

## The Warming Acupuncture for Treatment of Sciatica in 30 Cases

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**Objective:** To observe the relation between the pain threshold and the therapeutic effects of acupuncture for sciatica. **Methods:** 90 sciatica patients were equally divided at random into the following 3 groups: a warming acupuncture group treated with the needles warmed by burning moxa, a western medicine group administered Nimesulide tablets and a point-injection group with Anisodamine injected. The pain threshold was tested before treatment and after the first, second and third treatment courses. **Results:** The warming acupuncture therapy showed better therapeutic effects than the other two groups with significant differences in the change of pain threshold and the improvement of clinical symptoms and signs ( $P<0.01$ ). **Conclusion:** Acupuncture can relieve the symptoms of sciatica with the increase of pain threshold.

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Sciatica is a syndrome with pain radiating from the nerve roots of L<sub>4</sub>-S<sub>3</sub> via the hip and posterior side of the thigh and leg to lateral sides of the foot, and it may be primary or secondary. It has been found clinically that most of the patients may have reduced pain threshold at special points of the affected limbs, and it may vary with the illness condition. In the present study, warming acupuncture was adopted for treatment of sciatica to observe the change of pain threshold and the improvement of clinical symptoms and signs.

### CLINICAL MATERIALS

#### General data

In this series, all the 90 cases of sciatica admitted were out- or in- patients from the First of Affiliated Hospital of the Hunan TCM Professional Training College in the period from September 2002 to June 2004. They were equally divided at random into the following 3 groups: a warming acupuncture group treated with the needles warmed by burning moxa, a western medicine group administered Nimesulide tablets, and a point-injection group with Anisodamine injected. In the warming acupuncture group, there

were 22 males and 8 females, aged  $34.24\pm 5.78$  years, with the average illness course of  $5.25\pm 3.59$  years, and the pain threshold  $0.98\pm 0.27$  mA. 29 cases had lumbago, 11 cases with the pain aggravated by coughing, 10 cases with the pain aggravated by sneezing, and 8 cases with the pain aggravated during defecation. In the western medicine group, there were 21 males and 9 females, aged  $33.36\pm 7.58$  years, with the illness course of  $5.78\pm 4.87$  years, and the pain threshold  $1.04\pm 0.27$  mA. 28 cases had lumbago, 12 cases with the pain aggravated by coughing, 9 cases with the pain aggravated by sneezing, and 7 cases with the pain aggravated during defecation. In the point-injection group, there were 20 males and 10 females, aged  $35.78\pm 9.65$  years, with the illness course of  $4.71\pm 3.96$  years, and the pain threshold  $0.86\pm 0.22$  mA. 29 cases had lumbago, 13 cases with the pain aggravated by coughing, 9 cases with the pain aggravated by sneezing, and 7 cases with the pain aggravated during defecation.

The pain threshold was also tested in 300 healthy subjects, including 160 males and 140 females, aged  $35.46\pm 7.52$  years, with the average pain threshold  $1.96\pm 0.48$  mA.

The  $\chi^2$  and  $F$  tests showed that there was no significant difference among the three groups in sex, age, illness course, and symptoms and signs ( $P>0.05$ ). And the variance analysis of the pain threshold with SPSS10.0 statistical software showed no significant difference among the 3 groups ( $F=1.72$ ,  $P>0.05$ ).

### Diagnosis criteria

The patients 1) had radiating pain in the distributing area of the sciatic nerve; 2) had tenderness at the nerve stem, the middle clunial nerve, the popliteal fossa, the peroneal nerve and the ankle; 3) with positive Lasegue's sign, Kernig's sign, and Bonnet's sign; 4) abnormal movement, sensation and reflection were shown in the area innervated by the sciatic nerve, and the Achilles jerk was reduced or vanished; 5) narrowing of the intervertebral space of L4-5; and 6) with a pain threshold 0.40–1.80 mA.

### Criteria for admission

The patients who conformed to the above diagnostic criteria and whose illness condition belonged to the cold-damp and/or kidney-deficiency type were admitted.

### Criteria for exclusion

The patients with prolapse of the lumbar intervertebral disc, bone tuberculosis, and tumor were excluded.

## METHODS

### For the warming acupuncture group

Acupuncture was performed with filiform needles (0.30 mm in diameter and 60–75 mm in length) at the routinely sterilized points of Shenshu (BL 23), Dachangshu (BL 25), Huantiao (GB 30), Weizhong (BL 40) and Kunlun (BL 60) on the affected side. The uniform reinforcing-reducing manipulation was given to induce the needling sensation. 5 min later, 3–5 moxa cones were successively ignited on the needle handles. The treatment was given once a day for 10 days as one therapeutic course with a 3-day interval between courses.

### For the western medicine group

Nimesolide tablets were orally administered, 01 g

each time and twice a day, for 10 days as one treatment course with a 3-day interval between courses.

### For the point-injection group

Anisodamine (2 mg) was injected into each of the following points Shenshu (BL 23), Dachangshu (BL 25), Huantiao (GB 30), Weizhong (BL 40) and Kunlun (BL 60) on the affected side, once a day, for 10 days as one treatment course with a 3-day interval between courses.

### The Indexes observed

1) The pain threshold: The EP601C pain-threshold detector (produced by the Scientific and Educational Instrument Factory affiliated to the East China Normal University) was used to test the pain threshold at Shenshu (BL 23), Dachangshu (BL 25), Huantiao (GB 30), Weizhong (BL 40) and Kunlun (BL 60), with the value taken as the pain threshold of the subjects.

2) The clinical symptoms and signs: Sciatica and lumbago with the pain aggravated by coughing, sneezing and during defecation.

### Statistical method

The SPSS 10.0 statistic software was used to set up the database. The  $\chi^2$  test,  $t$  test and  $F$  test were used for the enumeration data. The Mann-Whitney U rank test was used for the intergroup comparison. And the data were expressed as  $\bar{x} \pm s$ .

### Criteria for therapeutic effects

Cured: all the symptoms and signs disappeared with no relapse in a one-year follow-up period, and with a pain threshold increase of  $1.65 \pm 0.57$  mA. Improved: the symptoms and signs were obviously improved, and with a pain threshold increase of  $0.45 \pm 0.29$  mA. Failed: no improvement of the symptoms, signs, and no change in the pain threshold.

## RESULTS

### The pain threshold detection

As shown in Table 1, there were significant differences among the 3 groups in the value of pain threshold at the third course of treatment. A

significant difference was found between the warming acupuncture group and the western medicine group ( $t=8.153$ ,  $P<0.01$ ). The difference was significant between the warming acupuncture group and the point-injection group ( $t=8.760$ ,  $P<0.01$ ). However, no significant difference was found between the western medicine group and the point-injection group ( $t=0.057$ ,  $P>0.05$ ). The increase of pain threshold was much higher in the warming acupuncture group than the other two groups ( $t=14.56$ ,  $P<0.01$ ).

### The therapeutic effects

In the warming acupuncture group of 30 cases, 17 cases (56.67%) were cured, 10 cases (33.33%) improved, and 3 cases (10.00%) failed, with a total effective rate of 90.00%. Of the 30 cases in the western medicine group, 8 cases (26.67%) were cured, 14 cases (46.67%) improved, and 8 cases (26.67%) failed, with a total effective rate of 73.33%. 6

cases (20.00%) of the point-injection group were cured, 13 cases (43.33%) improved, and 11 cases (36.77%) failed, with a total effective rate of 63.33%. The therapeutic effects were in favor of the warming acupuncture group as compared with the western medicine group ( $\chi^2=17.04$ ,  $P<0.01$ ), and with the point-injection group ( $\chi^2=12.00$ ,  $P<0.01$ ).

### Scoring for the clinical symptoms

Table 2 shows significant differences in the 3 groups before and after treatment in all the symptoms and signs ( $P<0.05$  or  $P<0.01$ ) except the aggravated pain by sneezing, and defecation in the warming acupuncture group. Better results for lumbago and sciatica were shown in the warming acupuncture group as compared with the other two groups (both  $P<0.01$ ). The effect for the pain aggravated by coughing was better in the warming acupuncture group than that of the point-injection group ( $P<0.01$ ).

Table 1. Comparison of the pain threshold before and after treatment among the 3 groups (mA,  $\bar{x} \pm s$ )

| Group                  | Cases | Before treatment | 1 course  | 2 courses | 3 courses               | Total increase         |
|------------------------|-------|------------------|-----------|-----------|-------------------------|------------------------|
| Acupuncture group      | 30    | 0.98±0.27        | 1.40±0.32 | 1.94±0.48 | 2.62±0.59*              | 1.65±0.61              |
| Western medicine group | 30    | 1.04±0.27        | 1.11±0.34 | 1.34±0.44 | 1.54±0.39* <sup>△</sup> | 0.50±0.29 <sup>△</sup> |
| Point injection group  | 30    | 0.86±0.22        | 1.17±0.27 | 1.37±0.24 | 1.58±0.22* <sup>△</sup> | 0.72±0.11 <sup>△</sup> |

Note: For the intragroup comparison, \* $P<0.01$ ; and for the intergroup comparison, <sup>△</sup> $P<0.01$ .

Table 2. Comparison of the evaluation score for clinical symptoms before and after treatment among the 3 groups (score,  $\bar{x} \pm s$ )

| Group                  | Time             | Cases | Lumbago                  | Sciatica                 | Aggravated pain in cough | Aggravated pain in sneezing | Aggravated pain in defecation |
|------------------------|------------------|-------|--------------------------|--------------------------|--------------------------|-----------------------------|-------------------------------|
| Acupuncture group      | Before treatment | 30    | 2.00±0.24                | 1.56±0.35                | 3.50±0.78                | 4.20±1.45                   | 5.80±0.15                     |
|                        | After treatment  | 30    | 5.80±0.14**              | 5.74±0.25**              | 5.78±0.08**              | 4.60±2.12                   | 5.78±0.12                     |
| Western medicine group | Before treatment | 30    | 2.20±0.19                | 1.42±0.37                | 2.98±0.71                | 4.56±1.56                   | 4.53±2.45                     |
|                        | After treatment  | 30    | 3.40±0.19** <sup>△</sup> | 2.42±0.33** <sup>△</sup> | 3.48±0.71*               | 4.86±1.56                   | 5.08±0.45*                    |
| Point injection group  | Before treatment | 30    | 1.90±0.21                | 1.75±0.32                | 3.15±0.73                | 4.25±1.67                   | 4.75±2.76                     |
|                        | After treatment  | 30    | 2.90±0.21** <sup>△</sup> | 2.75±0.32** <sup>△</sup> | 4.15±0.73** <sup>△</sup> | 4.85±0.67                   | 4.75±1.76*                    |

Note: For the intragroup comparison, \* $P<0.05$ , \*\* $P<0.01$ ; and for the intergroup comparison, <sup>△</sup> $P<0.01$ .

## DISCUSSION

Clinically, acupuncture is very effective for relieving pain. It has been demonstrated that acupuncture can make the brain and spinal cord release  $K^+$ ,  $Ca^{++}$ , 5-hydroxytryptamine, and opioid peptides,<sup>2-6</sup> which may change the composition of neurotransmitters to block the transmission of pain, thus showing the analgesic effect.<sup>7</sup> The burning moxa used for warming acupuncture therapy may dilate the capillaries in the affected area, improve microcirculation, accelerate circulation of blood and lymphatic fluid, and promote the resorption, transfer and excretion of the inflammatory exudates with the algogenic substances in particular, thus strengthening the analgesic effect of acupuncture.

Huantiao (GB 30), a crossing point of UB and GB, can activate *qi* and blood of the 2 channels. Weizhong (BL 40), a converging point of UB, is good for treating lumbago. Shenshu (BL 23) and Dachangshu (BL 25) as the local points can directly regulate *qi* of the channels in the waist, and strengthen the bones and kidney. Weizhong (BL 40) and Kunlun (BL 60) as the distal points can regulate *qi* of the affected limbs and the lumbar region. The warming acupuncture at the above points can warm *yang*, dispel cold, expel dampness, and check the pain.

Nimesulide tablet is a non-steroid, antipyretic, analgesic and anti-inflammatory agent. It can inhibit the generation of epoxy enzyme-2 (cox-2) and reduce the synthesis of prostaglandin to relieve pain.

Anisodamine (654-2) is an anticholinergic agent with the effect similar to atropine. It can improve microcirculation and promote the transfer and excretion of algogenic substances, indicated for treating sciatica. However, the injection can increase the intracranial pressure, accelerate the heart rate and make it difficult to pass water. It is contraindicated for acute cerebral hemorrhage and glaucoma.

To sum up, in the present study, the warming acupuncture therapy was adopted for treating sciatica with better results than the oral administration of Nimesulide and the point-injection of Anisodamine. Possibly because the therapy can make the brain and spinal cord release  $K^+$ ,  $Ca^{++}$ , 5-hydroxytryptamine and opioid peptides, regulate the secretion of neurotransmitters to block the transmission of pain, accelerate blood circulation, and promote the resorption, transfer and excretion of the above-mentioned active substances. In addition, determination of  $K^+$  for the pain threshold may help us objectively evaluate the illness condition and the therapeutic effects, which is of significance for clinical research.

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