

Acupuncture And Sciatica

عرق النسا و الوخز بالإبر الصينية

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الخلاصة:

الوخز بالإبر هو أقدم وسيلة معروفة للعلاج وقد مورس في الصين لما يزيد عن ثلاثة آلاف عام. وقد أعدت منظمة الصحة العالمية للامم المتحدة عدد من الامراض التي تستجيب للعلاج بالإبر الصينية منها الصداع والصداع النصفي، الام اسفل الظهر، عرق النسا وغيرها. تقشي او أنتشار عرق النسا حوالي ٣-٥% ومتساوي لكلا الجنسين. ويعد تكهن اغلب المرضى المصابين بعرق النسا جيد ولكن ٣٠% منهم يعانون من الالم لمدة سنة واحدة او اكثر.

الهدف من الدراسة: تقييم فعالية العلاج بالوخز بالإبر الصينية لمرضى عرق النسا.

المرضى والطرق: دراسة شدة الوجع لثمانية عشر مريضا مصابين بعرق النسا من كلا الجنسين حيث تتراوح اعمارهم بين ٣٠-٦٠ سنة تم تقسيمهم الى مجموعتين، تسعة مرضى لكل مجموعة، المجموعة الاولى عولجت بالوخز بالإبر الصينية، وعولجت المجموعة الثانية بالعلاج الطبي الاساسي اضافة للوخز بالإبر الصينية حيث خضع كل مريض الى ١٠ جلسات خلال اربعة اسابيع، وقد تم العلاج في مستشفى الامام الرضا (ع) و العيادة الخاصة للدكتور سيد جواد مجتبوي في مدينة مشهد المقدسة في ايران للفترة من شباط ٢٠١٢ ولغاية ايار ٢٠١٢.

تم استخدام برنامج SPSS لاجراء التحليل الاحصائي للنتائج المستخلصة.

النتائج: عند المقارنة في فعالية العلاج (قبل وبعد العلاج) وجد ان هنالك نقصان معنوي في شدة الوجع في كلتا المجموعتين ولكن عند مقارنة فعالية العلاج بين المجموعتين وجد انه ليس هنالك فرق معنوي بينهما.

الاستنتاج: ان العلاج بالوخز بالإبر الصينية فعالا لتقليل شدة الألم للمرضى المصابين بعرق النسا.

التوصيات: يمكن استخدام الوخز بالإبر الصينية لعلاج عرق النسا او على الاقل علاج اعراضه كالألم.

مفردات البحث: الإبر الصينية، عرق النسا، الألم.

Abstract:

Traditional Chinese Acupuncture has a history of over 3,000 years. The World Health Organization recommends the use of acupuncture treatment for many diseases including headaches, migraine, low back pain, sciatica and others. The prevalence of sciatica is about 3% - 5%, and equally common in men and women. In most patients, the prognosis is good, but up to 30% will have pain for one year or longer

Objective: To prove that acupuncture is effective in treating sciatica.

Patients and method:

This study was carried out on 18 cases of chronic sciatica from both genders, aged 30-60 years. Patients were randomly divided into 2 groups, 9 cases in each group, 1st group received acupuncture treatment while 2nd group received conventional medical treatment like NSAID as diclofenac and muscle relaxant as baclofen in addition to acupuncture, in both groups patients received 10 sessions of real acupuncture for 4 weeks, Those 18 patients were treated in Emam Reza Hospital in Mashhad city in Iran and in private clinic of Dr. Mojtabavi over a period from February 2012 till May 2012. Statistical analysis was done by using SPSS in which independent t-test was used to compute significance.

Result: on comparing the effect of treatment in both groups separately i.e. before and after therapy, show there is significant decrease in the intensity of pain in both groups. But on comparing the effect of treatment between groups found there is no significant difference between them.

Conclusion: acupuncture is effective, in reducing the intensity of the pain, for sciatica.

Recommendation: acupuncture can be used to treat, as least painful symptoms of, sciatica.

Keywords: acupuncture, sciatica, pain.

INTRODUCTION

Traditional Chinese Acupuncture has a history of over 3,000 years (1). The term "Acupuncture" consists of two words from the Latin: *acus*: needle and *puncture*: insertion. It is a treatment procedure in which, generally, steel needles are inserted into specific acupuncture points (2). Acupuncture techniques: can be categorized into two groups:

1- Therapies that involve the insertion of thin, solid, dry needles into tissue (sometimes referred to as “needling”) where the needles are stimulated either manually or electrically (electroacupuncture), or both.

2- Therapies that involve other “non-needling” acupuncture techniques include the stimulation of acupuncture points or other areas of the body with finger pressure (acupressure) or suction (cupping). Heat can also be applied to acupuncture points by burning small pieces of the dried mugwort plant on the surface of the skin, a technique known as moxibustion. Lasers or electric current delivered through surface electrodes may also be used to stimulate acupuncture points (3, 4). There are two models of acupuncture practice; the first is the traditional Chinese approach. This is based on theories describing flows and blockages of vital energy or qi (pronounced “chi”). Needling or other forms of stimulation of acupuncture points are considered to provide access to energy circulating through the body along channels known as meridians, yielding therapeutic benefits for a wide range of conditions. Often the acupuncture treatment provided by therapists adhering to the traditional Chinese approach will be individualized according to the patient’s symptoms and signs, as interpreted within the theories of Chinese medicine (3, 4). The treatment may also include herbal preparations and advice on lifestyle and diet(4).

The second is “modern” acupuncture, also known as “medical acupuncture”. This is commonly used by medical practitioners and other therapists trained in Western biomedicine. Here diagnosis is more likely to be based on conventional history taking and physical examination, with acupuncture seen as just one of several therapeutic options that could be offered to the patient. Practitioners of modern acupuncture are generally less likely to adhere to the traditional Chinese theories relating to energy flows, believing instead that acupuncture stimulates nerve endings (4, 5). Therapeutic functions of acupuncture can be summarized into three main areas regulatory effects, analgesic effects and rehabilitation effects (6). There are many theories for analgesic effects of acupuncture:

The first theory(Transmission of pain impulses along acupuncture channels) is that most pain impulses travel along the same pathways as those of the traditional Qi circulation (i.e. the channels). These pathways are closely related with channel theory in TCM(7). Another theory(Pain-gate theory) suggests that pain impulses are blocked from reaching the spinal cord or brain at various ‘gates’ within the nervous system. Research studies have shown that both peripheral and central nerves are very important in pain relief by acupuncture. In the peripheral nervous system acupuncture when used to treat pain can, firstly, block the conduction of sensory fibers in the algietic nerves; secondly, it can cause downward inhibition of the dorsal horn cell conduction in the spinal cord resulting from the noxious stimulation. It is the peripheral nerves that receive and conduct the acupuncture ‘message’; the II, III and IV fibers could all participate in the pain-relief process. In the central nervous system the structures at various levels, including the spinal cord, brain stem, thalamus, caudate nucleus and cortex, participate in the process of pain relief by acupuncture(7).

A third theory suggests that acupuncture stimulates the brain’s production of polypeptides that reduce pain sensitivity. Scientists have discovered that one of its possible mechanisms is that it increases the release of natural pain-relieving molecules known as endorphins by the brain. These are very similar to opiates (such as morphine), which are potent anaesthetic agents. In China this work was performed and directed in the 1970s by Professor Han Jisheng, an internationally known researcher of acupuncture, when a research program to study acupuncture induced anaesthesia was initiated during the Cultural Revolution. His studies showed that

electrical stimulation of inserted acupuncture needles caused release of different amounts of endorphin compounds into the central nervous system. This is the key mechanism that is most widely used as explanation for the effect of acupuncture treatment in relieving pain. This is not a complete explanation, however, of all of acupuncture's pain-alleviating mechanisms, because acupuncture has other physiological effects besides decreasing pain sensitivity. For instance, it often increases local blood circulation in areas of muscle spasm, and can decrease the muscular contraction that often causes or contributes to painful conditions. Thus, local actions such as decreasing tissue swelling (due to better blood circulation) and lessening muscle spasm may, in turn, release pressure on nerves or interior organs, contributing to the pain relief⁽⁷⁾. Another theory suggests a central nervous system connection that induces the production or secretion of other chemicals in the body such as neurotransmitters, hormones and lymphokines, etc. In particular, acupuncture may bring about the following biochemical changes⁽⁷⁾.

Serotonin changes: the higher the level of 5-HT that is recorded, the greater is the level of pain relief. Acupuncture, and especially electroacupuncture, can increase the level of 5-HT, which helps to increase the pain threshold. For instance, Zhu Dinger has reported that high serotonin levels can be detected in the thalamus, medulla oblongata and midbrain when electroacupuncture is used for sedating pain⁽⁷⁾.

Acetylcholine changes: other studies have shown that, when the pain threshold is raised by the use of acupuncture, a high level of acetylcholinesterase is recorded in the cerebral cortex, caudate nucleus and hypothalamus, and when the threshold is artificially decreased, a low level of acetylcholinesterase is recorded. It appears, therefore, that the level of acetylcholine (Ach) could play an important role in acupuncture pain relief⁽⁷⁾.

Catecholamine changes: the results of some studies indicate that noradrenaline (NA) has the opposite effect in pain relief. That is, when the pain threshold is raised and pain relief is obtained, there is a low level of NA recorded in the cortex, hypothalamus, brain stem, spinal cord and striate body. It is also very interesting to observe that dopamine (DA) levels increase in the caudate nucleus when the pain threshold is raised by electroacupuncture, and in addition the level of homovanillic acid (HVA), one of the products of the metabolism of DA, is high in the midbrain and hindbrain. In short, acupuncture achieves its effects by working with the body's own chemicals, rather than the addition of synthetic chemicals. This approach has several advantages over drug-based medicine⁽⁷⁾.

Psychological and cultural factors are also important in pain. It is believed that many psychological modalities, including formal relaxation and distraction training as well as clear explanations before giving acupuncture, may directly ameliorate pain and increase the person's positive attitude to the treatment. Conversely, because of cultural differences, Chinese people find it easier to undergo acupuncture treatment for pain syndrome than do Westerners, which in turn results in less muscular tension, cramp and nervousness. All these are very important for achieving the therapeutic result. Recently, it has been commonly believed, particularly by medical practitioners, that the effect of acupuncture on pain is a form of hypnosis, or can be explained by the 'placebo effect', but there is lack of evidence for this belief. Studies have shown, conversely, that there is no correlation between capacities to be hypnotized or belief in the treatment and the subsequent results. People who receive acupuncture and do not believe that it will help are just as likely to respond to it as people with full faith in the treatment. The successful use of acupuncture to treat many animal diseases is one of the best arguments that the effect of acupuncture on pain is not a form of

hypnosis⁽⁷⁾. Sciatica, more accurately termed lumbar radiculopathy, is a syndrome involving nerve root impingement and/or inflammation that has progressed enough to cause neurological symptoms (e.g. pain, numbness, paraesthesia) in the areas that are supplied by the affected nerve root(s) ⁽⁸⁾. Sciatica is almost invariably accompanied or preceded by back pain, and mobility is often affected ⁽⁹⁾. Indicators for sciatica include unilateral leg pain that is greater than low back pain; pain radiating to the foot or toes, numbness and paraesthesia; increased pain on straight leg raising, and neurological symptoms limited to one nerve root ⁽¹⁰⁾. The prevalence of sciatica is about 3% - 5%, and equally common in men and women ⁽⁸⁾, in most patients, the prognosis is good, but up to 30% will have pain for one year or longer ⁽¹¹⁾. Sciatica is, mainly about 90%, caused by a herniated disc involving nerve root compression. However, lumbar canal stenosis or foraminal stenosis and (less often) tumours or cysts are other possible causes ⁽¹²⁾. Pathophysiologically, sciatica in patients with disc disease was long ascribed to pressure put on the sciatic nerve root by a herniated disc. However, a role for chemical factors acting in conjunction with this mechanical insult is suggested due to many causes including: disc surgery does not consistently provide pain relief⁽¹³⁾, large disc herniations are not always symptomatic ⁽¹⁴⁾, severe pain may be found in patients without imaging evidence of nerve root compression ⁽¹⁵⁾, the severity of symptoms and neurological signs is not well correlated with the size or type of the disc herniation ^(16,17), and conservative therapy is often effective ^(18, 19). Experimental studies have provided further evidence for a chemical component: disc herniations can undergo spontaneous resorption ⁽²⁰⁾, the intervertebral disc is immunogenic ⁽²¹⁾, and mediators for inflammation have been identified within intervertebral disc tissue ^(22,23). The current pathophysiological theory incriminates proinflammatory substances secreted by the nucleus pulposus (NP). When preexisting or concomitant mechanical injury to a nerve root occurs, these substances can cause nerve root pain ⁽²⁴⁾.

Animal experiments have established that the NP can induce functional and structural nerve root abnormalities in the absence of mechanical compression and that this effect is mediated by substances located at the surface of NP cells ⁽²⁴⁾.

OBJECTIVE:

To prove that acupuncture is effective in treating sciatica.

PATIENTS AND METHOD:

This study was carried out on 18 patients with chronic sciatica, and from both genders. The age of the selected patients was 30-60 years, with duration of complaint about 3 months and more from sciatica with the following criteria (the pain is burning or tingling in nature, either localized to low back and buttocks or radiate to the thigh or below the knee or even to the big toe, intensity of the pain is moderate to severe but there is no serious neurological signs, MRI findings were negative). Patients in the past 3 months received conventional treatment like NSAID as diclofenac and muscle relaxant as baclofen but without improvement. The patients were randomly divided into 2 groups, 9 cases in each group, 1st group received acupuncture (AP) only while 2nd group received acupuncture plus conventional (CO) medical therapy, in both groups patients received 10 sessions of real acupuncture for 4 weeks, three sessions per week in first two weeks then twice weekly. There were several common approaches including: bilateral points; usage of disposable, sterile steel needles (0.25mmX40 mm); skin disinfection with 70% alcohol; needles in place for 20-30

minutes with electrical stimulation and infrared light directed to the painful area; Tuina (Chinese massage include rolling, pressing/kneading and pushing were performed to relax muscles and open the meridians) was applied with each acupuncture session in duration about 10-15 minutes. Real acupuncture treatment was individualized based on the principles of TCM. These eighteen patients were treated in Emam Reza Hospital in Mashhad city in Iran and in private clinic of Dr. Mojtabavi over a period from February 2012 till May 2012; the patients record the intensity of the pain, before the beginning of first session of acupuncture and after the last session in the fourth week, in both groups for studying the effect of each group alone by comparing before and after acupuncture, in addition to comparing between them to evaluate effectiveness of acupuncture only versus acupuncture plus conventional medication in treatment of sciatica. Intensity of the pain is measured on an 11-points pain intensity numerical rating scale (PI-NRS), where 0=no pain, 1-3=mild pain, 4-6=moderate pain and 7-10= severe pain. Statistical analysis was done by using SPSS in which independent t-test was used to compute significance (P-value < 0.05 regarded as significant).

RESULTS

1-Effect of the treatments, acupuncture or acupuncture plus conventional medication, on reduction the intensity of pain: show table (1) and figures (1) and (2)

Table (1): A comparison the effects of both treatments (before and after treatment) on reduction the intensity of pain.

		Mean	No.	S. D	P- value
Pair 1	AP-BEFORE	6.8889	9	0.78174	<0.001
	AP-AFTER	4.4444	9	1.01379	
Pair 2	AP+CO BEFORE	7.22	9	0.833	<0.001
	AP+CO AFTER	3.78	9	0.667	

AP=acupuncture; CO= conventional treatment; SD= standard deviation;
No. = number of patients; PI= pain intensity

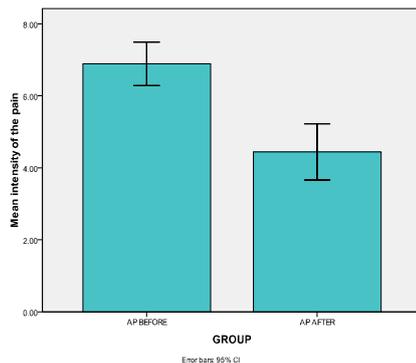


Figure (1): Effect of AP on PI.

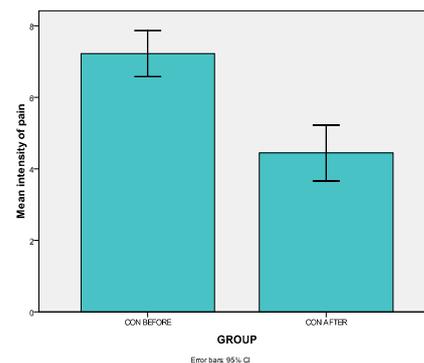


Figure (2): Effect of AP+CO on PI.

Intensity of the pain is assessed by numerical rating scale (PI-NRS), in both groups, before first session and after the last session of acupunctures. There were highly significant differences in the treatments of both groups when comparing before and after treatments.

2- Effect of acupuncture versus acupuncture plus conventional treatments on the reduction of intensity of pain: show table (2)

Table (2): A comparison the effects of treatments between both groups.

GROUP	No.	Mean	S. D	P- value
AP AFTER	9	3.78	0.667	0.119(NS)
AP+CO AFTER	9	4.44	1.014	

NS = not significant

There was no significant difference when comparing between the effect of the acupuncture treatments versus acupuncture plus conventional treatment on reduction the intensity of pain.

DISCUSSION:

Sciatica in Traditional Chinese Medicine can be considered as back pain⁽²⁵⁾. The intensity of the pain was significantly decreased more after than before acupuncture treatments in both groups. This result agrees with Thomas et. al. 2006⁽²⁶⁾ found there was stronger evidence for acupuncture over usual care in the long term of low back pain, also Haakeet. et al. 2007⁽²⁷⁾; Rathmell 2008⁽²⁸⁾; Cherkinet. et al. 2009⁽²⁹⁾; Berman et. al. 2010⁽³⁰⁾ concludes acupuncture was significantly more superior and effective than usual care in reducing chronic low back pain. Yuan 2008⁽³¹⁾ found that acupuncture better, or at least as, standard medical care for back pain. Wang 2009⁽³²⁾, Chen 2009⁽³³⁾, Inoue 2008⁽³⁴⁾, Wang 2004⁽³⁵⁾ found acupuncture provides some pain relieve in sciatica. Feng 2002⁽³⁶⁾; Zhou Yi (2005)⁽³⁷⁾ founds acupuncture is very effective for the treatment of sciatica. Nefyn H Williams (2011)⁽³⁸⁾ regards the acupuncture is one of the possible effective treatment of sciatica. Ali Aminlari (2011)⁽³⁹⁾ concludes acupuncture had a significant effect on pain in patients with lumbar canal stenosis. While Furlanet. al. 2005⁽⁴⁰⁾ found the acupuncture was no more effective in reducing pain than conventional therapy but when conjunct together causing greater pain reduction. However, Acupuncture can help in reducing or relieving back pain and sciatica by different mechanisms including stimulating nerves located in muscles and other tissues, which leads to release of endorphins and other neurohumoral factors, and changes the processing of pain in the brain and spinal cord⁽⁴¹⁾, reducing inflammation, by promoting release of vascular and immunomodulatory factors^(42, 43), muscle stiffness and joint mobility improved by increasing local microcirculation⁽⁴⁴⁾, causing a transient change in sciatic nerve blood flow, including circulation to the cauda equine and nerve root. This response is eliminated or attenuated by administration of atropine, indicating that it occurs mainly via cholinergic nerves^(34, 45), influencing the neurotrophic factor signaling system, this is important in neuropathic pain⁽⁴⁶⁾, increasing levels of serotonin and noradrenaline, which can help reduce pain and speed nerve repair⁽⁴⁷⁾, improving the conductive parameters of the sciatic nerve⁽⁴⁸⁾, promoting regeneration of the sciatic nerve^(49, 50). The World Health Organization in 2003⁽⁵¹⁾ recommends the use of acupuncture treatment for many diseases including low back pain, sciatica and others.

CONCLUSION:

Acupuncture is effective, in reducing the intensity of the pain, for sciatica treatment.

RECOMMENDATIONS:

1- Acupuncture can be used to treat, as least painful symptoms of, sciatica.

- 2- A comparison of the long-term follow up of sciatica treated by acupuncture versus acupuncture plus conventional medical treatment.

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