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CLINICAL CASE REPORT

Acupuncture Treatment of Chronic Low Back Pain by Using the *Jingjin* (Meridian Sinews) Model

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Abstract
This case report details the unexpected and sustained relief from chronic low back pain in a patient after a single acupuncture treatment. The treatment administered on that occasion was based on the *jingjin* (i.e., "meridian sinew") model of traditional acupuncture. Treatments based on the *jingjin* model involve needling the *ah shi* (i.e., locally tender) points in myofascial tissue along the *jingjin* pathway. Tight chains can be needled to treat symptoms that are either close to or at some distance from the site of the needling treatment. In this patient, the points were in the gastrocnemius muscle and the hamstring muscles, which are part of the Bladder *jingjin* pathway. The patient, a 69-year-old woman, had had back pain for more than 40 years. The relief from the pain occurred within a day after the treatment and, at the time of this report, the relief has persisted for 5 months. This report examines two possible mechanisms for such a result: (1) a local increase in the extensibility of the hamstrings could be responsible or (2) the complex interactions within the central nervous system that are involved in acupuncture treatment could be more important factors.

1. Introduction

Low back pain is common and expensive [1]. It causes more global disability than any other condition [2]. Among the many conservative treatments for low back pain, acupuncture is one of the more promising with the weight of evidence now tending to support its efficacy, at least in the short term [3,4].

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Within the scope of contemporary acupuncture practice, many potential strategies can be used for a given presentation of low back pain [5]. These are unlikely to be equally effective; however, no consensus exists on which approach works best. This case study presents an example of the *jingjin* (i.e., channel sinews) model providing the basis for a superior treatment for a particular patient.

2. Case Report

A 69-year-old woman had been receiving intermittent treatment at the author's clinic for chronic low back pain for 23 years. Occasional complaints in other areas such as her shoulder and feet required treatment during this period; however, her low back pain remained the most persistent and serious of her problems.

The pain spread across both sides of her lumbosacral region and was referred to her right buttock. It was worse on the right and was associated with thoracolumbar pain on the right and occasional midthoracic pain. There were no neurological signs or symptoms. The pain was present on waking, after immobility, and on prolonged trunk flexion. She rated the intensity of her daily pain at 7 on the visual analogue scale (VAS).

The pain had an acute onset 40 years earlier after she had carried a heavy load. It had been present as a chronic pain ever since with occasional acute episodes that would last from a few days to several weeks. These episodes could be disabling and required her to take time off work. The intensity of the pain during exacerbations was 8—9 on the VAS.

Examination revealed some general restriction of lumbar movement and some tightness in the hamstrings. Muscle tone on the right hand side was excessive—almost spastic—as if caused by an upper motor neuron lesion.

X-ray imaging showed a transitional vertebra at S1. There was a free transverse process of S1 on the right and an asymmetrical right facet joint between S1 and S2. On the left side, S1 was more completely fused with S2 and there was a rudimentary disc between S1 and S2.

The exact treatment varied across her visits, but a typical treatment involved gentle manual therapy to her low back and pelvis in combination with acupuncture. The acupuncture treatment was aimed at her low lumbar facet joints (*huatuo jiaji* points at L5/S1 and/or S1/S2, Bl 25) + Bl 58, Bl 23 and *ah shi* (i.e., locally tender) points to address the muscular hypertonicity in the lumbar and low thoracic regions.

This treatment approach did not eliminate her pain, but the patient was happy with the overall reduction in its intensity. She felt that occasional treatment helped improve her daily functional capacity and had eliminated the severe flare-ups that she used to experience.

Late last year (August 2014), she mentioned that her hamstrings on the right felt particularly tight. I decided to structure the treatment around the *jingjin* approach by employing the Bladder *jingjin*. This involved inserting several needles into the *ah shi* points on the upper calf and hamstrings (i.e., lateral and medial, but primarily lateral). The needles were inserted to depths of 1—1.5 cun so that the needle penetrated the tender tissue changes identified on palpation. This treatment produced rapid relief of the hamstring tightness (which was the main intention) and her low back pain. Within 24 hours the low back pain had subsided to a minimal level.

On several return visits over the next few months, the relief of the low back pain persisted. At her last visit (5 months after the *jingjin*-based treatment) the low back pain had virtually disappeared (her VAS was 0—2), her morning stiffness was much less, and the excessive muscle tone in her lower back and low thoracic spine was remarkably reduced. The *jingjin* treatment was not repeated in any subsequent treatment.

She reported that she felt her need for treatment had lessened and that she intended to see me on a much less frequent basis.

3. Discussion

In contemporary acupuncture practice, many alternative models are available to treat any particular presentation. These models determine the shape (e.g., point selection, needle technique) and the intention (i.e., desired effect) of the acupuncture treatment. The *jingjin* system is one such model.

This report highlights the value of changing the models used for diagnosis and treatment when it is apparent that previous approaches have been, at best, only partially successful. It also details an example of a particularly successful outcome of a treatment based on the *jingjin* model of acupuncture.

The *jingjin* have been variously translated as "tendinomuscular meridians" [6], "sinew channels" [7,8], "muscle channels" [9], and "meridian sinews" [10]. They were first mentioned in the *Neijing* (Second Century CE) [11] and are featured in modern texts, but have been little used in recent clinical practice. There has been some recent interest in the *jingjin* model in Chinese literature [12—14].

Jingjin treatments are aimed at the muscular system. They essentially involve needling the *ah shi* points along chains or pathways of myofascial tissue. The needles are inserted to a depth that is indicated by the tissue changes detected by palpation and the need to protect vulnerable structures in the immediate vicinity.

There are 12 *jingjin*, one associated with each main meridian. The pathways were described in the original *Neijing* material and have since been re-examined by this author to clarify the specific tissues associated with each pathway. In general, the tissues within a particular pathway share many structural, biomechanical, and neuromuscular features.

The Bladder *jingjin* was used in this patient. It runs from the plantar fascia on the sole of the foot through the Achilles tendon, the calf muscles, the hamstrings, the sacrotuberous ligament, the paraspinal muscles, and occipito-frontalis, and ends between the eyes (Fig. 1). The part of the *jingjin* used in the treatment was between the upper calf and the hamstring origin on the ischial tuberosity.

The *jingjin* model provides at least two substantial clinical benefits. First, it facilitates the successful

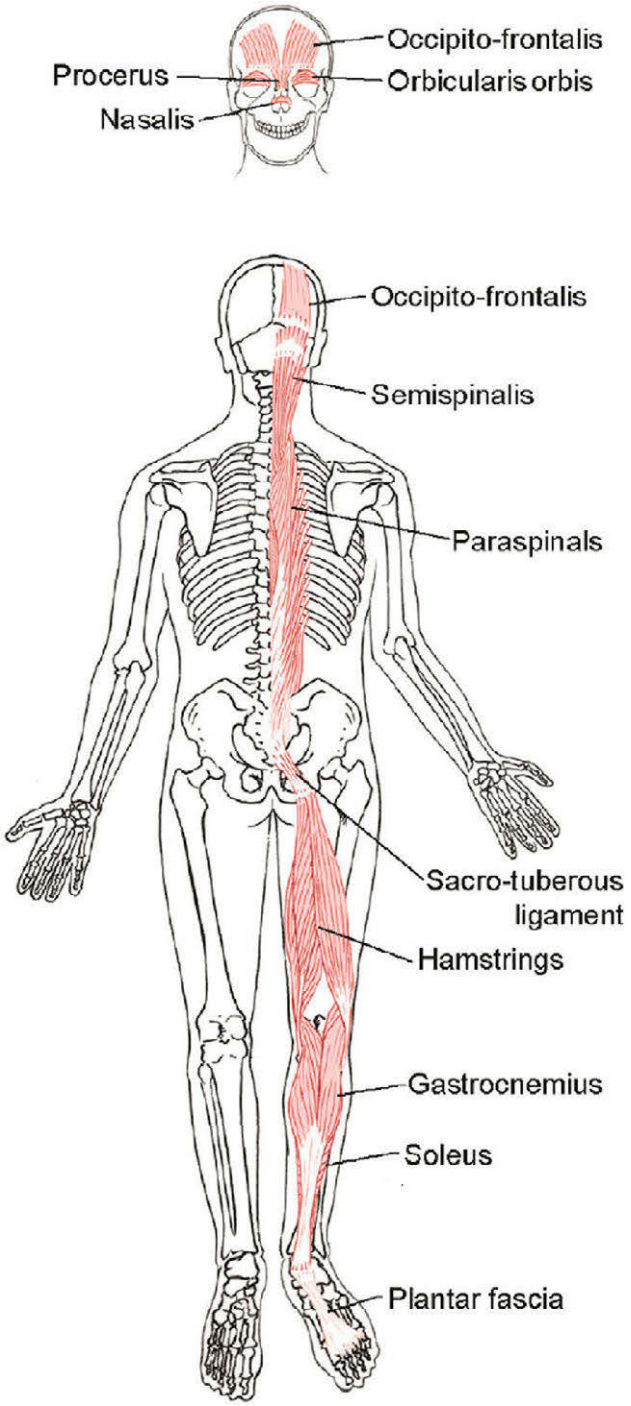

Figure 1 The Bladder *jingjin*.

treatment of pain caused by myofascial trigger points, which is the most common cause of musculoskeletal pain. Second, it encourages the needling of tight chains of tissue to reduce strain and relieve pain. In simple biomechanical terms, releasing a tight chain reduces the strain on a symptomatic area that is in effect a weak link.

Trigger points in the hamstrings do not refer pain to the low back [15]. Therefore, it is the second benefit that likely provided the relief in the patient under discussion.

The association between low back pain and hamstring tightness or shortness is well recognised but poorly understood [16]. Clearly this tightness can be a consequence of chronic low back pain [17—22], either as a secondary response to sciatic nerve root irritation [16] or other reflex protective mechanisms.

The possibility that hamstring tightness could be a cause of back pain has been investigated in adolescents [23—25], but has provided no clear answer.

Tight or short hamstrings restrict trunk flexion. They do this by restricting forward pelvic rotation through their attachment on the ischial tuberosity and by exerting pressure on the sacrum through the sacrotuberous ligament. The superficial fibers of the biceps femoris attachment are continuous with those of the sacrotuberous ligament [26], which is why this ligament is included as part of the Bladder *jingjin*.

The natural history of chronic back pain involves a gradual recovery (40—70% annually). The evidence shows that treatment efficacy tends to be less [27]. It is therefore safe to say that a sudden and dramatic improvement in a patient with chronic low back pain is out of the ordinary and deserves examination.

How did the treatment administered to this particular patient result in such a dramatic improvement in long-standing low back pain? The patient was familiar with all aspects of the treatment experience and had no reason to expect a different outcome than usual and was not going through any significant life changes; therefore, there is nothing to suggest that a placebo-type effect was responsible for the relief.

There are two possibilities that are worth considering. First, it is possible that the *jingjin* treatment simply improved the extensibility of the hamstrings through local and simple reflex effects. This action then sufficiently reduced the strain on the tissues of the low back to eliminate the pain. This would imply that the pain she was experiencing was a simple case of nocioception arising from mechanical strain. Even if the complex nature of chronic pain is ignored, her lack of a substantial response to previous manual therapy and acupuncture treatment suggests that this is not the circumstance. However, if needling were to produce a more substantial relaxation and extensibility of the hamstrings than repetitive stretching, then perhaps such profound effects on the lower back are possible. It is worth considering the possible effects on the transitional vertebra at S1/S2 in this context. A reduction in the tension in the myofascial chain that runs through the hamstrings (especially the biceps femoris) and the sacrotuberous ligament would have a direct influence on the forces acting on this segment, which may well be the weak link.

The second possibility is that the benefits of acupuncture treatment using the *jingjin* model extend beyond simple local and biomechanical responses. The effects of needling are widespread [28,29] and the overall therapeutic response can be because of a combination of different mechanisms. These could include local mechanical effects, simple segmental reflex activity, changes to dorsal horn neurons, reflex sympathetic changes, and alterations in the function of a wide range of centres in the brain.

The tissues associated with a particular *jingjin* pathway such as the Bladder *jingjin* have a structural, biomechanical, and neurological relationship, which is likely reflected

in the central nervous system. To produce the changes, the afferent stimulation from needling the hamstrings could interact with the pathways involved in the chronic nociception and pain experienced by this patient.

This case study supports several courses of action: (1) an acupuncturist should always modify techniques used if results are less than satisfactory; (2) the *jingjin*/meridian sinews model should be further explored; and (3) the hamstrings are worth needling in patients with low back pain. Future research should decide whether needling provides greater improvements in hamstring extensibility and length, compared with stretching.

Disclosure statement

The author has neither financial interests nor conflicts of interest to declare in relation to the material in the manuscript.

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