

Economic Evaluation of Treating Herpes Zoster with Various Methods of Acupuncture and Moxibustion

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RESULTS: After the 10-day treatment, there was no statistical difference ($P > 0.05$) in the curative effect among the five groups. Pain being alleviated one day faster than in group E amounted to a saving of RMB 21.90 yuan in group A, a saving of RMB 21.87 yuan in group B, a saving of RMB 26.00 yuan in group C, and a saving of RMB 20.23 yuan in group D. Compared with group C, the values of $\Delta C/\Delta E$ were RMB 1.55, 2.81, and 0.21 yuan in groups A, B, and D, respectively.

CONCLUSIONS: The curative effect in groups A, B, C, and D was similar to that in group E, but the C/E was better than in group E.

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Key words: Acupuncture; Herpes zoster; Economic evaluation

Abstract

OBJECTIVE: To analyze the cost effect of surrounding acupuncture plus electric acupuncture, cotton-sheet moxibustion, puncturing with red-hot needles, tapping plus cupping on herpes zoster.

METHODS: Five hundred patients with herpes zoster were randomly divided into group A (surrounding acupuncture plus electric acupuncture), group B (cotton-sheet moxibustion), group C (puncturing with red-hot needles), group D (tapping plus cupping), and group E (Western medicine). The treatment was carried out twice a day in group E and once a day in the other four groups. The curative effect was observed on the 10th day of treatment; the cost was calculated for the five therapies, and the cost-effect ratio (C/E) and increment ratio ($\Delta C/\Delta E$) were analyzed.

INTRODUCTION

With the accelerated pace of daily life, the increase in stress levels, and gradual aging of the world's population, the incidence of herpes zoster, a common viral skin disease, has been rising^[1]. The disease is clinically manifested by an accumulation of herpes blisters associated with the peripheral nerves in addition to acute nerve pain. At present, there are many methods for treating the disease. Certain curative effects have been achieved by treating herpes zoster with traditional Chinese medicine (TCM) as well as Western medicine. This study was an economic evaluation of treating herpes zoster using acupuncture, moxibustion, and Western medicine to identify the most appropriate therapy in terms of cost to effect (C/E).

TEST SUBJECTS

The test subjects came from nine hospitals in Chengdu, Guangzhou, and Wuhan (Chengdu Second Municipal People's Hospital, the Hospital Affiliated to Chengdu University of Traditional Chinese Medicine, Sichuan Academy of Chinese Medical Sciences, the First Hospital Affiliated to Guangzhou University of Traditional Chinese Medicine, Guangzhou Hospital of Traditional Chinese Medicine, Guangdong Second Provincial Traditional Chinese Medicine Hospital, Wuhan Integrated Traditional Chinese Medicine and Western Medicine Hospital, Tongji Hospital Affiliated to Tongji

Medical College of Huazhong University of Science and Technology, and Wuhan Hospital of Traditional Chinese Medicine). Of 500 originally selected patients, 469 completed the entire course of the study, 20 dropped out, and 11 were excluded: 94 were selected for group A, 94 for group B, 91 for group C, 95 for group D, and 95 for group E. The patients were aged 18 – 70 years, had a course of illness 1 – 7 days, and had not received antiviral or analgesic treatment. There was no statistical difference ($P>0.05$) in age and course of illness among the five groups. The general patient data appear in Table 1.

Table 1 General patient data

Item	Group A	Group B	Group C	Group D	Group E	Statistic amount	<i>P</i> value
Age	43.76±15.34	46.98±13.61	45.20±15.06	44.33±15.07	46.51±15.30	2.7665	0.5976
Discomfort/illness/course(days)	6.15±4.11	5.56±3.14	5.63±2.70	5.77±3.05	5.24±2.52	2.5641	0.6332
Pain/illness/course(days)	4.54±3.22	4.62±3.52	4.44±2.97	4.19±2.91	4.01±2.52	1.2444	0.8707
Herpes/illness/course(days)	3.70±1.95	2.98±1.58	3.46±1.77	3.56±1.97	3.40±1.58	7.5289	0.1104
N	98	100	97	96	98		

THERAPIES

The patients were treated over a period of 10 days; patients in group E were treated twice a day, while patients in the other four groups were treated once a day. Surrounding acupuncture plus electric acupuncture was performed each time for 30 min at points Ah Shih (at the point of the skin lesion), Jiaji (EX-B2; on the affected side on the back, 0.5 *cun* from the central line under the spinous process), Zhigou (TE 6) on both sides, and Houxi (SI 3) on both sides.

Surrounding acupuncture plus electric acupuncture (group A)

Manipulation: 1) Surrounding acupuncture: The patient adopted a lying position. After routine sterilization, no. 30 1.5- to 2-*cun* filiform needles were inserted at points 0.2 cm from the edge of the skin lesion at a 15° angle, with the needle tip directed toward the center of the lesion and an interval of 1 – 2 cm between the needles. The number of needles was directly proportional to the extent of the lesion. When the lesion was less than 3 cm in diameter, a needle was inserted at either end of the peripheral nerve. When the lesion was 3 – 5 cm in diameter, six to eight needles were inserted. When the lesion was more than 5 cm in diameter, 10 – 16 needles were inserted. 2) Electric acupuncture was performed at point Jiaji (EX-B2). No. 30 1.5- to 2-*cun* filiform needles were inserted at an angle of 45° toward the spine at a depth of 0.8 – 1 *cun*. After needling sensation was elicited, two Jiaji points (EX-B2) were connected to the two poles of a Han's point-stimulator (Nanjing Gensun Medical Technolo-

gy Co. Ltd., Nanjing, China). No. 30 1- to 1.5-*cun* filiform needles were inserted at points Zhigou (TE 6) and Houxi (SI 3) at an angle of 90° to the skin and a depth of 0.8 *cun*. After the needling sensation was elicited, the cathode was connected to point Zhigou on one side and the anode to point Houxi on the same side. The electric acupuncture stimulation was carried out using direct current, with sparse-dense wave at 2/100 Hz and 2 – 5 mA at a level that was tolerable to the patient.

Cotton-sheet moxibustion (group B)

Manipulation: 1) Cotton-sheet moxibustion: The patient adopted a lying position to fully expose point Ah Shih. After routine sterilization with active iodine, an absorbent cotton sheet (without holes, 30 × 30 mm, 0.1 mm thick, and weighing about 20 mg) was applied to point Ah Shih and ignited using a match. As the cotton rapidly burned, the patients experienced only a slight burning sensation. Moxibustion was performed three times. 2) Surrounding acupuncture: After the cotton-sheet moxibustion, local surrounding acupuncture was carried out at the selected Ah Shih point using the same method as in group A once a day. 3) Points Jiaji (EX-B2), Zhigou (TE 6), and Houxi (SI 3) were acupunctured using the same method as in group A.

Puncturing with red-hot needles (group C)

Manipulation: 1) Puncturing with red-hot needles: The patient adopted a lying position. The selected Ah Shih point was sterilized with active iodine. A medium-thick needle was heated on an alcohol burner until the needle tip became reddish-white. The needle was

then rapidly inserted into the center of the lesion at a depth of 0.2 - 0.3 cm. Depending on the number of lesions, three to five were selected at a time and each was punctured twice. Early lesions were punctured first. After puncturing, the liquid was squeezed out of the lesions; pressure was applied to the punctured site for about 30 seconds, which was then treated with a herbal medicine, Wanhua oil. 2) After puncturing with red-hot needles, local surrounding acupuncture was performed at the selected Ah Shih point using the same method as in group A. 3) Electric acupuncture at points Jiaji (EX-B2), Zhigou (TE 6), and Houxi (SI 3) was performed using the same method as in group A.

Note: If there were no lesions and no pain, no puncturing with red-hot needles was required. If there were no lesions but the patient felt pain, shallow puncturing with red-hot needles was carried out until the pain disappeared.

Tapping plus cupping (group D)

Manipulation: 1) Tapping plus cupping: The patient adopted a sitting position or lateral lying position to fully expose the affected area. After local routine sterilization, a sterilized plum-blossom needle was used to tap point Ah Shih until there was slight bleeding. Appropriately sized glass cups were rapidly pressed onto the tapping site and the two ends of the lesion; they were kept in place for 5 - 10 min and 3 - 5 mL blood was drained. After the cups were removed, active iodine was applied to the affected site. The extent of the lesions determined the type and number of cups used. 2) After tapping plus cupping, local surrounding acupuncture was carried out on point Ah Shih using the same method as in group A once a day. 3) Electric acupuncture was carried out at points Jiaji (EX-B2), Zhigou (TE 6), and Houxi (SI 3) using the same method as in group A.

Western medicine (group E)

Valacyclovir hydrochloride at 300 mg was orally taken twice a day. Vitamin B₁ at 10 mg was orally taken three

times a day. The skin was kept clean, and care was taken to protect the lesion.

Items and indexes of observation

A record was made as to whether the treatment was successful, had an obvious effect, was effective, or ineffective. The total effective rate was calculated for the five groups. The curative effect was judged by reference to the Revised Standard of Comprehensive Curative Effect—clinical curative effect of puncturing with red-hot needles on herpes zoster^[2]. The rate of the curative effect was calculated as follows (nimodipine method):

$$N \text{ (comprehensive index of curative effect)} = \frac{\text{accumulated score before treatment} - \text{accumulated score after treatment}}{\text{accumulated score before treatment}} \times 100\%$$

N=100% signifies a complete cure, N≥60% signifies that the treatment exerted an obvious effect, N≥30% signifies effectiveness, and N<30% signifies ineffectiveness.

The number of days needed for an obvious effect to be achieved was recorded. For each of the five groups, the mean time needed to achieve an obvious effect was calculated. Compared with Western medical therapy, the number of days needed to achieve pain alleviation in the various groups (the number of days of increased health) was calculated. Costs are generally taken to include both direct and indirect costs. The only direct costs considered here were those for acupuncture, moxibustion, drugs, local disposal of the lesions, and registration. These costs were calculated according to the standard charges in grade-3A hospitals.

Statistical analysis

A chi-square test was used to compare the rate of obvious effect among the various groups. For the economic evaluation, cost-effect analysis was expressed as C/E and $\Delta C/\Delta E$. An analysis of the curative effect is shown in Table 2, and an analysis of the cost effect appears in Table 3.

Table 2 Curative effect on herpes zoster (PPS)

Group	Case	N(%)	Rate of obvious effect	χ^2	P value
A	94	81	86.17	7.88	0.96
B	94	70	74.47		
C	91	76	83.52		
D	95	72	75.79		
E	95	69	72.63		

Table 3 Comparison of the cost effect among the five therapies

Group	Cost (RMB)	Obvious effect (days)	Increased health (days)	C/E	Increased cost	Increment ratio
A	238.68	6.63±1.83	10.90±21.82	21.90	16.92	1.55
B	254.52	7.07±1.85	11.64±24.43	21.87	32.76	2.81
C	221.76	6.16±1.82	8.53±21.73	26.00	-	-
D	223.56	6.21±2.15	11.05±22.65	20.23	1.8	0.21
E	371.68	7.69±1.83	-	-	149.92	-

As shown in Table 3, the mean time for an obvious effect to be achieved was shortest using puncturing with red-hot needles, followed by surrounding acupuncture plus electric acupuncture; the longest time was with Western medical therapy. There was a difference in the medical costs among the five groups. The costs in descending order were as follows: Western medicine; cotton-sheet moxibustion; surrounding acupuncture plus electric acupuncture; tapping plus cupping; puncturing with red-hot needles. Compared with Western medicine, puncturing with red-hot needles can save RMB 149.92 yuan, surrounding acupuncture plus electric acupuncture can save RMB 133 yuan, tapping plus cupping can save RMB 148.12 yuan, and cotton-sheet moxibustion can save RMB 117.16 yuan.

DISCUSSION

Puncturing with red-hot needles, cotton-sheet moxibustion, tapping plus cupping, and electric acupuncture plus surrounding acupuncture are often used to treat herpes zoster in clinical practice in China. From an analysis of the ratio of cost to effect, electric acupuncture plus surrounding acupuncture alleviated pain one day faster than Western medicine, amounting to a saving of RMB 21.90 yuan; cotton-sheet moxibustion would achieve a saving of RMB 21.87 yuan; puncturing with red-hot needles would achieve a saving of RMB 26.00 yuan, and tapping plus cupping would achieve a saving of RMB 20.23 yuan. From an analysis of the increment ratio, puncturing with red-hot needles and electric acupuncture plus surrounding acupuncture can alleviate pain one day faster than Western medicine at a cost of RMB 1.55 yuan, cotton-sheet moxibustion can achieve this at a cost of RMB 2.81 yu-

an, and tapping plus cupping can do so at a cost of RMB 0.21 yuan. With the current economic level in China, the increased costs for the various methods of acupuncture and moxibustion to alleviate pain one day faster than Western medicine are roughly the same. One flaw with our study was that no comparison of the increment ratio could be made with the Western medical group because there was no control group. Since there was no difference in the curative effect among the various methods of acupuncture and moxibustion and their costs were similar, our results indicate that electric acupuncture plus surrounding acupuncture should be the method of choice. The present economic evaluation was part of a project on screening effective protocols to treat herpes zoster using various methods of acupuncture and moxibustion. The project aims at screening various methods of treating herpes zoster and promoting them among community hospitals, township hospitals, and grass-roots medical institutions. The costs in the present study were calculated according to the charging standards in grade-3A hospitals. If the costs were calculated according to the charging standards in community hospitals or grass-roots medical institutes, the cost of treating herpes zoster using acupuncture and moxibustion would be much lower than with Western medicine.

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