control group. At day 8, the treatment group worked better in detumescence than the control group. At day 28, the recovery effect in treatment group was found to be better than the other. From these, it is shown that the traditional Chinese medicine works much better in the treatment of distal radius fracture than traditional treatment medicine. Thus it is of great worth spreading for use.

Keywords: Huayu zhitong powder, distal radius fracture, shangke jiegu tablet.

INTRODUCTION

Huayu Zhitong powder is acquired from the addition and subtraction prescription based on the traditional empirical prescription Qi-Li powder. It is composed of several ingredients, including Dracorhodin, frankincense, myrrh, safflower, sanchi, Pyrite Pyritum, Szechuan Lovage Rhizome, Radix Achyranthis Bidentatae, Radix Dipsaci, Fortunes Drynaria Rhizome, catechu, angelica, Hippocampus, cinnabar, borneol, and musk. It enjoys the function of activating blood circulation and dissipating blood stasis, while playing an important role in pain relief, hemostasism and tissue regeneration. It has been applied in clinical practice for over 10 years and its effect has been verified by clinical practice. Thus, it wins a large popularity among all medical experts. In study from Li Shuping, Liu Dongping, *et al* (Shuping *et al*., 2010), they made several experiments for verification by taking mice as the objects of study and observed the efficacy of these capsules, which provided experiment evidence in pharmacodynamics for their clinical application. In study from Liu Hai and Liu Zhiqun (Hai and Zhiqun, 2013) Huayu Zhitong powder was applied externally, namely the ankle joint sprain part. This therapy was applied among 42 patients with acute ankle joint sprain so as to observe the therapy effects. The experiment result showed that Huayu Zhitong powder was quite effective in treating the ankle joint sprain in exercise. In study from Xu Xionghua and Hu Shanmei (Xionghua and Shanmei, 2011), HPLC was applied to determine the content of Dracorhodin. Meanwhile, it experienced the inspection of methodology. Based on the experiment, it can be safely concluded that this result is accurate with a reliable method, which can be applied in the quality control of Dracorhodin in Huayu Zhitong powder.

At the same time, this paper also focused on the study of Huayu Zhitong Powder. It took the method of group and contrast experiment and remade an evaluation for this medicine. Finally, it laid a solid theoretical basis on a much wider clinical application.

MATERIALS AND METHODS

Data of cases

Two hundred patients with distal radius fracture were included in this study who received treatment in our hospital from Jan, 2010 to Dec, 2012. They were all in fresh closed fracture injured in a tumble. There were no serious complications and other systemic diseases. These patients were randomly divided into the treatment group and control group. There were 97 patients in the treatment group with 46 males and 51 females with a mean age of (61.31±5.16) years. There were 103 patients in the control group with 40 males and 63 females with a mean age of (60.70±7.17) years. The two groups have no significant differences in the general data ($P>0.05$) so that they can be drawn into a comparison.

Choice of cases

(1) Criteria of diagnosis: according to criteria of diagnosing the distal radius fracture in PRC ZY-Criteria

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of diagnosis and therapeutic effect of diseases and syndromes in traditional Chinese medicine. (2) Inclusive criteria: conforming to the criteria of diagnosing the distal radius fracture, which did not require a surgery but a manual reduction plus external plaster or small splint fixation, with age ranging from 55 to 77. (3) Exclusive criteria: patients with pathologic fracture or open fracture, with injury or infection in soft tissues; females in gestation or lactation period; patients with an allergy to this medicine; patients with severe primary diseases in heart, brain, liver, kidney, hematopoietic system and endocrine system or patients with mental disorder; patients with such a critical illness that it is too hard to make precise evaluation for the safety and effects of medicine applied. (4) Withdrawals from this study: patients who removed themselves the external fixation during the clinical experiment and who failed to take medicine as prescribed or come back for return visit.

Therapy

Two hundred patients were all treated with a manual reduction and plaster fixation by the same group of doctors in orthopedics in a unified approach and standard. These doctors received a professional training before. Next, these patients were arranged for a return visit, at day five or eight after reduction so as to check the swollen part. Then they were arranged for a return visit at day 14, 28 and 56 and took an x-ray to check the recovery of their fractured part. Patients in treatment group took orally the Zhitong Huayu powder for 1g once, tid (three times per day), while patients in control group took orally the Shangke Jiegu tablet for four tablets once, tid. The course for both groups was two weeks.

Observation project

(1) Pain: this paper took NRS from scale 0 to 10 (Wenping *et al*., 2013), and the patients would grade themselves according to their personal feelings. (2) Swelling: According to Gu Yudong (Yudong *et al*., 2011)'s standard of rating for the swelling degree of limbs, namely I, II and III, they was graded as point 1, 2 and 3 respectively. At day 5 and 6 after reduction, they received the evaluation from the same group of doctors who received a professional training before in a united approach respectively. (3) Recovery of fracture: they all took an x-ray at day 14, 28 and 56 and then they were graded according to the growth of osteotylus (Shiyu *et al*., 2009).

Criteria of evaluation

(1) Pain: NRS from scale 0 to 10 was applied. The criteria of evaluation includes scale 0 for painless; scale from 1 to 3 for slight pain, in this scale, patients could feel hurt but it was under toleration limit. They could live normally and sleep quietly; scale from 4 to 6 for moderate pain, in this scale, patients had an obvious sense of soreness and it was beyond toleration limit so that they could only sleep with the help of pain-killers; scale from 7 to 10 for severe pain, in this scale, patients could feel a violent pain which might even carry a dysfunction of autonomic nervous system or negative position. They felt so hard to go asleep that the painkillers were badly in need for treatment.

(2) Swelling: In degree I, skin in fractured limbs was more intense than the normal skin. But the dermatoglyph was still there. Compared with the normal skin, the center height in swelling part was less than 0.5cm. In degree II, skin in fractured limbs was more intense than the normal skin. With the disappearance of dermatoglyph, the skin temperature was a bit higher. But there were no tension blisters yet. Under the comparison with uninjured side in scale, the central height of swelling part was from 0.5 to 1.0 cm. In scale III, the skin in fractured limbs was intense and shiny. With the disappearance of dermatoglyph, the skin temperature was much higher. Meanwhile, there were tension blisters growing in the fractured part. Under the comparison with uninjured side in scale, the central height of swelling part was over 1.0 cm.

(3) Recovery of fracture: it was graded based on the growth of osteotylus. One point meant the growth of a certain amount of osteotylus with a clear fracture line; two points meant that there was continuous osteotylus crossing the fracture line. A vague fracture line meant the fracture was recovered in clinical practice; three points meant that there was osteotylus, which was close to the normal bone density with the trabecula crossing the fracture line. The disappearance of fracture line was the symbol of bone union.

Statistical processing

Data analysis was performed by SPSS 19.0 software. Ranked data from the two groups was analyzed by Mann Whitney Test (Z), while the repeated measurement data was analyzed by the two-factor multilevel analysis of variance (F).

RESULTS

Comparison over the pain relief for the two groups

The repeated measurement data was analyzed by the two-factor multilevel analysis of variance (F). Data from five days were put into analysis, including day 1, 7, 14, 21, and 28 (fig. 1). The original data for the two groups is shown in table 1 and the processing result is shown in table 2. With the statistical processing, it found $F=45.434$, $P<0.01$ and the difference was of statistical significance. This result illustrates that the Huayu Zhitong powder works better in pain relief than Shangke Jiegu tablet.

Comparison of detumescence between the two groups

Huayu Zhitong powder worked better in detumescence at day 5 than Shangke Jiegu tablet. The application of Mann

Whitney Test (Z) found Z=-6.374, P<0.01 and the difference between the two groups was of statistical significance. Huayu Zhitong powder worked better in detumescence at day 8 than Shangke Jiegu tablet. The application of Mann Whitney Test (Z) found Z=-4.517, P<0.01 and the difference between the two groups was of statistical significance (table 3).

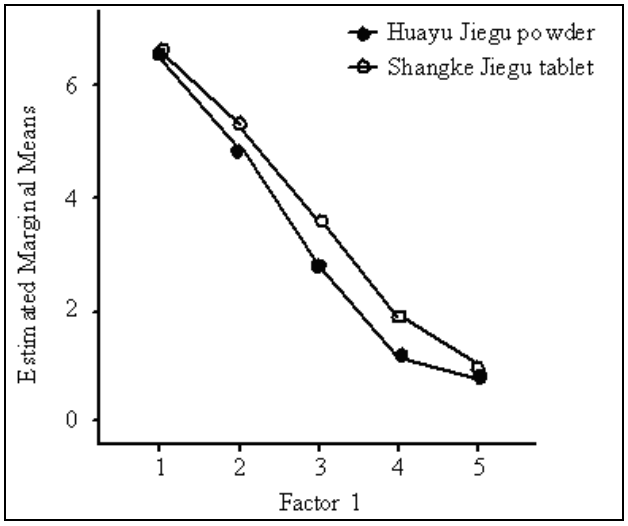

Fig. 1: The mean value of data from two groups at different measure time.

Comparison of the recovery of fracture between the two groups

With the comparison of the recovery of fracture at day 14, 28, and 56, the Huayu Zhitong powder had a same recovery effect as Shangke Jiegu tablet at day 14. The application of Mann Whitney Test (Z) found Z=-0.465, P>0.05 and the difference between the two was of no statistical significance. Huayu Zhitong powder worked better than Shangke Jiegu at day 28. The application of Mann Whitney Test (Z) found Z=-3.487, P<0.01 and the difference between the two was of statistical significance. The recovery of fracture is shown in table 4 in detail.

DISCUSSION

Distal radius fracture is a common clinical illness, which makes up one sixth in emergency patients with fracture. Distal radius fracture mainly occurred in two age periods, one between 6 and 10, the other between 60 and 75. In age period ranging from 6 to 10, there is no obvious difference in the incidence between male and female. In age period ranging from 60 to 75, there is an obviously higher incidence in female patients compared with male patients. With the increase of age, the incidence is also gradually higher (Linlin *et al*., 2012; Yongkai, 2011). From the perspective of causes, patients in age ranging from 6 and 10 are mainly induced by the high-energy damage, as well as related to the bone development among these young people. Patients in age ranging from 60 to 75, enjoy much more frequent low-energy tumble than the high-energy damage. This is closely related to the porous and weak bones for the seniors and females after menopause.

Wrist joint is one of the most important joints in the whole body with a high efficiency of activity and a high requirement for functional recovery. An improper therapy is likely to induce a chronic pain and stiffness in wrist joint, and leave a serious effect on the functions of hands. Especially in terms of fracture within the joints, a simple external plaster immobilization is hard to realize a good contraposition and a firm immobilization so that it may further trigger the traumatic arthritis in radio-carpal joint and radioulnar joint. In this way, patients may feel very weak, stiff, and painful in their wrist joint. Besides, it may also induce the abnormally growing, shortening wrist joint with limits on activity. The distal radius fracture within joints makes up 5% in the whole forearm fracture, and 25% in the distal radius fracture. The therapy for the distal radius fracture within joints is similar to that for other parts. The therapy aims to recover the complete and smooth articular surface, avoid the secondary injury of tissues, sustain or get close to anatomical reduction, keep an internal or external fixation as stable as possible, recover the stability of radio-carpal joint and radioulnar joint and maximize the functions of protecting the wrist. In previous clinical practice, there are some disputes over the choice of therapy for distal radius fracture. There are many scholars suggesting that the open reduction and internal immobilization has no obvious difference with the direct manual reduction and external immobilization by plaster. In recent years, with the development of biomechanics in wrist and microanatomy, there are increasingly more retrospective clinical analysis and forward research reports over the therapy for distal radius fracture (Junxian and Xinyu, 2011; Xingping, 2011; Yuqing, 2012). The treatment scheme for distal radius fracture is constantly updated. There are springing up various and improved therapies for the distal radius fracture in different types.

This paper focused on the treatment effects of Huayu Zhitong powder on the distal radius fracture. The ingredients and components for this medicine are quite complex and precise, including several rare herbals. This powder cannot only promote blood circulation, dissipate blood stasis and relieve the pain, but promote the Qi moving and blood pushing. Furthermore, it is able to nourish the kidney and liver, strengthen the bone and muscles. In a word, it can stimulate the blood circulation while enabling patients to dissipate blood stasis so that patients can be recovered with a stronger and healthier body.

CONCLUSION

Huayu Zhitong powder is a traditional Chinese medical formula integrating several rare herbals, which enjoys

Table 1: Original data of total pain intensity (T) from the two groups

	T1	T7	T14	T21	T28
Huayu Jiegu powder	6.25±0.542	4.84±0.812	2.74±1.063	1.13±0.571	0.77±0.445
Shangke Jiegu tablet	6.64±0.482	5.32±0.717	3.57±0.717	1.87±0.987	0.95±0.632

Table 2: Statistical processing result of total pain intensity from the two groups

Source of variation	Freedom	Variance	Mean variance	F	P
Factors in medicine	1	55.609	55.609	45.434	0.000

Table 3: Comparison of detumescence between the two groups (measured in case)

Swelling degree	Patients taking Huayu Zhitong (t5)	Patients taking Shangke Jiegu (t5)	Patients taking Huayu Zhitong (t8)	Patients taking Shangke Jiegu (t8)
–	63	20	87	64
α	33	83	10	39
β	1	0	0	0

Table 4: Comparison of the recovery of fracture between the two groups(measured in case)

Points for recovery of fracture	Patients taking Huayu Zhitong (t14)	Patients taking Shangke Jiegu (t14)	Patients taking Huayu Zhitong (t28)	Patients taking Shangke Jiegu (t18)	Patients taking Huayu Zhitong (t56)	Patients taking Shangke Jiegu (t56)
1	94	100	5	27	1	0
2	4	3	78	66	11	44
3	0	0	14	10	85	59

obvious effect on stimulating the blood circulation and dissipating blood stasis. In recent years, it is widely applied in clinical therapy for injured tendons and bones. However, till now, this medicine can only be applied on trauma and bone injury. However, there are no related reports about its effect on treating chronic diseases, such as high blood pressure and diabetes at present. Based on this study result, patients in the treatment group obviously feel a relief in their pain and detumescence. It proves that Huayu Zhitong powder is able to stimulate the blood circulation and dissipate blood stasis, promote the recovery of fracture and greatly improve the lives of patients with fracture. This medicine enjoys such a sound effect, and has been applied in our hospital for over ten years in clinical without any side effects. Besides, patients in treatment group enjoy a less cost on medicine than patients in the control group per day. It is safe to say that this medicine, namely Huayu Zhitong powder is of great worth spreading for use.

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