



Different acupuncture for neurodynia and skin lesions with acute herpes zoster

Guohua Lin¹, Yunkuan Yang², Hongxing Zhang³, LiXia Li^{4*}, Chuyun Chen⁴, Yue Liu⁵, Xu Shan Cha¹, Qian Li¹

¹The First Affiliated Hospital of Guangzhou University of Traditional Chinese Medicine

²Chengdu University of Traditional Chinese Medicine

³Wuhan NO.1 Hospital

⁴Guangzhou Hospital of Traditional Chinese Medicine

⁵The Second Hospital of Traditional Chinese Medicine of Guangdong Province

E-mail: lilixia_med@163.com

Abstract: Objective: To analyze the effectiveness of different acupuncture-moxibustion therapies for neurodynia and skin lesions of acute herpes zoster. **Patients and Methods:** From April 2007 to October 2009, 500 patients with clinical acute herpes zoster were included in study. They were randomly divided into five groups as follow:electroacupuncture; electroacupuncture + cotton-pave moxibustion; electroacupuncture + fire acupuncture; electroacupuncture + tapping combined with cupping; control group of western medicine. **Results:** The time of staunch bleb, scab and scab off had no obvious statistical difference in electroacupuncture; electroacupuncture + cotton-pave moxibustion; electroacupuncture+fire acupuncture; electroacupuncture + tapping combined with cupping and control group, however, five methods could obviously reduce symptom of herpes zoster and improved general symptom. Within five days of treatment, compared to control, the other four methods could ameliorated more quickly the general symptom of herpes zoster, and electroacupuncture + fire acupuncture was superior to electroacupuncture + cotton-pave moxibustion. Acute herpes zoster is reduced during treatment, electroacupuncture + cotton-pave moxibustion, electroacupuncture + fire acupuncture and electroacupuncture + tapping could relieved neuralgia and shortened duration of pain, which was superior to control group treatment with western medicine. In addition, within first 3 days of treatment, the efficacy of treatment with electroacupuncture, electroacupuncture + fire acupuncture or electroacupuncture + tapping was superior to that of electroacupuncture + cotton-pave moxibustion, and electroacupuncture+fire acupuncture was better to electroacupuncture. After five days or end-of-treatment, the efficiency of odynolysis by treatment with electroacupuncture + fire acupuncture, electroacupuncture + tapping or electroacupuncture + cotton-pave moxibustion was no more than electroacupuncture. The incidence of neurodynia was reduced after treatment with electroacupuncture + cotton-pave moxibustion, electroacupuncture + fire acupuncture or electroacupuncture + tapping at 30th, 60th and 90th day, and pain of postherpetic neuralgia was relived. **Conclusion:** It is a certain advantages for organism reparation, abatement of neurodynia, reduction of postherpetic neuralgia by acupuncture treatment.

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1.Introduction

Acute herpes zoster is caused by reactivation of latent varicella zoster virus (VZV or human herpesvirus 3). The virus can persist for years in the dorsal root ganglia of cranial or spinal nerves after resolution of original infection. As cellular immunity wanes with age or immunocompromise, the virus can be transported along peripheral nerves, producing an acute neuritis.(Burke et al.,1982; Meier and Straus 1992) Herpes zoster is characterized by a painful, unilateral vesicular eruption usually in a restricted dermatomal distribution.(Gnann JW and Whitley 2002).

Pain associated with herpes zoster infection can

be classified as acute herpetic neuralgia, subacute herpetic neuralgia, and postherpetic neuralgia. (Dworkin and Portenoy 1996) Pain is the most common symptom of acute herpes zoster and may precede skin changes by days or weeks.(Gilden et al.,1991; Bowsher 1995) Moreover, pain is typically described as a sharp or stabbing sensation, burning sensation, or even "allodynia" (pain evoked by normally non-painful stimuli such as light touch). (Bowsher 1995)

Pain associated with herpes zoster infection can cause significant suffering, particularly in elderly persons. Symptoms may be severe enough to interfere with sleep, appetite, or sexual function. In

addition, symptoms may persist from months to years and cause profound psychosocial dysfunction, disability, and despair. The difficulty in treating herpes zoster means increased costs for individuals and health services. (Lydick et al., 1995; Graff-Radford et al., 1986)

The treatment of herpes zoster is aimed primarily at earlier healing of lesions and prevention of complications. Randomized controlled trials and systematic reviews have found that oral antiviral agents (acyclovir, famciclovir, valaciclovir) are effective to relieve pain at 1-3 months and to reduce the prevalence of postherpetic neuralgia at 6 months, although the effect is moderate. These drugs must be administered within 3 days from the onset of symptoms and have a good safety profile. Netivudine has a similar effect. (Lancaster et al., 1995; Volmink et al., 1996; Alper and Lewis 2002; Alper and Lewis 2000) Other drugs such as levodopa, amantadine, amitriptyline, and idoxuridine are of unknown effectiveness in preventing herpes zoster complications. Moreover, corticosteroids drug are considered to be ineffective or even harmful. (Alper and Lewis 2000) Drugs considered to have a moderate effect in treating established postherpetic neuralgia are gabapentin and tricyclic antidepressants. (Alper and Lewis 2002; Backonja and Glanzman 2003; Rice and Maton 2001).

Despite these treatment options, many patients experience refractory pain and frequent adverse effects, especially elderly patients with cardiovascular disease. Therefore, pain associated with herpes zoster infection remains a challenge for effective management. Acupuncture and other methods from Traditional Chinese Medicine such as bloodletting and moxibustion have not been evaluated for this disorder. However, some Chinese case series report good treatment results but lack rigorous design. (Owen and Deadman 1994; Wu and Guo 2000; Xuan 2000) We began a pain program at our primary care institution and collected cases with herpes zoster-associated pain to determine if these techniques could be helpful.

2. Methods

2.1 Clinical data

Diagnostic criteria: Traditional Chinese medicine diagnostic criteria has referred to diagnostic criteria of snake strand sore in 《Diagnosis curative standard of tradition Chinese medicine disease》; Western medicine diagnosis standard has referred to diagnostic criteria of herpes zoster in 《Cecil Textbook of Medicine》.

Inclusion criteria: Age range was from 18 to 70

years; the patients have herpes 1 to 7 days, and were not treated with antiviral or relieve pain drugs; all patients signed the information consent form, and agreed to accept the all therapeutic methods and obey arrangement.

Exclusion criteria: Special types of herpes zoster, including herpes zoster ophthalmicus (HZO), herpes zoster oticus (HZO), herpes zoster viscera, herpes zoster meninx, generalized herpes zoster, or no rash type herpes zoster; pregnant or lactating women; patients of anaphylaxis or drug allergy; scar diathesis; primary disease or systemic failure including cardiovascular, blood vessel of brain, liver, kidney and hematopoietic system, diabetes patients, cancer or mental patients, connective tissue disease and hemophilia, patients with bleeding tendency; patients with critical illness who were difficult to evaluate effectiveness and safety of treatment; patients who were treated with the corticosteroids or immunity inhibitor within one month.

2.2 General Information

All cases were come from the the first affiliated hospital of Guangzhou university of Chinese traditional medicine, Guangzhou hospital of traditional Chinese medicine, two Chinese medicine hospital in Guangdong Province, Chengdu Second People's Hospital, The affiliated hospital of Chengdu University of Traditional Chinese Medicine, traditional Chinese medicine research institute in sichuan province and combining Chinese and Western Medicine Hospital of Wuhan at the time range from April 2007 to October 2009. A multicentric random trial (allocation concealment and central random) was did in GCP center of Chengdu University of Traditional Chinese Medicine) was adopted, the 500 conforming cases who equally divided into five groups as follow: electroacupuncture; electroacupuncture + cotton-pave moxibustion; electroacupuncture+fire acupuncture; electroacupuncture+ tapping combined with cupping; control group with conventional western medicine therapy.

In electroacupuncture group, there were 45 male and 53 female cases included 4 cases with scab falling off, other 2 cases were eliminated; in electroacupuncture + cotton-pave moxibustion group, there were 44 male and 56 female cases included 6 cases with scab falling off; in electroacupuncture+fire acupuncture group, there were 39 male and 58 female cases included 6 cases with scab falling off, other 3 cases were eliminated; in electroacupuncture+ tapping combined with cupping group, there were 40 male and 56 female cases included only 1 case with scab falling off, other 4 cases were rejected; in control group with

conventional western medicine therapy group, there were 36 male and 62 female cases, including 3 dropping cases, other 2 cases were eliminated. In five groups, the mean age was 43.76 ± 15.34 , 46.98 ± 13.61 , 45.20 ± 15.06 , 44.33 ± 15.07 and 46.51 ± 15.30 years, respectively. Besides these, the time between feeling uncomfortable and medical consultation were 6.15 ± 4.11 , 5.56 ± 3.14 , 5.63 ± 2.70 , 5.77 ± 3.05 and 5.24 ± 2.52 days, respectively. Meanwhile, the VAS scores of five groups were respectively 59.23 ± 25.71 , 53.84 ± 25.95 , 52.45 ± 28.11 , 56.63 ± 25.44 and 57.20 ± 27.17 before treatment.

All indicators between the two as described above had no significant differences ($P > 0.05$), so, there was comparable between any two groups.

2.3 Treatment

All included patients kept the clean skin on parts of herpes zoster and protected skin lesions.

Electroacupuncture: The main points included Ashi, Jiaji (on one side of sick), Zhigou and Houxi acupoints. The clients were adopted left and side-lying position, after routine disinfection, the Ashi acupoint was treated with acupuncture round pain; Jiaji point were treated with oblique insertion toward the spinal column; Zhigou and Houxi acupoints were dealt with coup droit. All points were inserted with needles at depths range from 0.8 to 1.0cm, after result that patients suffered needling sensation response, the all cases were stimulated with Hans acupoint nerve stimulator (HANS; LH202H, China) which was operated in a standard method that adopted alternating current with frequency of 2/100HZ and current of $2 \sim 5$ mA, and a strength that all patients could bear.

Electroacupuncture + cotton-pave moxibustion: The cases were treated with cotton-pave moxibustion based on the electroacupuncture as described above. The clients were adopted lying position, then Ashi point was completely exposed to medical workers, after sterilization with iodine, the cotton wool that was tore into thin slices as cicada's wings (without a hole, 3×3 cm²), was covered on the part of Ashi point, lit and burnt out rapidly. The acupuncture treatment was applied every 3 times.

Electroacupuncture + fire acupuncture: The patients were treated with fire acupuncture based on the electroacupuncture as described above. The clients were adopted lying position, then Ashi point was sterilized with iodine. Herpes central was penetrated with needle of moderate thickness that was heated until red and white, at depths range from 0.2 to 0.3cm. Based on the number of herpes, early onset of herpes which selected numbers range from 3

to 5 were first pierced, and each was did 2 times. Postoperation, liquid of herpes zoster was drained then, the location was pressed for 30s and coated with a flower oils.

Electroacupuncture + tapping combined with cupping: The cases were treated by combination tapping with cupping and electroacupuncture as described above. The clients were adopted sitting and side-lying position, after routine disinfection, the Ashi point was treated with plum blossom-needle tapping with slightly bleeding. Cupping was pressed on the both ends of parts of collateral puncture and impairment. After bleeding by 3 to 5 ml and leaving the cupping for 5 to 10 min, the cupping was taken away and routinely sterilized.

Control: Valaciclovir and vitamin B1 were used through taken orally by 300mg each with 2 times per day and 10mg each with 2 times per day, respectively. The course of treatment consulted the electroacupuncture as described above.

2.4 Outcomes

Pain intensity (PI, VAS marking; mm): the tender spot was observed and noted in the 24 hours before the treatment. The interval range from 0 to 100mm, which presented a level of pain intensity from indolence (0mm) to maximum pain (100mm) that patients could feel. We noted the pain intensity at first 10 days before treatment and at 11th day, respectively.

Duration of pain: noted the time from pain presented to pain completely went away. Incidence of postherpetic neuralgia PHN: noted the postherpetic neuralgia PHN at 30th day.

2.5 Statistics

Values were shown mean \pm SEM. The significance of differences between all groups were evaluated using one-way ANOVA with a post-hoc Student-Newman-Keuls multiple comparisons test. Chi-square test was used in enumeration data. Duration of pain analyses was adopted Log Rank test. Statistical analyses were performed using SPSS Software (V18.0, SPSS, USA), and a p-value < 0.05 was considered to be statistically significant.

3. Results

3.1 The time of staunch bleb, scab and scab off

As shown in Table 1, the time of staunch bleb, scab and scab falling off had no statistical significance between any two groups ($P > 0.05$). So, five treatment methods shown a similar efficacy in time of staunch bleb, scab and scab falling off.

Table 1.

Group	Cases	Staunch vesicle (days)	Scab (days)	Scab off (days)
1	94	5.02±2.48	9.13±3.90	21.49±8.98
2	94	4.54±1.95	8.49±3.47	20.87±8.14
3	91	4.87±2.03	9.04±4.57	20.13±8.86
4	95	5.05±2.32	9.45±4.90	21.06±9.45
5	95	4.83±2.30	9.91±3.63	24.27±12.67

1:electmacupuncture; 2: electmacupuncture + cotton-pave moxibustion;
3: electmacupuncture+fire acupuncture; 4: electmacupuncture + tapping combined with cupping; 5:control group

3.2 Aggregate score of herpes zoster before and after treatment

Before treatment, there were no statistical significance between five groups($P>0.05$), so it was comparability between the groups. However, at 5th days, the result ($P<0.01$) was opposite compared to the pre-treatment, as described above. Compared to control group, the other four groups had statistical significance($P<0.01$), moreover, cotton-pave moxibustion group was superior to fire acupuncture group($P<0.05$). End-of-treatment, compared to control group, the other four groups had statistical significance($P<0.01$), the result as like as it as described above($P<0.01$ or $P>0.05$), and there were statistical significance between pre-treatment and after 5 days treatment($P<0.01$). However, there was a difference between before and after treatment($P>0.05$). In summary, the five methods could reduced obviously the symptom of acute herpes zoster, and ameliorated the general symptoms. Within the first five days of treatment, compared to control, the other four methods could ameliorated more quickly the general symptom of herpes zoster, and fire acupuncture was superior to cotton-pave moxibustion(Table 2).

Table 2

group	pre-treatment	treatment(within 5 days)	after treatment	difference between treatment(5 days) and pre-treatment	difference between before and after treatment	
1	Case(n) 94	13.97±3.31	8.27±3.55	3.50±2.79	5.70±4.02	10.47±3.79
2	94	13.62±3.50	8.77±3.27	3.76±2.56	4.85±3.61	9.86±3.82
3	91	13.86±3.69	7.44±3.83	3.41±2.80	6.42±4.48	10.45±4.44
4	95	13.52±3.94	8.11±4.34	3.59±3.03	5.41±5.10	9.93±4.51
5	95	14.77±3.30	10.23±3.88	4.59±3.02	4.54±3.45	10.18±3.36

1:electmacupuncture; 2: electmacupuncture + cotton-pave moxibustion; 3:electmacupuncture+fire acupuncture; 4: electmacupuncture + tapping combined with cupping; 5:control

3.3 Duration of pain

As shown in Fig. 1 and Table 3, the pain lasting time had statistical significance between control and other four groups ($P < 0.01$). In addition, there was statistical significance between other three groups and electroacupuncture + tapping combined with cupping group ($P < 0.01$ or $P < 0.05$). However, the pain lasting time had no statistical significance between any two groups for electroacupuncture, electroacupuncture + cotton-pave moxibustion and electroacupuncture+fire acupuncture groups as described above ($P > 0.05$). Therefore, the former four groups could obviously reduced the pain lasting time compared to western medicine group. However, the effects in three groups, including the electroacupuncture group, electroacupuncture + cotton-pave moxibustion and electroacupuncture + fire acupuncture group, were better compared to electroacupuncture + tapping group.

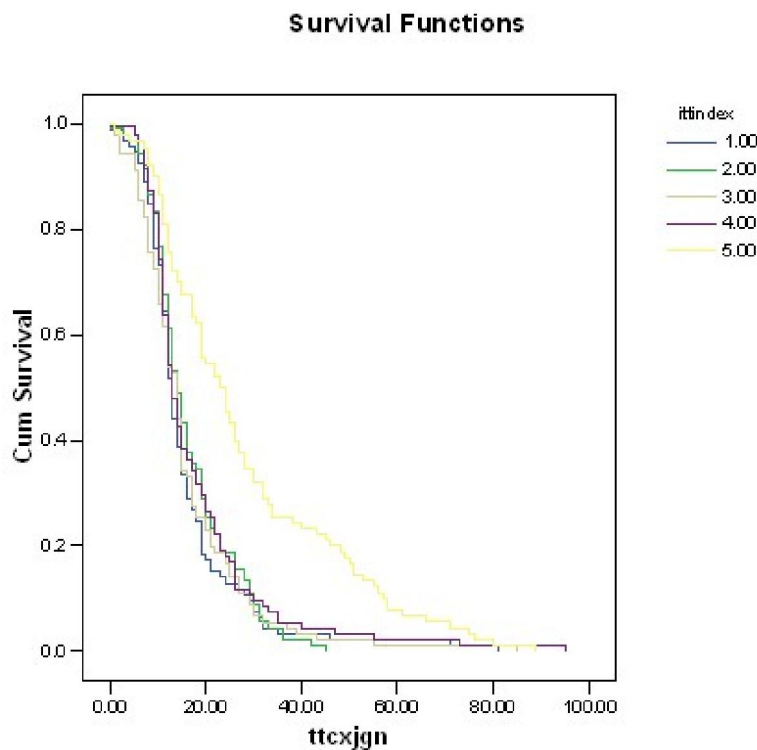


Fig 1. 1:electroacupuncture; 2: electroacupuncture + cotton-pave moxibustion; 3:electroacupuncture+fire acupuncture; 4: electroacupuncture + tapping combined with cupping; 5:control

Table 3

group	case(n)	duration of oain(days)
1	94	15.87±11.86
2	94	16.66±8.80
3	91	15.89±12.00
4	95	17.65±13.53
5	95	28.26±19.69

3.4 VAS of treatment

As shown in Table 4, there were no statistical significance between any two groups ($P > 0.05$). In addition, there was statistical significance between prior to the treatment and end-of-treatment between any two groups ($P < 0.01$). Meanwhile, at day 3,5,7 of their hospitalisation and end-of-treatment, there were significant difference between any two groups ($P < 0.01$). Besides that, there were statistical significance between former four groups and control group

($P < 0.01$). However, there were no statistical significance between any two groups of four groups included electroacupuncture, electroacupuncture + cotton-pave moxibustion, electroacupuncture + fire acupuncture and electroacupuncture + tapping combined with cupping ($P > 0.05$). In summary, the five methods could reduce gradually the pain of nerve, the effects of former four methods was better compare to western medicine method. Moreover, at first 3 days of treatment, both the electroacupuncture, electroacupuncture+tapping and electroacupuncture+fire acupuncture had better therapeutical efficiency compared to electroacupuncture + cotton-pave moxibustion, and the electroacupuncture+fire acupuncture was superior to alone electroacupuncture.

Table 4.

group	case(n)	Pre-treatment	Treatment(3 days)	Treatment(5 days)	Treatment(7 days)	After treatment
1	94	58.88±25.89	36.60±24.18	22.88±19.68	13.30±17.52	4.03±9.27
2	94	54.09±26.35	41.19±24.61	27.30±22.21	14.46±16.76	6.05±12.46
3	91	52.67±27.82	34.95±23.98	23.63±21.79	14.60±16.65	5.01±10.12
4	95	56.17±25.17	36.13±23.17	25.96±22.51	17.26±19.49	5.16±10.98
5	95	58.01±26.97	47.59±23.96	34.73±21.54	25.89±19.43	14.30±16.15

1:electmacupuncture; 2: electmacupuncture + cotton-pave moxibustion;
3: electmacupuncture+fire acupuncture; 4: electmacupuncture + tapping combined with cupping; 5:control group

3.5 Different VAS of pretreatment and post-treatment

After treatment for 5 days, there were statistical significance between the four groups and control group ($P < 0.01$). In addition, electroacupuncture, electroacupuncture + tapping and electroacupuncture + fire acupuncture were superior to electroacupuncture + cotton-pave moxibustion ($P < 0.01$). Besides, electroacupuncture was better to electroacupuncture + tapping and electroacupuncture + fire acupuncture ($P < 0.01$). However, there were no statistical significance between pretreatment and post-treatment. In short, the five methods could reduce gradually the pain of nerve, and former four methods had a better efficiency than control group. Furthermore, the three groups, including the electroacupuncture, electroacupuncture +tapping and electroacupuncture+fire acupuncture, which had better analgesic effect compared to electroacupuncture+cotton-pave moxibustion, and electroacupuncture was superior to the electroacupuncture+fire acupuncture and electroacupuncture+ tapping (Table 5).

Table 5.

group	Case(n)	difference between treatment(5 days) and pre-treatment	difference between before and after treatment
1	94	36.00±28.63	54.86±25.84 ^②
2	94	26.79±23.26	48.03±28.72
3	91	29.04±29.93	47.66±27.73
4	95	30.21±25.18	51.01±25.41
5	95	23.28±23.24	43.71±27.55

1:electmacupuncture; 2: electmacupuncture + cotton-pave moxibustion; 3:electmacupuncture+fire acupuncture; 4: electmacupuncture + tapping combined with cupping; 5:control group

3.6 VAS of during follow-up period

As shown in Table 5, follow-up test were applied at 22th, 30th, 60th and 90th day after treatment, respectively. There were statistical significance between the other four groups and control group ($P < 0.01$ or $P < 0.05$). Meanwhile, the electroacupuncture was superior to electroacupuncture + fire acupuncture at 22th and 30th day ($P < 0.01$ or $P < 0.05$). In brief, levels of pain in electroacupuncture, electroacupuncture + tapping, electroacupuncture + fire

acupuncture and electroacupuncture + cotton-pave moxibustion groups was lighter compared to that in control group, and electroacupuncture was superior to electroacupuncture+fire acupuncture group.

Table 6.

group	Case(n)	22 th day	39 th day	60 th day	90 th day
1	94	1.44±5.32	0.60±3.52	0.27±1.85	0.11±1.03
2	94	2.05±7.03	1.04±5.03	0.59±4.01	0.53±3.70
3	91	2.33±9.32	1.36±7.40	0.22±2.10	0±0
4	95	1.80±8.22	1.13±6.11	0.32±2.28	0±0
5	95	8.18±12.97	5.47±10.72	2.21±7.80	1.16±6.03

1:electmacupuncture; 2: electmacupuncture + cotton-pave moxibustion; 3:electmacupuncture+fire acupuncture; 4: electmacupuncture + tapping combined with cupping; 5:control group

3.7 Incidence of postherpetic neuralgia

As shown in Table 7, Follow-up test were performed at 30th, 60th and 90th day after treatment, respectively(P<0.01 or P<0.05), in addition, postherpetic incidences in neuralgia electroacupuncture, electroacupuncture+tapping, electroacupuncture+fire acupuncture and electroacupuncture+cotton-pave moxibustion groups were less compared to that in control(P<0.01 or P<0.05).

Table 7.

group	Case(n)	Follow-up(30 th day)		Follow-up(60 th day)		Follow-up(90 th day)	
		no	yes	no	yes	no	yes
1	94	90(95.74)	4(4.26)	92(97.87)	2(2.13)	93(98.94)	1(1.06)
2	94	89(94.68)	5(5.32)	92(97.87)	2(2.13)	92(97.87)	2(2.13)
3	91	87(95.60)	4(4.40)	90(98.90)	1(1.10)	91(100.00)	0(0.00)
4	95	90(94.74)	5(5.26)	93(97.89)	2(2.11)	95(100.00)	0(0.00)
5	95	63(66.32)	32(33.68)	86(90.53)	9(9.47)	90(94.74)	5(5.26)

1:electmacupuncture; 2: electmacupuncture + cotton-pave moxibustion; 3:electmacupuncture+fire acupuncture; 4: electmacupuncture + tapping combined with cupping; 5:control group

4. Discussion

Traditional Chinese medicine techniques such as acupuncture and moxibustion could be integrated with orthodox Western medicine therapies to fill the effectiveness gap in some pain problems included herpes zoster-associated pain to prevent or reduce pain with minimal adverse effects of treatment. The acute herpes zoster research is the first clinical study to investigate the effectiveness of an acupuncture treatment for acute herpes zoster pain in direct

comparison to a standard analgesic treatment with gabapentine and to a sham laser acupuncture treatment in a three-armed, randomised controlled clinical trial. Compared to previous studies of acupuncture in the treatment of herpes zoster, this study has a more rigorous methodology and will include more patients.

In our study, for the time of staunch bleb, scab and scab falling off, there were no obvious statistical difference in electroacupuncture, electroacupuncture

+ cotton-pave moxibustion, electroacupuncture+fire acupuncture, electroacupuncture + tapping combined with cupping and control groups, however, five methods could obviously reduce symptom of herpes zoster and improved the general symptom. At first five days of treatment, compared to control method, the other four methods could ameliorated more quickly the general symptoms of herpes zoster, and electroacupuncture + fire acupuncture was superior to electroacupuncture + cotton-pave moxibustion.

Acute herpes zoster is relieved during treatment, moreover, electroacupuncture + cotton-pave moxibustion, electroacupuncture + fire acupuncture and electroacupuncture + tapping methods could reduced the neuralgia and shortened the duration of pain, which were superior to that treating with western medicine. In addition, at first 3 days of treatment, the efficacy of treatment with electroacupuncture, electroacupuncture + fire acupuncture or electroacupuncture + tapping was superior to that of electroacupuncture + cotton-pave moxibustion, and electroacupuncture+fire acupuncture method was better than electroacupuncture. After the fifth day of treatment or end-of-treatment, the efficiency of relieve pain by treatment with electroacupuncture + fire acupuncture, electroacupuncture + tapping or electroacupuncture + cotton-pave moxibustion was no more than alone electroacupuncture. The incidence of neurodynia was reduced after electroacupuncture + cotton-pave moxibustion, electroacupuncture + fire acupuncture or electroacupuncture + tapping treatment at 30th, 60th and 90th day, and pain of postherpetic neuralgia was relieved.

In my paper, base line of all cases in electro-acupuncture group was basically in compliance with the control group. Valaciclovir (Page et al. 2006) was used in here, which had a bioavailability with 54.5%. So, it had a gender certainly as control.

In fact, the efficiency that local Ashi point was treated with stimulation of acupuncture which worked through a conducting system of cortex-meridians and collaterals- viscera. Varicella zoster viruses are almost lurked in spinal nerve root, namely locate in Du meridian and Jiaji points. In here, the partial skin lesions, painful place and relevant Jiaji points of ganglion are where pathogenic factors exist in, which could be thought as a Ashi point storing herpes zoster (Arora et al., 2008). Jiaji point locates in between Du meridian and Sun meridians of foot, we can regulate the yang-heavy of Du meridian, Sun meridians of foot and the whole body, which makes to reach the objective of regulation of meridians and collaterals and viscera.

In conclusion, it is a certain advantages for repairation of organism, abatement of neurodynia, reduction of postherpetic neuralgia by acupuncture treatment, and the efficiency of combination electroacupuncture and fire acupuncture is better to that of only electroacupuncture in the early days. However, at the end of the treatment period, the efficiency of electroacupuncture + cotton-pave moxibustion, electroacupuncture + fire acupuncture or electroacupuncture + tapping is no more than that of only electroacupuncture. Further studies are required to determine the pre-clinical utility of this method.

Corresponding authors:

LiXia Li.

Address to: Guangzhou Hospital of Traditional Chinese Medicine. 16 Airport Road, Guangzhou, China.

Tel.: +86 020-36591372;

Fax: +86 020-36588747;

E-mail: lilixia_med@163.com

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