

Retrospective study of therapeutic effect of Tongbi paste vs Fufangzhuifeng paste for shoulder periarthritis

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Abstract

Objective: To compare the therapeutic effects of Tongbi and Fufangzhuifeng pastes in shoulder periarthritis.

Methods: The retrospective study was conducted at the Chongqing Traditional Chinese Medicine Hospital, China, and comprised data of shoulder periarthritis patients who were treated from December 2018 to June 2019. Group A had data of patients treated with Tongbi paste and group B had data of patients treated with Fufangzhuifeng paste. The groups were compared for effect on pain, shoulder flexion, abduction and extension. Data was analysed using SPSS 22.

Results: Of the 81 patients, 43(53%) were in group A; 18(42%) males and 25(58%) females with an overall mean age of 54.26 ± 12.38 years (range: 28-79 years) who were suffering from shoulder periarthritis for a mean duration of 5.08 ± 3.07 months (range: 0.25-13 months). There were 38(47%) patients in group B; 23(60.5%) females and 15(39.5%) males with an overall mean age of 53.08 ± 11.08 years (range: 33-76 years) who were suffering from shoulder periarthritis for a mean duration of 4.96 ± 2.77 months (range: 1-12 months). Mean pain, shoulder flexion, abduction and extension scores after two weeks of treatment were significantly better for group A compared to group B ($p < 0.001$), but after three weeks of treatment, intergroup differences were different but not significant ($p > 0.05$).

Conclusions: Tongbi and Fufangzhuifeng pastes were found to have a positive effect in the treatment of shoulder periarthritis, with the former providing faster relief.

Keywords: Retrospective study, Shoulder periarthritis, Traditional Chinese medicine. (JPMA 72: 53; 2022)

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Introduction

Shoulder periarthritis is a common disease characterised by long-term repeated shoulder pain and progressive limitation of movement in both active and passive individuals.^{1,2} It is an inflammatory reaction caused by muscles, tendons and other tissues around the shoulder, which is characterised by pain and dysfunction, and usually occurs at around age 50 and mostly women are affected. The reason it is more common among women aged around 50 years, and the exact pathogeny of shoulder periarthritis remain unclear. Shoulder periarthritis is generally considered to have an incidence of 2-5%, and there are some common risk factors, including diabetes, hyperthyroidism, autoimmune diseases, stroke, etc.³ with a study concluding that hyperthyroidism was an independent risk factor for developing adhesive capsulitis in patients with hyperthyroidism.⁴ It has been reported that 1-4% of emergency patients are treated for shoulder pain.⁵ Shoulder pain and stiffness are not easily diagnosed accurately and are difficult to assess and treat.⁶

There are many ways to treat shoulder stiffness, but no single method has been identified as the best. Invasive treatments include shoulder arthroscopic release, regional

nerve block, continuous steroid injection in the articular cavity, and high-pressure water separation, which are usually used in clinical practice. Although these treatments can achieve certain effects, complications can occur, such as infection, anaesthesia accidents and pneumothorax.⁷⁻⁹ Although some patients urge conservative treatment, invasive strategy is used when the conservative fails to get the desired level of improvement. The most conservative treatment is taking nonsteroidal anti-inflammatory drugs (NSAIDs). However, it is clear that NSAIDs have serious consequences for people with chronic peptic ulcers and cardiovascular conditions.¹⁰ Other conservative methods, including hot pack, physical therapy (PT), acupuncture and local irradiation by electromagnetic equipment, may be ineffective or require frequent hospital visits. To save patients' time and resources and to minimise adverse reactions as much as possible, topical patches were invented.

Tongbi paste is a kind of ointment made from a certain number of Chinese herbal medicines and processed with oil, which is used for the treatment of pain from knee osteoarthritis and periarthritis of the shoulder by external application through medical gauze in the Chongqing Academy of Traditional Chinese Medicine. The formula of Tongbi paste is from ZhongGuoChuangTongLiao FaCongShu, in page 77. Fufangzhuifeng paste (Chongqing Dadu Pharmaceutical Co. Ltd) is also a kind of ointment.

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The formula of Fufangzhuifeng paste is from Prepared preparations of traditional Chinese medicine of People's Republic of China, in page 384. The usage of medicinal materials in these two pastes was on the basis of Shennong's Herbal Classic of Materia Medica and The Compendium of Materia Medica which comprise the classical data of Chinese medicine.

Fufangzhuifeng paste's main function is to promote blood circulation, while the main function of Tongbi paste is to treat cold syndrome. The current study was planned to compare Tongbi and Fufangzhuifeng pastes in shoulder periarthritis cases.

Materials and Methods

The retrospective study was conducted at the Chongqing Traditional Chinese Medicine Hospital, China, and comprised data of shoulder periarthritis patients who were treated from December 2018 to June 2019. After approval from the institutional ethics review board, data was retrieved for all patients treated with Tongbi or Fufangzhuifeng paste along with an exercise programme for adhesive capsulitis. Data was limited to patients who presented to the outpatient department (OPD), and the diagnosis was made on the basis of presence of shoulder pain with limitations in active and passive movements of the glenohumeral joint. Those with acute exacerbations of pain and functional limitations, or with chronic condition were excluded, and so were those with diabetes, trauma, hyperthyroidism, coagulopathy, rotator cuff tear requiring surgery, or stroke.

Group A had data of patients treated with Tongbi paste and group B had data of patients treated with Fufangzhuifeng paste.

The relevant paste was applied on the affected parts of the subjects for 8 hours a day, and they were assisted by therapists in following an exercise regimen which consisted of active range of motion (ROM) exercises related to flexion, abduction, external rotation, posterior extension and internal rotation. Each exercise motion had to be repeated 20 times. If there was no obvious improvement after 3 weeks of intervention, other treatment options were explored. Finally, the treatment for such patients was changed to articular cavity injection or manual release after brachial plexus nerve block.

Clinical evaluation included a subjective

pain score using visual analogue scale (VAS), ranging 0-10 (0=no pain; 10 = worst pain imaginable)¹¹ and the functional outcomes of flexion, abduction, posterior extension were measured.

Data was analysed using SPSS 22. Data was expressed as mean±standard deviation. The data met the requirements for normality and homogeneity of variance. Independent samples t tests were used for intergroup comparisons, and paired samples T tests were used for intragroup comparisons. $P<0.05$ was considered statistically significant.

Results

Of the 81 patients, 43(53%) were in group A; 18(42%) males and 25(58%) females with an overall mean age of 54.26 ± 12.38 years (range: 28-79 years) who were suffering from shoulder periarthritis for a mean duration of 5.08 ± 3.07 months (range: 0.25-13 months). There were 38(47%) patients in group B; 23(60.5%) females and 15(39.5%) males with an overall mean age of 53.08 ± 11.08 years (range: 33-76 years) who were suffering from shoulder periarthritis for a mean duration of 4.96 ± 2.77 months (range: 1-12 months) (Table 1).

Mean pain, shoulder flexion, abduction and extension scores after two weeks of treatment were significantly

Table-1: Demographic characteristics.

Variables	Patient's demographics at baseline		
	Tongbi	Fufangzhuifeng	p-value
Age (years)	$54.56\pm12.38(28-79)$	$53.08\pm11.08(33-76)$	0.656
Gender n (%)			0.830
Male	18(41.86%)	15(39.47%)	
female(%)	25(58.14%)	23(60.53%)	
Duration(Months)	$5.08\pm3.07(0.25-13)$	$4.96\pm2.77(1-12)$	0.855

Table-2: Comparison between Tongbi and Fufangzhuifeng treatment groups.

	Tongbi		Fufangzhuifeng		t value	p value
	Mean±SD	Growing rate	Mean±SD	Growing rate		
Abduction	41.28 ± 10.12	-	44.34 ± 8.79	-	-1.445	0.152
Abduction (1w)	47.56 ± 8.82	15.22%	48.95 ± 10.47	10.19%	-0.648	0.519
Abduction (2w)	64.65 ± 10.31	56.62%	54.08 ± 8.53	21.97%	4.987	<0.001
Abduction (3w)	84.88 ± 10.15	105.63%	83.03 ± 9.83	87.34%	0.836	0.406
Flexion	59.07 ± 12.64	-	57.37 ± 10.51	-	0.654	0.515
Flexion (1w)	60.81 ± 12.81	2.95%	59.61 ± 9.96	3.90%	0.469	0.640
Flexion (2w)	67.79 ± 13.20	14.76%	61.32 ± 9.77	6.89%	2.482	0.015
Flexion (3w)	91.16 ± 20.73	45.63%	83.55 ± 15.11	45.63%	1.867	0.066
Posterior extension	10.81 ± 4.62	-	9.61 ± 5.12	-	1.117	0.267
Posterior extension (1w)	11.74 ± 4.48	8.60%	9.74 ± 5.06	1.14%	1.879	0.064
Posterior extension (2w)	14.53 ± 5.75	34.41%	11.05 ± 4.37	14.98%	3.035	0.003
Posterior extension (3w)	20.47 ± 6.97	89.36%	18.03 ± 4.12	87.62%	1.885	0.063
VAS score	5.19 ± 0.96	-	5.50 ± 0.95	-	-1.477	0.144
VAS score (1w)	4.12 ± 1.03	-20.62%	4.24 ± 0.85	-22.91%	-0.570	0.570
VAS score (2w)	2.95 ± 1.31	-43.16%	4.03 ± 0.85	-26.73%	-4.307	<0.001
VAS score (3w)	2.53 ± 1.32	-51.25%	2.32 ± 0.90	-57.82%	0.862	0.391

better for group A compared to group B ($p < 0.001$), but after three weeks of treatment, intergroup differences were different but not significant ($p > 0.05$).

In group A, 4(%) subjects had muscle disuse atrophy on the affected side; 1(25%) male and 3(75%) females. In group B, 5 subjects had muscle disuse atrophy; 3(60%) males and 2(40%) females.

Mean pain, shoulder flexion, abduction and extension scores after two weeks of treatment were significantly better for group A compared to group B ($p < 0.001$), but after three weeks of treatment, intergroup differences were different but not significant ($p > 0.05$) (Table 2).

Discussion

There are several kinds of Chinese medicinal materials, but the basic research in such materials is not adequate even though there is a lot to study as ephedrine, an alkaloid with ergogenic properties can be found in *Ephedrae Herba*, which can enhance aerobic capacity, reduce fatigue, increase alertness, and improve reaction time during physical activity. Because of such effects, ephedrine is prohibited by the World Anti-Doping Agency (WADA) in sports competition.¹²

Both kinds of paste analysed in the current study contain several Chinese medicinal materials, and were found to have clinical effects on shoulder periarthritis, but it is a pity that there has never been enough basic research done on either of them. The current study found that there were three additional toxic materials in Tongbi paste than in Fufangzhuifeng paste; cinnamomum camphora, plumbum rubrum and calomel, and the presence of these materials may be one of the reasons the Tongbi paste worked faster.

It is known that the incidence of shoulder periarthritis is a little higher in women than in men, and the change of estrogen is one of the reasons, also the cause of menopausal syndrome. As mentioned above, the post-menopause hormone therapy, once considered a choice for climacteric symptoms, such as joint pain and muscle-tendon stiffness, can work as an example.¹³ Because of serious risks with even short-term use, the hormone therapy is not widely used today.¹⁴ Although shoulder periarthritis is often self-limiting, some studies have reported natural relief in 1-3 years.¹⁵ However, other studies have shown that 20-50% of participants suffer from some degree of pain and ROM limitation for up to a decade^{16,17} and, as was noted in the current study, pain is the most common complaint.

Functional exercise is an important means of restoring joint mobility, but exercise is often accompanied by increased pain. Taking NSAIDs can provide some relief, but adverse

reactions may occur.¹⁸ The Tongbi paste combined with relevant exercises relieved pain, improved joint mobility, and avoided adverse reactions to oral medicine in the current study.

The use of Chinese herbal medicine has been reported in many countries for the treatment of skeletal muscle and entrapment neuropathy. *Shakuyaku-kanzo-to* is used to treat thoracic outlet syndrome, *kampo* is a traditional Japanese herbal medicine based on traditional Chinese herbal medicine, and *nijutsuto* is part of a formula that has been reported to relieve pain intensity associated with shoulder stiffness in Japan.¹⁹ One study reported that the herbal formulation *eezpain* spray showed efficacy in mild-to-moderate cases when applied locally to the affected parts to relieve pain from myalgia, osteoarthritis and knee joint inflammation.²⁰

The current study has limitations. The follow-up period lasted only three weeks. Also, the improvement in the participants' pain was only slightly different in terms of data, but in terms of functional recovery, there are relatively more individual differences. Finally, although we fully taught the participants the relevant exercises, there is no way of knowing for sure about the extent of compliance.

Conclusion

Both Tongbi and Fufangzhuifeng pastes were able to relieve pain in shoulder periarthritis cases, and the long-term results of the two were consistent. Tongbi paste, however, relieved pain more quickly.

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