

Algodystrophy Treated with Needle-Free Electroacupuncture and Raw Chinese Herbal Decoction: A Case Report and Review of Literature

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Abstract

Background: Reflex sympathetic dystrophy (RSD) is a serious and potentially disabling condition and is a very complex syndrome, which consists of pain maintained by the sympathetic nervous system. There have been no data present demonstrating that this condition can be treated with electroacupuncture and Chinese herbal medicine effectively.

Objective: The objective of this study was to present a case treated by electroacupuncture and Chinese herbal decoction successfully.

Patient data: A young Australian woman, who presented with the symptoms of severe swollen left foot, foot pain, swollen ankle and ankle pain, and lower-extremity RSDs, was the subject of the treatment.

Method: A needle-free electroacupuncture method was applied to the affected meridian region. An individually designed Chinese herbal decoction was used for a coordinated approach.

Results: Noticeable progress occurred within 2 weeks of the treatment, and 1.5–2 months later, the patient could walk without crutches. A full recovery occurred after a further 2 weeks.

Outcome measurement: The outcome measurement was change in pain score and swollen status (severity of swollenness), as well as function restoration.

Conclusions: There are no published articles showing the efficiency and safety of this needle-free acupuncture and herbal medicine treatment regimen. Therefore, an accumulation of similar clinical cases or further research is needed to evaluate this particular treatment method.

Introduction

ALGONEURODYSTROPHY, ALSO KNOWN AS reflex sympathetic dystrophy (RSD), is a poorly recognized condition of uncertain etiology that presents with pain and tenderness, vascular instability, swelling, and stiffness of an affected limb.¹ Patients typically develop burning pain, together with various combinations of sensory disturbances, swelling, and vasomotor, sudomotor, and trophic changes.^{2–4} Although a few tests are available for the assessment of this condition,^{5,6} diagnosis is still reliant on the clinical symptoms, case history, and a clinical examination.⁷

RSD is a condition of the hyperreactive autonomic nervous system, and is a very complex syndrome that occurs on different integration levels of the nervous system, and consists of sympathetically maintained pain.⁷ Due to the name of RSD, the name of its underlying mechanism, such as a neurogenic inflammation reaction, is often misunderstood. The newest name for RSD is complex regional pain syn-

drome (CRPS) type I, which was introduced by International Association for the Study of Pain in 1994 to address this confusion.⁷ Because of the name change, the causes and mechanisms of neuropathic pain, prolonged inflammation, and psychologic factors are becoming clearer. However, the etiology of CRPS is still very poorly understood.⁸

Classically, the pain is treated by interrupting the sympathetic supply to the painful area. This principle has not changed since the 1940s.⁹ Endoscopic sympathectomy and percutaneous radiofrequency lesioning of the sympathetic trunk are used from case to case. The dominant method in current practice is local anesthetic sympathetic blockade. A meta-analysis of randomized controlled trials, retrospective and prospective case series and controlled studies, comprising 1144 total patients, showed that the benefit of a sympathetic blockade with local anesthetics was indistinguishable from that of a placebo.¹⁰ A high-profile systematic review revealed the scarcity of published evidence, based on data from the Cochrane Central Register of Controlled Trials,

MEDLINE, and EMBASE, to support the use of local anesthetic sympathetic blockade as the “gold standard” treatment for CRPS. However, this study turned out to be inconclusive.¹¹ Despite these heavy criticisms, invasive sympathetic block still stands as an important part of the therapeutic concept.⁷

Case Presentation

The author shares the experience of successfully treating a 19-year-old woman, who is diagnosed with RSD.

The first episode

History. A 19-year-old female patient visited M. Modern Traditional Chinese Medical Clinic in the outer eastern suburbs of Victoria, Australia on August 13, 2005. Her chief complaint was swollen left foot, toes, and ankles, with severe pain in the same areas. Burning sensations arose from the severe pain. She could not use the left foot for driving manual cars, and a gentle movement of the ankle increased the severity of the pain. It was impossible for her to walk without a crutch. The patient had had an ice-cold feeling in the affected areas. She also noticed that there was no sweating at all in the left foot on warm days. She had no injury history prior to this complaint.

A few days before, she had been to a rheumatologist. A plain x-ray film and local ultrasound examination were done. The swollen soft tissues of the left foot and ankle were shown in these examinations; nevertheless, there was no evidence of abnormalities in the bone and joints of the affected region. Consequently, she was diagnosed as having algodystrophy by the specialist. The patient was unwilling to accept the procedure of local anesthetic sympathetic blockade. This was the reason she was looking for an alternative way of management.

The patient suffers from dysmenorrhea due to endometriosis. She has no other health conditions. Her father is French and her mother is English and there is no history of RSD in the family.

On examination of the patient, she was 85 kg in weight and 191 cm in height. It was apparent that her left ankle, foot, and toes had increased in size due to the swolleness. All affected joint regions, such as phalangeal joints, interphalangeal joints, metatarsophalangeal joints, and intermetatarsal joints, were unable to move in any direction subjectively and objectively. The skin color was very pale compared to the area above the left ankle. Also, there was a distinct cold sensation felt, in contrast to the unaffected area or the right foot. The temperature of the left foot was about 0.7–0.8°C lower (34.0°C–34.1°C versus 34.7°C–34.8°C) than the right, measured at both dorsalis pedis arteries by an instant infrared detecting thermometer (93/42 EEC, Livingstone, Australia).

In a Traditional Chinese Medicine (TCM) examination, it was found that this patient had had a red tongue, especially the front part and tongue tip, which were redder in contrast to the rest of the tongue. The tongue had very thick moist fur covering the whole top part. Her pulse was deep and tense.

The diagnosis and TCM assessment. According to the clinical symptoms, examinations, and the specialist’s diagnosis, the diagnosis was confirmed as RSD.

“Four limbs extremity cold syndrome” was the category assessment from a TCM perspective. As Chao, Yun-Fang (AD 610) stated, all meridians originated or terminated at the hands or feet, and imbalance of the Blood and Qi due to deficiency of Qi and Blood is the cause of this kind of condition.¹² Thus, a TCM pattern assessment is “Cold Pathogen blocking the meridians and collaterals, causing Blood stasis due to stagnation of Qi, and depression of Qi generates The Fire,” which is the most important principle for the rational design of the treatment.

Treatment methods. A needle-free electroacupuncture device (Suntown, VT91, HaiLi Suntown Research Institute of Electronic Technology, Beijing) was chosen for the treatment.

There was one output with two pads used. The size of the treating pad was about 5.5 cm in width and 6 cm in length. One pad was fixed on KI 1 (*Yongquan*), and another was covering LR 2 (*Xingjian*), LR3 (*Taichong*), ST43 (*Xianggu*), ST44 (*Neiting*), GB43 (*Xiaxi*), and GB41 (*Zulinqi*). The working voltage was 220 V–240 V, frequency was 50 Hz, and the output was less than 8 W. There were seven settings, which modeled the effects of manual acupuncture needling, that is entering, plum-blossom needling, turning, turning and twisting, pulling and pushing, pulling and dragging, and reinforced pulling and dragging. Each of these settings was divided and used for 4 minutes, with a total of 28 minutes in one session. A treatment session was scheduled once a week for 12 times as a treatment course.

In the meantime, a raw Chinese herbal decoction was used as a coordinated approach. The details of herbs are described below and were used as daily dosages: *Gui Zhi* 18 g (*Cinnamomum cassia*), *Dan Shen* 15 g (*Salvia miltiorrhiza*), *Dang Gui* 15 g (Chinese *Angelica sinense*), *Sheng Di Huang* 30 g (*Rehmannia glutinosa*), *Gan Cao* 6 g (*Glycyrrhiza uralensis*), *Ze Xie* 30 g (*Alisma orientalis*), *Fu Ling* 30 g (*Poria cocos*), *Che Qian Zi* 9 g (*Plantago asiatica*), *Chi Shao* 15 g (*Paeonia lactiflora*), and *Guan Zhong* 9 g (*Dryopteris crassirhizoma*). This decoction was used for 6 days every week during the period of treatment. Only mild modifications were made according to the patient’s treatment progress.

Result. The progress of the treatment was as follows: On August 27, 2005 (2 weeks later), the patient had noticed decreased swelling around the foot and less pain. On September 20, 2005 (38 days later), most of the swelling had disappeared, nearly a 70% reduction in swelling. The pain that she felt was from a score of 10 to a score of 4, according to the visual analogue scale (VAS). The ice-cold feelings disappeared and the patient felt a hot sensation instead. There was no difference in temperature measurement in both feet, deduced by using the same method as was used before the treatment. Thus, a few herbs (*Ze Xie*, *Fu Ling*, *Che Qian Zi*) were withdrawn, and three herbs were added. They were *Hong Hua* 9 g (*Carthamus tinctorius*), *Xuan Shen* 15 g (*Scrophularia ningpoensis*), and *Jin Yin Hua* 9 g (*Lonicera japonica*). On September 27, 2005 (45 days later), the swolleness of the foot was nearly gone. The patient was able to walk without a crutch. The VAS pain score was 2. The objective pain induced by an examination in the affected region, could still be felt slightly. On November 22, 2005, 3 months later, all the symptoms disappeared. Importantly, there was no objective

pain and the function of left ankle and foot returned to normal.

The second episode

The same patient, 22 years old on the day of the consultation, visited the abovementioned clinic again on June 22, 2008. She complained of left foot and ankle pain and swolleness and she relied on a crutch to walk. The pain started when a light object, about 50–100 g, dropped on the left foot (the same foot as in the first episode) accidentally. The pain and swolleness gradually increased in severity in the period of 2 months prior to the consultation. Another specialist made a diagnosis of RSD. She attended this clinic for the same treatment that worked well for her in 2005. The same treatment regimen was used. On August 15, 2008, she was able to walk without a crutch. On August 25 (2 months later), this patient's symptoms disappeared and all the functions and signs returned to normal.

Discussion

The various current treatments used in treating RSD/CRPS

The diversity of treatments for RSD/CRPS were explored through an up-to-date literature search of PubMed, EM-BASE, MEDLINE (Ovid), Cochrane Library, SpringerLink, Scopus, AMED, and J-STAGE. A comprehensive search in Chinese was also conducted through CNKI, CQVIP, wang-fangdata, cintcm, and tcm100 full text. There were no data available regarding RSD/CRPS being treated with acupuncture and Chinese herbal medicine. Various treatments used in the treatment of RSD/CRPS were very interesting. A brief summary is as follows.

Various pharmaceutical drugs have been used: nonsteroidal anti-inflammatory drugs, corticosteroids, antidepressants, anticonvulsants, local anesthetics, opioid analgesics, such as clonidine, gabapentin, and capsaicin; calcitonin and second-generation bisphosphonates (pamidronate, alendronate, and clodronate); α -blockers, bretylium/ketaserin, and iloprost.^{13–15}

Response to physiotherapy and routine analgesic drugs is commonly poor.¹⁶ Harke et al. argue that long-term spinal cord stimulation (SCS) plus physiotherapy can improve the functional status and the quality of life in sympathetically maintained CRPS type I.¹⁷

In summary, there are no uniformly successful treatment methods for RSD/CRPS.¹⁸ Recent studies suggest that treatment should be based on a multidisciplinary experienced team approach, with chronic pain management specialists, physical therapists, and orthopedic surgeons, with a focus on functional restoration.^{19,20}

The fresh method used in treating this case

RSD can be caused by injuries and trauma,¹⁶ such as arterial puncture,²¹ vaccination,²² and routine venipuncture.²³ Only one article argues that in the treatment of 10 patients with algodystrophy stage II, a significant increase of blood volume flow was attributed to acupuncture and was correlated to functional improvement.²⁴ However, this acupuncture treatment was for stage II, the warmth sensation, which is the signal of recovery that occurs about 7 days before the disappearance of major symptoms and restoration of

functions in both episodes in this case. Thus, it is logical that needling the affected extremities may increase the risk of having more severe RSD, especially in stage I. This rationale was used when applying a needle-free method in this case.

With or without sympathetic blockade either on the peripheral level or epidural anaesthesia or so-called SCS, a manual physical treatment is very painful²⁵ and unacceptable due to poor outcomes¹⁶ and lack of evidence.²⁶ Logically, a manual physical treatment may delay or diminish the chance of full recovery because this "forced" manual method creates injury and the common cause of RSD is injury. The strong force used in manual therapy may increase the degree of swolleness and inflammation. This was evident because of the long-term treatments needed as a result of manual therapy.¹⁷ In contrast, the middle-ranged voltage device used in this case was gentle, had more capability in reaching the depth of the local tissue, and was acceptable to patients without a sympathetic blockade.

The herbal decoction used was very complex. The ingredients used in this formula provided the effects of promotion of blood flow, anti-inflammation, relief of pain, and reduction of the degree of swolleness/edema.^{12,27} The modification of herbs was to assist in the balance of the cold and warm sensations that the patient experienced according to the TCM *yin-yang* balance and Meridian energy theories. As van der Laan et al. stated, it is important to recognize "cold" RSD immediately at the onset of the disease because this group of RSD patients has a higher risk of developing severe complications, mostly followed by a severe disability that is resistant to therapy.²⁸

If RSD is not treated properly, it may lead to long-term impairment or disability and may need rehabilitations.^{7,17,19} The particular method used in this case report had the result of a relatively quick full-recovery compared with various commonly used approaches. Maybe the patient had had RSD for relatively short periods, or perhaps because of her young age, may have responded relatively well to the treatment.⁹ Nevertheless, this kind of therapy regimen proved twice successful in promoting full recovery from RSD.

Conclusions

A combination of needle-free electroacupuncture and Chinese herbal decoction treatment successfully led to a full-recovery outcome. The concepts of category assessment and pattern assessment were used as rational bases of this therapy. Understandably, RSD/CRPS is a rare condition among those of south, east, and north Asian ethnicity, and thus, it would not have been expected for there to be a large amount of literary records available in languages other than English or European languages. There are no published articles that show the efficiency and safety of this needle-free acupuncture and herbal medicine treatment regimen. Thus, accumulations of similar clinical cases or research are needed for further evaluation of this particular treatment method.

Clinical Commentary

This case report will be of particular interest to clinicians seeking an alternative way to manage RSD/CRPS. The case presents another example of the importance of TCM category assessment and pattern assessment in clinical decision-making. It will also alert researchers to a real issue: The

research methodologies or designs of numerous randomized controlled trials in complementary medicine by academics, particularly in TCM, do not necessarily reflect the same treatments that clinicians consider or apply to their patients. Clinicians seem more interested in results and practical methods than theories if there is a conflict between the two.

Disclosure Statement

No competing financial interests exist.

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