

Review Article

Acupuncture Therapy: An Effective Intervention for Acute Low Back Pain

Sun Z¹, Bi Y² and Ji C^{2*}¹Shaanxi University of Traditional Chinese Medicine, Xianyang, China²Shaanxi Hospital of Traditional Chinese Medicine, Xi'an, China***Corresponding author:** Changchun Ji, Department of Acupuncture, Shaanxi Hospital of Traditional Chinese Medicine, No. 4 Xihua Gate, Xi'an, Shaanxi, 710003, China**Received:** February 14, 2022; **Accepted:** March 09, 2022; **Published:** March 16, 2022**Abstract**

Acute low back pain is a relatively common case in the emergency department, and the currently used therapeutic measures can hardly meet the need for immediate relief of patients' low back pain and functional impairment. This study examines the scientific validity and feasibility of acupuncture intervention in the emergency department for this condition and attempts to provide new treatment ideas that can enrich the treatment of acute low back pain. The text demonstrates the scientificity of acupuncture intervention in acute low back pain from three aspects, including the effectiveness of acupuncture therapy in treating the disease and clinical experimental studies and basic research; it also shows the specific acupuncture points and operation steps required for acupuncture therapy in the form of diagrams, which makes acupuncture therapy operable in clinical use. The use of acupuncture therapy should be attempted in future emergency clinical practice with the aim of promoting its use in the treatment of acute conditions.

Keywords: Acute low back pain; Acupuncture; First aid technology; Prompt treatment**Introduction**

Acute low back pain (ALBP) is one of the more common acute pains in the emergency department, which refers to simple acute lumbar sprain or non-specific acute low back pain excluding lumbar fracture, tumor and spinal slip. The cause is mainly mechanical external force damage, such as lifting heavy objects, twisting the lumbar region, or prolonged sitting, operating vibrating tools, etc. ALBP has become the leading cause of activity limitation and work absenteeism worldwide, causing a huge economic burden to society and will become the leading cause of disability in the global population [1].

Due to the few studies on the molecular biology of ALBP, there is a lack of targeted drug interventions, mainly based on physical therapy, exercise therapy, and anti-inflammatory and analgesic treatment [2]. Although it can temporarily alleviate the symptoms, it cannot meet the demand for rapid relief of pain and discomfort of patients. In contrast, acupuncture therapy in Chinese medicine for analgesia has been widely proven [3-5], especially in the treatment of ALBP as a safe and efficient intervention, and is gradually accepted by the majority of patient groups [6-9], and 20.0% of the guidelines in the last 20 years in Europe and the United States for low back pain recommend the application of acupuncture therapy [10].

Study on the Effectiveness of Acupuncture Therapy Intervention for ALBP

In the management of ALBP, pain and lowback dysfunction are the predominant symptoms, which are mostly treated symptomatically with opioids for analgesia; however, opioids have short-term side effects of constipation, nausea and increased risk of fracture [11]. In the clinical practice guidelines for acupuncture in low back pain, acupuncture is recommended as a high-quality intervention for the

treatment of ALBP [12]. In terms of evidence provided by evidence-based medicine, Wu B et al. [13] found better safety and efficacy of acupuncture interventions for ALBP based on evidence provided by reticulated meta, especially manual acupuncture deserves clinical promotion, while Su X et al. [14] found that acupuncture was effective in improving VAS scores and ODI scores in patients with ALBP through meta-analysis, thus positively improving patients' low back pain and functional impairment symptoms. We will demonstrate the effectiveness of acupuncture therapy intervention in ALBP in terms of clinical experimental studies and cellular molecular mechanisms.

Clinical Experimental Study of Acupuncture Therapy Intervention for ALBP

In terms of clinical experimental studies, the effectiveness of acupuncture in the treatment of ALBP has also been verified. For example, Su JT et al. [15] found that carpal and ankle needling could provide immediate analgesia in comparison to sham acupuncture and concluded that carpal and ankle needling analgesia is mainly achieved through neuroreflex modulation. In addition, the floating needles in acupuncture therapy have also been studied and confirmed to have better efficacy. For example, Li NG et al. [16] found that floating needles can efficiently treat ALBP and achieved satisfactory clinical efficacy, while a study further compared the difference in the effect of floating needles and general analgesics on ALBP and concluded that the efficacy of floating needle therapy intervention in this disease is due to analgesic drugs [17], in addition to the exploration of the timing of the immediate analgesic effect of floating needles [18], which concluded that floating needle therapy has a positive The immediate analgesic effect of floating needle therapy on ALBP was found to be more rapid and the analgesic effect was stronger and more sustained compared with traditional acupuncture. In addition, the Chinese Journal of Emergency Medicine has more clinical research

Table 1: Commonly used acupoints and body surface positioning for the emergency department of ALBP.

Acupuncture points	Location of acupuncture points	Acupuncture operation
1. Wrist ankle acupuncture	Most of the lumbar pain areas are in zones 5 and 6 of the human body, upper 5: the center of the back of the wrist, i.e., the area of the "Waiguan "(SJ 5); upper 6: the back of the ulnar margin on the little finger side; lower 5: the outer side, against the posterior edge of the fibula. Mainly for arthralgia, ankle sprains, etc. Lower 6: against the outer edge of the Achilles tendon.	After routine disinfection, hold the needle handle with three fingers, with the needle body at a 30° angle to the skin, and twist the needle handle lightly with the thumb so that the needle tip passes through the skin quickly. After the tip of the needle through the skin, that is, the needle is flattened, the tip of the needle will then pick up the skin needle 0.2cm size of the mound, the needle body close to the surface of the skin, along the longitudinal straight line direction into the needle along the subcutaneous, the needle into the subcutaneous length is generally 35mm, the requirements do not appear sore, numb, swelling, pain and other sensations, the needle body to stay in the subcutaneous tissue of the shallow layer, retain the needle 30min. acute cases daily needle 1 time.
2. Dong's special points	Erjiao Ming (in the central line of the first knuckle of the middle finger on the back of the palm, with two points taken in thirds between the two knuckles), Zhong Bai (between the little finger bone and the ring finger metacarpal bone on the back of the hand, 0.5 inch from the joint between the finger bone and the metacarpal bone), and Xia Bai (between the little finger metacarpal bone and the ring finger metacarpal bone on the back of the hand, 1.5 inches from the joint between the finger bone and the metacarpal bone)	The patient is placed in a seated position with the back resting on the back of the chair, a 1-inch disposable acupuncture needle is used, the skin is sterilized, and the Erjiao Ming point is first stabbed flat against the bone, slightly oblique to the direction of the little finger, and then the Zhongbai and Xiabai points are stabbed straight, while the twisting and lifting technique is performed to make the patient feel sore, numb and swollen. For left-sided lumbar sprains, the right side is needed; for right-sided lumbar sprains, the left side is needed.
3. Houxi (SI 3) and Yanglao (SI 6) points	Houxi point (SI 3) (slightly clenched fist, distal side of the posterior ulnar side of the 5th finger metacarpal joint, at the head of the transverse palm stripe at the red and white flesh interval). Nourishing point (SI 6) (with the palm of the hand facing the chest, when the ulnar styloid process is in the depression of the radial suture of the bone)	The 1-inch disposable acupuncture needle was used, and the patient was asked to take a sitting or standing position, with the elbow joints bilaterally flexed and the wrist joints exposed. Before the operation, the acupuncture points and their surrounding skin were routinely disinfected with 75% alcohol, and the patient was first taken to one side of Houxi , Yanglao, and the needles were stabbed into the two points about 15-20 mm, and given a strong stimulation technique of lifting and twisting, to the extent that the hand appeared to be radiating to the elbow or fingers, and the technique lasted about 1 min, and then the patient was instructed to get up and do lumbar movements, such as forward bending, backward leaning, and twisting, without excessive pain and as much as possible, The whole movement was slow and even, and if the pain was tolerable, the amplitude of the activity could be gradually increased, and the duration of the activity was 5 min, and then the contralateral Houxi (SI 3) and Yanglao (SI 6) points were needed again, with the same technique as before, alternately, for a total of about 30min.
4. The most painful point of the lumbar region and the point of lumbar pain	The most painful point in the lumbar region is at the back of the lower back, where the patient is in the most pain by the practitioner's pressure. The point of lumbar pain is on the back of the hand, when the midpoint of the transverse wrist and metacarpophalangeal joint, between the second and third metacarpal bones and the fourth and fifth metacarpal bones, 2 points on one side.	Patients take the prone position, in the waist to find the most painful point, with 75% alcohol cotton ball routine sterilization, take 0.35 mm × 40 mm sterile acupuncture needle, vertical straight stab a needle, into the needle depth of 1 ~ 1.5 inches, and then this point as the center, up and down about 2 inches, the tip of the needle pointing to the center, the angle of 45° oblique stab twist into the needle, in order to get gas is good, the needle closed and then use the finger to follow the skin around the needle body, in order to promote get After starting the needle, the patient was instructed to take a standing position, and the point of lumbar pain was selected for acupuncture with both hands, and after routine disinfection with 75% alcohol cotton balls, a sterile acupuncture needle of 0.35mm×40mm was taken, and the tip of the needle was inserted at an oblique angle of 45° upward, and acupuncture was used to obtain gas, Gradually, the needle was left for 30 min and started.

literature reporting cases of efficient intervention of acupuncture therapy in ALBP [19-22], which also confirms our view. It is evident that acupuncture has made greater progress in clinical studies, and the efficacy has been verified.

Study on the Mechanism of Acupuncture Therapy Intervention in ALBP

Regarding the research on the evidence of molecular mechanism of acupuncture intervention for ALBP taking effect, it is believed that acupuncture can reduce serum inflammatory cytokine levels and

inhibit early inflammatory response, thus effectively relieving ALBP lumbar pain symptoms [23-25]. In contrast, Li G [26] found that acupuncture of lumbar pain points combined with McKenzie therapy was clinically effective in patients with ALBP and significantly relieved their pain symptoms, which may be related to the reduction of serum osteoprotegerin, DKK-1 and sclerostin levels.

In addition, in the study of brain mechanism of acupuncture for ALBP, Liu ZP et al. [27] observed the alteration of intracerebral pain matrix of ALBP by acupuncture supported by functional magnetic resonance imaging (fMRI) technique of brain and concluded that

acupuncture can cause S1 and S2 signal alteration in brain, while intracerebral S1 and S2 can process pain sensory components, so acupuncture can play a role in the treatment of ALBP. In conclusion, acupuncture can produce certain effects on the peripheral and central parts of the body making it possible to rapidly relieve low back pain in ALBP patients.

Common Acupuncture Points and Body Surface Positioning for ALBP Emergency Department

According to the needs of emergency clinical practice, acupuncture interventions for ALBP should try to use acupoints that are simple to obtain, safe and have stable efficacy, such as Wrist ankle acupuncture (zone 5 and zone 6), Dong's special points (Erjiao Ming, Zhongbai and Haibai), Houxi (SI 3) and Yanglao (SI 6) points, the most painful point of the lumbar region and the point of lumbar pain. In addition, combined with the operational requirements, they can meet the need for efficient emergency treatment of ALBP and achieve satisfactory results. The relevant acupoints positioning and operation are shown in Table 1.

In addition, there are also the Weizhong (BL 40) and Shuigou (DU 26) point. The phrase "Yao Bei Wei Zhong Qiu" is from the Zhen jiu da cheng, and it briefly highlights the main relationship between the back point and back diseases, meaning that all back diseases can be sought from the back point, and its effects will be answered [28]. Body surface positioning of the Guizhong point: in the posterior region of the knee, at the midpoint of the transverse popliteal stripe. The skin of the acupuncture point was routinely disinfected, and 0.32mm×40mm acupuncture needles were selected, and the needles were inserted into the acupuncture point at a 90° angle to the skin, and the needles were left in place for 30 min after obtaining Qi.

Acupuncture at the Shuigou acupuncture point for the treatment of ALBP belongs to the principle of acupuncture in Lingshu-Zhongshi, which states that "when the disease is underneath, it is taken at a high level." Therefore, acupuncture at Shuigou, an acupuncture point of the Directing Vessel, can relax the meridians of the Directing Vessel and harmonize the qi and blood, thus allowing the lumbar meridians to flow smoothly and heal the sprain [29]. The location of the Shuigou point on the body: at the junction of the upper 1/3 and lower 2/3 of the central Renzhong sulcus. Operation: The point was routinely disinfected, and the operator gently pinched the muscles from both sides of the nasolabial groove with the left hand, selected 0.32 mm×40 mm acupuncture needle with the tip of the needle upward at an angle of 15°, and then quickly pierced 0.2-0.3 inch, first rotated half a circle, then performed the needle sparrow pecking method, repeatedly performed the needle for about 1 min, while the patient was instructed to slowly move the waist, the amplitude of movement was from small to large, and the needle was retained for 15 min, and when the needle was discharged generally No pressure on the needle hole.

Conclusion

In summary, it is clear from the effectiveness of acupuncture intervention in ALBP, experimental studies applied to clinical practice and studies on molecular mechanisms that acupuncture therapy has been proven to be a scientific and effective way to intervene in ALBP. For the specificity of the emergency situation, a review of the

literature revealed that the treatment of ALBP by acupuncture of Wrist ankle acupuncture (zone 5 and zone 6), Dong's special points (Erjiao Ming, Zhongbai and Haibai), Houxi (SI 3) and Yanglao (SI 6) points, the most painful point of the lumbar region and the point of lumbar pain, as well as the Weizhong (BL 40) and Shuigou (DU 26) point are supported by evidence-based medical evidence [30], and the above points are simple to obtain, stable in efficacy, and can meet the clinical requirements in combination with the operation of the need for emergency interventions for ALBP to achieve rapid efficacy.

Using accurate point localization and following the clinical operational requirements of acupuncture, the efficacy of acupuncture therapy is stable for intervention of ALBP in emergency situations. Compared with traditional treatment modalities, acupuncture therapy also has the advantages of being easy to perform, safe and quick, and free of toxic side effects, which is easily accepted by the majority of patient groups. In addition, according to the recommendations of the American College of Physicians, acupuncture is highly recommended as one of the important treatment modalities for ALBP [31], therefore, the use of acupuncture should be emphasized in clinical practice in the emergency department, and new insights about acupuncture treatment should be constantly proposed with the aim of gradually promoting the application of acupuncture therapy in the clinical treatment of acute diseases.

Acknowledgments

This work is supported by National Natural Science Foundation of China (Project No. 82074560).

References

- Hartvigsen J, Hancock MJ, Kongsted A, Louw Q, Ferreira ML, Genevay S, et al. What low back pain is and why we need to pay attention. *Lancet*. 2018; 391: 2356-2367.
- Patrick N, Emanski E, Knaub MA. Knaub, Acute and chronic low back pain. *Med Clin North Am*. 2014; 98: 777-789.
- Wang QY, Qu YY, Feng CW, Sun WB, Wang DL, Yang TS, et al. Analgesic mechanism of acupuncture on neuropathic pain. *Zhongguo Zhen Jiu*. 2020; 40: 907-912.
- Vas J, Aranda J M, Modesto M, Benitez-Parejo N, Herrera A, Martinez-Barquin DM, et al. Acupuncture in patients with acute low back pain: a multicentre randomized controlled clinical trial. *Pain*. 2012; 153: 1883-1889.
- Yuan QL, Wang P, Liu L, Sun F, Cai Y S, Wu WT, et al. Acupuncture for musculoskeletal pain: A meta-analysis and meta-regression of sham-controlled randomized clinical trials. *Sci Rep*. 2016; 6: 30675.
- Cohen MM, Smit V, Andrianopoulos N, Ben-Meir M, Taylor DM, Parker SJ, et al. Acupuncture for analgesia in the emergency department: a multicentre, randomized, equivalence and non-inferiority trial. *Med J Aust*. 2017; 206: 494-499.
- Jan AL, Aldridge ES, Rogers IR, Visser EJ, Bulsara MK, Hince DA, et al. Patient attitudes towards analgesia and their openness to non-pharmacological methods such as acupuncture in the emergency department. *Emerg Med Australas*. 2019; 31: 475-478.
- Cohen M, Parker S, Taylor D, Smit De V, Ben-Meir M, Cameron P, et al. Acupuncture as analgesia for low back pain, ankle sprain and migraine in emergency departments: study protocol for a randomized controlled trial. *Trials*. 2011; 12: 241.
- Skonnord T, Skjeie H, Brekke M, Klovning A, Grotle M, Aas E, et al. Acupuncture for acute non-specific low back pain: a randomised, controlled, multicentre intervention study in general practice-the Acuback study. *BMJ Open*. 2020; 10: e034157.

10. Yang X Y, Zhao H, Liu J, He L Y, Liu B Y, et al. Current status of application of acupuncture in low back pain guidelines. *Zhongguo Zhen Jiu*. 2019; 39: 908-912.
11. Deyo R A, Von Korff M, Dohrenwend B. Opioids for low back pain. *BMJ*. 2015; 350: g6380.
12. Zhao H, Liu Z, Xie L, Zhu Y, Li S. Interpretation of Clinical Practice Guideline for Low Back Pain Treated with Acupuncture and Moxibustion. *Zhongguo Zhen Jiu*. 2015; 35: 1065-1068.
13. Wu B, Yang L, Fu C, Jian G, Zhuo Y, Yao M, et al. Efficacy and safety of acupuncture in treating acute low back pain: a systematic review and bayesian network meta-analysis. *Ann Palliat Med*. 2021; 10: 6156-6167.
14. Su X, Qian H, Chen B, Fan W, Xu D, Tang C, et al. Acupuncture for acute low back pain: a systematic review and meta-analysis. *Ann Palliat Med*. 2021; 10: 3924-3936.
15. Su J T, Zhou Q H, Li R, Zhang J, Li W H, Wang Q. Immediate analgesic effect of wrist-ankle acupuncture for acute lumbago: a randomized controlled trial. *Zhongguo Zhen Jiu*. 2010; 30: 617-622.
16. Li N G, Yin H M, Wang Y. Floating acupuncture for acute lumbar sprain. *Chinese Journal of Rehabilitation Theory and Practice*. 2003; 8: 57.
17. Gu J, Guo Y, Liang Y. Clinical observation of different needle retention times for acute lumbar sprain treated with float needle. *Zhongguo Zhen Jiu*. 2015; 35: 891-894.
18. Wang G, Cai W, He W, Lu W. Immediate Analgesic Effect of Superficial Needling Treating Acute Lumbar Sprain: Study of Time-Effect Law. *Journal of Clinical Acupuncture and Moxibustion*. 2018; 34: 35-39.
19. Liang H S, Sheng D, Jiang R J, Bai X W, Cao Y, Hui X S. Analysis of Therapeutic Effect on Acute Lumbar Sprain Treated by Acupuncture at Dong's Extraordinary Point. *Journal of Emergency in Traditional Chinese Medicine*. 2020; 29: 1944-1946.
20. Wang J H. Clinical observation of acupuncture combined with local exercise therapy in the treatment of acute lumbar sprain. *Journal of Emergency in Traditional Chinese Medicine*. 2017; 26: 1673-1675.
21. Wang R X, Hu Z F, Li F. Clinical observation of acute lumbar sprain treated with acupuncture combined with intramuscular effect patch. *Journal of Emergency in Traditional Chinese Medicine*. 2015; 24: 1832-1834.
22. Huang J Y. 35 cases of acute lumbar sprain treated by Tianzhu (BL 10) and Yanglao (SI 10) interactive acupuncture method. *Journal of Emergency in Traditional Chinese Medicine*. 2010; 19: 1041.
23. Zhu M, Huang W. Effect of Lingui Bafa Acupuncture Combined with Massage in Treating Acute Lumbar Sprain and Influence on Levels of Inflammatory Cytokines. *Journal of Shandong University of Traditional Chinese Medicine*. 2020; 44: 658-662.
24. Miao J, Liu H Y, Zhou W, Fu G B. Effect of Needle-warming Moxibustion Combined with Acupoint Massage on Inflammatory Factors and Lumbar Mobility of Patients with Acute Lumbar Sprain. *Journal of Clinical Acupuncture and Moxibustion*. 2017; 33: 11-14.
25. Rui Q L, Yuan S C, Hu S F, Huang M. Clinical efficacy and mechanism of contralateral needling combined with holographic moving qi therapy on carpal dorsum in patients with acute lumbago Hebei. *Journal of Traditional Chinese Medicine*. 2021; 43: 1352-1356.
26. Su G. Effect of acupuncture on low back pain points combined with Mackenzie therapy in the treatment of acute low back pain and the effect on serum osteoprotegerin, DKK-1 and sclerostin levels. *Heilongjiang Journal of Traditional Chinese Medicine*. 2019; 48: 282-284.
27. Liu Z P, Wu W, Zhang S S, Guo S G, Yang J M. Pain matrix response to acupuncture stimuli in individuals with acute low back pain: an fMRI study. *Chinese Journal of Pain Medicine*. 2013; 19: 201-205.
28. Gao J H, Wang B L, Liu W, Piao S A. Research Progress of Point BL40 in Treating Low Back Pain Based on Theory of "Yaobei Weizhong Qiu". *Journal of Clinical Acupuncture and Moxibustion*. 2020; 36: 91-94.
29. Xia Y. 68 cases of acute lumbar sprain in Africans treated mainly with acupuncture Shuigou (DU26). *Journal of Clinical Acupuncture and Moxibustion*. 2011; 27: 28-29.
30. Zhang W X, Wang M Y, Lu T, Zhu Y G, Xiao H D. Analysis of acupoint selection rule of acupuncture treatment for lumbar sprain based on data mining. *Beijing Journal of Traditional Chinese Medicine*. 2020; 39: 870-874.
31. Qaseem A, Wilt T J, McLean R M, Forcica M A, Denberg T D, Barry M J, et al. Noninvasive Treatments for Acute, Subacute, and Chronic Low Back Pain: A Clinical Practice Guideline From the American College of Physicians. *Ann Intern Med*. 2017; 166: 514-530.