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Acute Stroke

Accidents vasculaires cérébraux aigus : évaluation de l'acupuncture

Articles connexes: - accidents vasculaires cérébraux -

1. Systematic Reviews and Meta-Analysis

1.1. Generic Acupuncture

1.1.1. Huang 2024

Huang S, Wang Y, Wu Y, Huang P, Dong Y, Zhang Q, Zhao M, Zeng J, Lu L, Liu X. Acupuncture for acute ischemic stroke: A systematic review and meta-analysis of randomized controlled trials. Integr Med Res. 2024 Dec;13(4):101092. https://doi.org/10.1016/j.imr.2024.101092

Objective	Assess the safety and effectiveness of acupuncture for acute ischemic stroke (AIS).
Methods	We conducted a comprehensive search across the PubMed, Cochrane Library, Embase, Web of Science, China National Knowledge Infrastructure (CNKI), China Science and Technology Journal Database (VIP), Wanfang, and SinoMed databases from their inception until October 3, 2023. Two reviewers screened eligible randomized controlled trials (RCTs) according to criteria and extracted data using a pre-established form. Cochrane tool was used for risk of bias assessment, and Revman 5.3 was used for subsequent meta-analysis. The GRADE tool will be used to assess the quality of evidence.
Results	**Thirty-one RCTs were included, involving 3604 patients**. Meta-analysis showed that compared with conventional treatments (CTs), acupuncture combined with CTs could improve in National Institutes of Health Stroke Scale (NIHSS) and Efficiency (MD:1.70, 95 %CI [-2.27, -1.14], P < 0.00001;RR: 1.21, 95 %CI [1.12, 1.31], P < 0.00001,);On the Chinese Stroke Scale (CSS) and effectiveness based on CSS, acupuncture showed positive effects (MD:4.33, 95 %CI [-5.67, -2.98], P < 0.00001; RR: 1.26, 95 %CI [1.13, 1.41], P < 0.0001). Furthermore, ADL, Fugl-Meyer Assessment Scale (FMA), prognosis analyses also showed the effectiveness of acupuncture. (SMD: 0.98, 95 % CI [0.64, 1.31], P < 0.00001; MD: 16.46, 95 %CI [12.56, 20.35], P < 0.00001; RR: 0.38, 95 %CI [0.16, 0.89], P = 0.03). However, the certainty of evidence was low.
Conclusion	According to current evidence, Acupuncture may be effective and safe for AIS. The future still needs high-quality evidence to support this conclusion.

1.1.2. Xang 2024 (dose-effect)

Wang X, Xiao L, Xiao L, Tian C, Liu Y, Dai X. The dose-effect relationship of acupuncture on limb dysfunction after acute stroke: a systematic review and meta-analysis. Front Neurol. 2024 Feb 28;15:1341560. https://doi.org/10.3389/fneur.2024.1341560

Objective	This study aimed to investigate the relationship between the dose and efficacy of acupuncture in treating limb dysfunction during acute stroke.
Methods	Studies were searched from seven databases, including PubMed, Embase, Cochrane Library, Chinese National Knowledge Infrastructure (CNKI), Wanfang Data (WF), VIP information database (VIP), and China Biology Medicine Database (CBM). All databases were searched until August 1, 2023 from inception. The risk of bias was assessed using Cochrane Collaboration's risk of bias tool (RoB2). Meta-analyses were performed using RevMan V.5.4 and Stata 12.0 statistical software. We used Fugl-Meyer Assessment (FMA) to measure recovery of limb dysfunction, NIH Stroke Scale (NIHSS) to measure neurological deficits, and Barthel index, Modified Barthel Index (MBI), and Activities of Daily Living (ADL) to measure activities of daily living. The primary outcome measure is FMA. After examining and integrating the raw data, we performed a meta-analysis using a 3-step process. First, we investigated the dose-related effects of acupuncture at varying doses and determined the optimal dosage for maximum therapeutic benefits. Second, we determined the difference between post-intervention and baseline scores on the outcomes of interest to determine minimal clinically important differences (MCID) to provide evidence for clinical treatment. Third, by combining the results of step 1 and step 2, we made the recommendations employing the Grades of Recommendations, Assessment, Development and Evaluations (GRADE) tool.
Results	**Twenty-six studies containing 1947 participants** were included, among which 61.5% of RCTs had a low risk of bias. Through the three-step analysis, the effect in improving limb dysfunction of acute stroke varied across different acupuncture dosages. Regarding the frequency of acupuncture, the results demonstrated a significant improvement in the low (every other day) and moderate-frequency (once a day) groups (low frequency: MD: 9.02, 95%CI: 5.40-12.64, $p < 0.00001$; moderate frequency: MD: 10.11, 95%CI: 5.05-15.18, $p < 0.00001$, heterogeneity ($p = 0.87$), $I2 = 0\%$). For the acupuncture retention time, the results showed no significant difference between the short and medium retention groups (short retention time: MD: 0.05, 95% CI: -0.21-0.31, $p = 0.71$; medium retention time: MD: -1.16, 95% CI: -2.80-0.48, $p = 0.17$, heterogeneity ($p < 0.00001$), $I2 = 99\%$). For the course of acupuncture, the results showed a significant improvement in the short course treatment (less than 2 weeks) group (MD: 14.87, 95% CI: 12.18-17.56, $p < 0.00001$, heterogeneity ($p = 0.45$), $I2 = 0\%$).
Conclusion	Our study demonstrated the effectiveness of different acupuncture dose in improving limb dysfunction. The pooled data suggested that the optimal intervention dose for acupuncture interval time was low (every other day) and moderate frequency (once a day), the optimal intervention dose for needle course time was short course treatment (less than 2 weeks). But we did not find the optimal intervention dose for needle retention time. Future studies of higher quality are needed to confirm this.

1.1.3. Zhang 2021

Zhang ZH, Zhang XC, Ni GX. [Thrombolysis combined with acupuncture therapy for acute cerebral infarction: a Meta-analysis of randomized controlled trials]. Acupuncture Research. 2021;46(5):431-8. [219272]. doi

Objective	To systematically evaluate the efficacy and safety of thrombolysis combined with acupuncture therapy in the treatment of acute cerebral infarction (ACI) in the light of evidence-based medicine.

Methods	Randomized controlled trials (RCT) for acupuncture and thrombolysis treatment of acute cerebral infarction published from the inception of databa-ses to March 2020 were searched from PubMed, Cochrane Library, Embase, Web of science, CNKI, Wanfang, VIP, and CBM Database. According to the inclusion and exclusion criteria, two reviewers independently screened the RCTs and extracted the data. The quality of the included literature was evaluated, and the Meta-analysis was performed by using Revman 5.3 software.
Results	A total of 330 studies were identified, and **14 RCTs** (including 604 cases of the treatment group, 598 cases of the control group) met the inclusion criteria. The Meta-analysis showed that the thrombolysis combined with acupuncture therapy was better than acupuncture therapy alone in the clinical effective rate (risk ratio □RR□=1.19, 95% confidence interval □CI□ □1.13, 1.25□), NIHSS score (mean difference □MD□=-3.51, 95% CI □-4.54, -2.48□), BI index (MD=12.26, 95% CI □8.07, 16.46□), and in lowering C-reaction protein levels (MD=-3.99, 95% CI □-4.35, -3.63□). The rate of complete recanalization (RR = 1.20, 95% CI □1.00, 1.44□), adverse reaction (RR = 0.76, 95% CI □0.41, 1.41□) and hemorrhagic conversion (RR = 0.72, 95% CI □0.14, 3.62□) was not statistically significant.
Conclusion	The current effective evidence shows that acupuncture has certain advantages in improving the therapeutic effect and safety of thrombolysis in the treatment of ACI patients.

1.1.4. Yang 2019

Yang Yuanyuan, Su Liqing, Liu Jing, Zhou Desheng, Ge Jinwen, Hu Hua. [Systematic Review of the Efficacy and Safety of Acupuncture Combined with Medicine on Acute Ischemic Stroke]. Journal of Emergency in Traditional Chinese Medicine. 2019;5:789-792. [201715].

> 的 系统评价针药结合治疗急性缺血性脑卒中的疗效及安全性. 方法 根据Cochrane系统评价方法, 采用Revman5.3软件对纳入研究进行Meta分析. 结果 共纳入26项研究, 共计2 275例急性缺血性脑卒中患者.Meta分析结果显示, 针药联合治疗急性缺血性脑卒中较对照组可提高总有效率、改善神经功能缺损、提高日常生活活动能力, 治疗较为安全. 结论 针药结合治疗急性缺血性脑卒中比单纯西药组有效安全.

[Automatic translation].	
Objective	The systematic evaluation of the efficacy and safety of acupuncture combined with drugs in the treatment of acute ischemic stroke.
Methods	According to the Cochrane systematic evaluation method, Meta-analysis was performed on the included studies using Revman5.3 software.
Results	The results included **26 studies**, a total of **2 275 acute cases**. Meta-analysis of patients with ischemic stroke showed that the combination of acupuncture and medicine for acute ischemic stroke can improve the total effective rate, improve neurological deficit, improve the ability of daily living, and safer treatment.
Conclusion	Acupuncture combined with drugs Treatment of acute ischemic stroke is more effective than simple western medicine.

1.1.5. Liu 2018

Liu Jiaqing, Liu Tongyan, Xiang Yun, Zhao Ning, Zhang Hong. [Acupuncture Efficacy on Acute Stroke Patients: A Meta-analysis]. Rehabilitation Medicine. 2018;3:62-67+72. [201764].

Objective	To investigate the effect of acupuncture on acute stroke patients.

Methods	Published articles from the earliest date to February 2018 were recalled from the database of Pubmed, Cochrane Library, Embase, CNKI, V1 P and Wanfang Data. Study selection, data extraction and quality appraisal were performed by two independent reviewers. The Stata 12.1 software was used for meta-analysis and the GRADE-profile was used to assess the outcome.
Results	**Eleven trials** that represented **1,087** participants were included. The results of meta-analysis indicated that the NIHSS score had no significant meaning between the acupuncture group and the control group [MD=-0.18,(95%CI:-0.41, 0.04), P=0.129], the Modified Barthel Index was significantly improved in the acupuncture group [SMD=0.52,(95%CI: 0.28, 0.76), P<0.01]. The GRADE evidence showed that the NIHSS had high quality and the MBI had moderate quality.
Conclusion	Acupuncture is effective in improving activities of daily living(ADL) and other functions in stroke patients, but it needs to be verified by more large-scale and high-quality randomized studies.

1.1.6. Zhang 2018

Zhang Shujiang, Li Zuoxiao. [The effectiveness of acupuncture and moxibustion in treating acute cerebral infarction: A meta-analysis]. Chinese Journal of Physical Medicine and Rehabilitation. 2018;3:217-222. [201787].

Objective	To analyze the clinical efficacy of acupuncture and moxibustion in treating acute cerebral infarction.
Methods	A thorough literature search of randomized and controlled tests of acupuncture and moxibustion in treating the acute cerebral infarction was conducted. A meta-analysis was performed using version 5.3 of the ReviewManager software.
Results	Thirty-nine reports covering 3792 cases were found and analyzed. The neurologic impairment analysis found that in the experimental group mean difference (MD) was-1.86,with the 95□ credibility interval (CI) of between-2.06 and-1.66 showing significant differences compared with the control group. The average clinical effectiveness rate of the experimental groups was 3.95,with a 95□ CI of between-3.02 and 5.16,significantly higher than the control groups. The experimental groups' markedly effective rate was 1.54,with a 95□ CI of 1.40 to 1.70,showing significant differences compared with the control groups.
Conclusion	Acupuncture and moxibustion are effective in treating acute cerebral infarction. They are worth popularizing in clinical practice.

1.1.7. Li 2017

Li Kesong, Zhuang Lixing, He Jun, Luo Xiaozhou, Zhang Bin, Zhuang Zhenyi, Chen Zhihui. [Cumulative Meta-analysis on Efficacy of Acupuncture Therapy for Acute Cerebral Hemorrhage]. Liaoning Journal of Traditional Chinese Medicine. 2017;12. [51997].

Objective	To evaluate the effectiveness and possible superiority of acupuncture and moxibustion in the treatment of acute cerebral hemorrhage by using cumulative Meta-analysis.
Methods	Cochrane Library, Pub Med, CNKI and other related databases and related journals and university library were searched, and STATA 14. 0 was used to accumulate the Meta-analysis.

Results	A total of 14 articles were included in the literature. According to the published age line, the acupuncture treatment of acute cerebral hemorrhage was proved to be effective in 2009, OR = 3. 48, 95% CI [1. 59, 7. 62]. According to the sample size, the sequential cumulative Meta-analysis showed that the odds ratio of acupuncture and moxibustion in the treatment of acute cerebral hemorrhage was stable and the accuracy was increasing. The above analysis shows that the total effective rate of the treatment group was better than the control group and the difference between the two groups was statistically significant (P < 0. 01). Egger test showed that the possibility of publication bias was small and the sensitivity analysis showed that all the study point values fell in the final results of 95% CI, indicating that the results of this study was reliable.
Conclusion	Acupuncture and moxibustion for acute cerebral hemorrhage was positive, but in view of less literature and low quality, we still need more high-quality researches to verify.

1.1.8. Zhang 2009 ☆

Zhang Tong, Zhang LI, Zhang Hui-Min, Li Qian. [Systematic review of acupuncture therapy for acute ischemic stroke]. China Journal of Traditional Chinese Medicine and Pharmacy. 2009;1:101-104. [186919].

Objectives	To review the curative effect of acupuncture for acute ischemic stroke.
Methods	Systematic review method was used to search MEDLINE, BIOSIS, CNKI, EMBASE, VIP, CBM, proceedings of “2006 Tiantan congress of cerebrovascular disease” and “2007Tiantan congress of cerebrovascular disease”, “WFAS 20th anniversary of foundation and international acupuncture congress”, and the references of researches. Then according to the Cochran standards, statistic analyzed the including researches by RevMan 4. 2 software.
Results	There were 5 researches met the including standards. 3 researches followed up 6 months disability rate and death rate (BI≤60), the result had no statistic meaning (P>0. 05). 3 researches used Scandinavian Stroke Scale (SSS), compared the difference of before and after treatment of treatment group and control group, the result showed acupuncture or electro-acupuncture can improve the neurological function, there was statistic meaning (P<0. 05), WMD3. 49, 95%CI (2. 00, 4. 99) .
Conclusions	The research result cannot prove that acupuncture can set down the disability rate and death rate;though **acupuncture can improve the neurological function of acute ischemic stroke patients**, the including researches had bias and were low quality, so far we cannot sure the curative effect of acupuncture for acute ischemic stroke. We need randomized, double blinded, controlled trials with high quality, large samples, multi-centers experimentation to get believable evidence.

1.1.9. Zhang 2005 Ø

Zhang SH, Liu M, Asplund K, Li L. Acupuncture for acute stroke. Cochrane Database Syst Rev. 2005. (2):CD003317. [136185].

Background	Acupuncture-like sensory stimulation activates multiple efferent (nerve) pathways leading to altered activity in numerous neural systems. Acupuncture is widely accepted by Chinese people and it is increasingly requested by patients and their relatives in Western countries.
Objectives	To assess the effectiveness and safety of acupuncture in patients with acute stroke.

Methods	Search strategy: We searched the Cochrane Stroke Group trials register (last searched August 2003), the Chinese Stroke Trials Register (August 2003) and the Chinese Acupuncture Trials Register (August 2003). Electronic searches were performed in the Cochrane Controlled Trials Register (The Cochrane Library, Issue 3, 2003), MEDLINE (1966 to 2003), EMBASE (1980 to 2003), Alternative Medicine Database (1985 to 2003), CINAHL (1982 to 2003) and the Chinese Biological Medicine Database (1981 to 2003). Reference lists of systematic reviews and identified trials were handsearched. Selection criteria: Randomised and quasi-randomised trials of acupuncture started within 30 days of stroke onset, compared with placebo/sham acupuncture or open control in patients with acute ischaemic and/or haemorrhagic stroke. Needling into skin was required for acupuncture. Data collection and analysis: Two reviewers selected trials for inclusion, assessed trial quality, and extracted the data independently. Authors of trials were contacted for missing data.
Main results	**Fourteen trials involving 1208 patients were included**. Ten trials included patients with only ischaemic stroke. When acupuncture was compared with sham acupuncture or open control, there was a borderline significant trend towards fewer patients being dead or dependent (Odds ratio (OR) 0.66, 95% confidence interval (CI) 0.43 to 0.99), and significantly fewer being dead or needing institutional care (OR 0.58, 95% CI 0.35 to 0.96) in the acupuncture group after three months or more. There was also a significant difference favouring acupuncture in the mean change of global neurological deficit score during the treatment period (standardized mean difference (SMD) 1.17, 95% CI 0.30 to 2.04). Comparison of acupuncture with sham acupuncture only showed a statistically significant difference on death or requiring institutional care (OR 0.49, 95% CI 0.25 to 0.96), but not on death or dependency (OR 0.67, 95% CI 0.40 to 1.12), or change of global neurological deficit score (SMD 0.01, 95% CI -0.55 to 0.57). Severe adverse events with acupuncture (dizziness, intolerable pain and infection of acupoints) were rare (6/386, 1.55%).
Authors' conclusions	**Acupuncture appeared to be safe but without clear evidence of benefit**. The number of patients is too small to be certain whether acupuncture is effective for treatment of acute ischaemic or haemorrhagic stroke. Larger, methodologically-sound trials are required.

1.2. Special Acupuncture Techniques

1.2.1. Scalp Acupuncture

1.2.1.1. Wang 2012

Wang Y, Shen J, Wang XM, Fu DL, Chen CY, Lu LY, Lu L, Xie CL, Fang JQ, Zheng GQ. Scalp acupuncture for acute ischemic stroke: a meta-analysis of randomized controlled trials. Evid Based Complement Alternat Med. 2012. [165869].

Objective	Scalp acupuncture (SA) is a commonly used therapeutic approach for stroke throughout China and elsewhere in the world. The objective of this study was to assess clinical efficacy and safety of SA for acute ischemic stroke.
Methods	A systematical literature search of 6 databases was conducted to identify randomized controlled trials (RCTs) of SA for acute ischemic stroke compared with western conventional medicines (WCMs). All statistical analyses were performed by the Rev Man Version 5.0.

Results	Eight studies with 538 participants were included in the studies. The studies were deemed to have an unclear risk of bias based on the Cochrane Back Review Group. Compared with the WCM, 6 RCTs showed significant effects of SA for improving neurological deficit scores (P < 0.01); 4 RCTs showed significant effects of SA for favoring the clinical effective rate (P < 0.01) However, the adverse events have not been documented.
Conclusions	In conclusion, SA appears to be able to improve neurological deficit score and the clinical effective rate when compared with WCM, though the beneficial effect from SA is possibly overvalued because of generally low methodology of the included trials. No evidence is available for adverse effects. Rigorous well-designed clinical trials are needed.

1.2.1.2. Zheng 2011 ☆

Zheng GQ, Zhao ZM, Wang Y, Gu Y, Chen XM, Fu SP, Shen J. Meta-analysis of scalp acupuncture for acute hypertensive intracerebral hemorrhage. J Altern Complement Med. 2011;17(4):293-9. [160035]

Objectives	Scalp acupuncture (SA) is a commonly used therapeutic approach for primary intracerebral hemorrhage (ICH) in Traditional Chinese Medicine (TCM), but the efficacy and safety of SA therapy are still undetermined. The aim of this study is to systematically evaluate the efficacy and safety of SA therapy for the treatment of acute hypertensive ICH.
Méthods	Literature reports with randomized controlled clinical trials and controlled clinical trials on SA therapy for acute hypertensive ICH were searched, and the efficacy and safety of SA therapy were evaluated by using the Cochrane systematic review methods. The primary outcome measures were death or dependency at the end of long-term follow-up (at least 3 months) and adverse events. The secondary outcome measure was neurological deficit improvement at the end of the treatment course.
Résultats	**Seven (7) independent trials (230 patients)** were included in this study. All trials described the methods of randomization in which four trials had adequate concealment of randomization at the level of grade A, but no trial included sham acupuncture as a control group. None of the trials included ‘‘death or dependency’’ as a primary outcome measure. Four (4) trials contained safety assessments and stated that no adverse event was found, whereas the other three trials did not provide the information about adverse events. By using random effects statistical model, it was found that **patients with acute hypertensive ICH who received SA therapy had significantly improved neurological deficit scores** (Z¼4.97, p<0.01).
Conclusions	Although SA therapy is widely used to treat acute hypertensive ICH in TCM, the efficacy and safety of SA therapy remain to be further determined. No evidence is available on whether SA therapy can be used to treat acute ICH according to the primary outcome measure. However, **SA therapy appears to be able to improve neurological deficit in patients with acute hypertensive ICH**.

1.2.2. Electroacupuncture

1.2.2.1. Liu 2015 ☆

Liu AJ, Li JH, Li HQ, Fu DL, Lu L, Bian ZX, Zheng GQ. Electroacupuncture for Acute Ischemic Stroke. Am J Chin Med. 2015;43(8):1541-66. [185112].

Objectives	Electroacupuncture (EA) is an extension technique of acupuncture based on traditional acupuncture combined with modern electrotherapy. Here, we conducted a systematic review specifically to assess the effectiveness and safety of EA for acute ischemic stroke.
Methods	Eight databases were searched for randomized-controlled clinical trials (RCTs) of EA for acute ischemic stroke published from inception to June 2013.
Results	Ultimately, 67 studies claimed to be RCTs. **Eighteen studies with 1411 individuals** were selected for the analyses, which got [Formula: see text] “yes” in the domains of Cochrane risk of bias tool. The meta-analysis showed a significant effect of EA for improving Barthel Index ([Formula: see text]), Fugl-Meyer Assessment ([Formula: see text]), National Institutes of Health Stroke Scale ([Formula: see text]) and Revised Scandinavian Stroke Scale ([Formula: see text]) compared with western conventional treatments (WCTs). In an analysis of the total clinical efficacy rate, there was a significant difference between EA and WCTs ([Formula: see text]). Adverse effects were monitored in 6 studies, and were well tolerated in all stroke patients. According to the GRADE approach, the qualityof evidence was mostly high or moderate.
Conclusions	In conclusion, this systematic review revealed the **evidence in support of the use of EA for acute ischemic stroke**, although further larger sample-size and rigorously designed RCTs are required.

1.2.3. Xing Nao Kai Qiao (XNKQ) Method

1.2.3.1. Shi 2023

Shi X, Wang A, Xiao L, Wang H, Yang S, Gan J, Liang C, Chang Y, Dai X. [Meta analysis of clinical effectiveness of Xingnao Kaiqiao needling method on limb dysfunction after stroke]. Chin J Convalescent Med. 2023;32(1):6-11.

Objective	To make Meta-analysis of the clinical effect of Xingnao Kaiqiao (activating brain and opening orifices) acupuncture on limb dysfunction after stroke.
Methods	The relevant literatures in the Chinese and English databases before August 2021 were comprehensively searched, and the literatures were screened. The risk assessment form recommended by Cochrane collaboration network was used to evaluate the literatures that met the standards. At the same time, the forest map was made by RevMan 5.3 software.
Results	A total of 37 studies were included. Meta-analysis showed that the method of Xingnao Kaiqiao could significantly improve the limb dysfunction of stroke patients. The therapeutic effect of Xingnao Kaiqiao acupuncture is better than that of non Xingnao Kaiqiao acupuncture.
Conclusion	Xingnao Kaiqiao acupuncture is safe and effective in treating limb dysfunction after stroke.

1.2.3.2. Yang 2017 ☆

Yang ZX, Xie JH, Liu DD. Xingnao Kaiqiao needling method for acute ischemic stroke: a meta-analysis of safety and efficacy. Neural Regen Res. 2017;12(8):1308-131. [184206].

Objective	To evaluate the effectiveness and safety of the Xingnao Kaiqiao needling method for treating acute ischemic stroke.

Methods	DATA SOURCES: We retrieved relevant randomized controlled trials involving Xingnao Kaiqiao acupuncture for treatment of acute ischemic stroke. The China National Knowledge Infrastructure, Weipu Information Resources System, Wanfang Medical Data System, Chinese Biomedical Literature Database, Cochrane Library, and PubMed were searched from June 2006 to March 2016. DATA SELECTION: We analyzed randomized and semi-randomized clinical controlled trials that compared Xingnao Kaiqiao acupuncture with various control treatments, such as conventional drugs or other acupuncture therapies, for treatment of acute ischemic stroke. The quality of articles was evaluated according to the Cochrane Handbook for Systematic Reviews of Interventions (Version 5.1), and the study was carried out using Cochrane system assessment methods. RevMan 5.2 was used for the meta-analysis of the included studies. OUTCOME MEASURES: The mortality rate, disability rate, activities of daily living (Barthel Index), and clinical efficacy were observed.
Results	**Twelve studies** met the inclusion criteria for this review. The meta-analysis showed that between Xingnao Kaiqiao acupuncture and the control treatment, Xingnao Kaiqiao acupuncture reduced the disability rate [risk ratio (RR) = 0.51, 95% confidence interval (CI) = 0.27-0.98, z = 2.03, P < 0.05], elevated the activities of daily living (weighted mean difference = 12.23, 95% CI: 3.66-20.08, z = 2.80, P < 0.005), and had greater clinical efficacy (RR = 1.61, 95% CI: 1.23-2.09, z = 3.53, P < 0.0004). However, there was no significant difference in mortality rate (RR = 0.61, 95% CI: 0.15-2.45, z = 0.70, P > 0.05).
Conclusion	**The Xingnao Kaiqiao needling method is effective and safe for acute ischemic stroke. However, there was selective bias in this study, and the likelihood of measurement bias is high**. Thus, more high-quality randomized controlled trials are needed to provide reliable evidence of the efficacy and safety of Xingnao Kaiqiao acupuncture in the treatment of acute ischemic stroke.

1.2.4. Dumai Acupoints

1.2.4.1. Ji 2018

Ji Jian-Gang, Zhang Li, Zhang Xin-Yu, Liu Wen-Ting. [Systematic review on acute cerebral infarction treated with acupuncture at the points of the Governor Vessel]. World Journal of Integrated Traditional and Western Medicine. 2018;7:900-903. [201741].

目的 系统评价针刺督脉穴治疗急性脑梗死的临床有效性. 方法 通过检索有关针刺督脉穴治疗急性脑梗死的随机对照试验研究文献, 采用Jadad评分标准进行质量评价, 应用RevMan5.3软件进行Meta分析. 结果 有5项研究纳入评价, 通过分析发现针刺所选用的督脉腧穴以百会、大椎、人中为主. 与单纯药物组比较, 针刺督脉穴组急性脑梗死有效率显著提高[OR =5.70,95□ CI为(3.10,10.49),Z=5.60,P□0.000 01],神经功能缺损评分显著改善[OR =4.22,95□CI为(3.04,5.41),Z=6.99,P□0.000 01];与传统针刺阳明穴组相比, 神经功能缺损评分亦明显改善[OR =2.09,95□ CI为(0.51,3.68),Z=2.58,P=0.01 □0.05].结论 针刺督脉穴作为一种辅助治疗手段干预急性脑梗死的疗效良好, 建议可开展更大规模的随机对照试验进行进一步验证与推广.

Automatic translation	
Objective	To systematically evaluate the clinical effectiveness of acupuncture at Dumai points in the treatment of acute cerebral infarction.
Methods	To search for the randomized controlled trials of acupuncture at Duo points for acute cerebral infarction, use Jadad scoring standard for quality evaluation, and apply RevMan5.3 software. Meta-analysis was carried out.

Results	Five studies were included in the evaluation. It was found that the Du Meridian points used in acupuncture were mainly Baihui, Dazhui and human. Compared with the simple drug group, there was an acute cerebral infarction in the Acupuncture Du Meridian group. Significantly improved efficiency [OR = 5.70, 95% CI (3.10, 10.49), Z = 5.60, P < 0.000 01], neurological deficit score improved significantly [OR = 4.22, 95% CI (3.04, 5.41), Z =6.99, P<0.000 01]; Compared with the traditional acupuncture Yangming acupoint group, the neurological deficit score was also significantly improved [OR = 2.09, 95% CI (0.51, 3.68), Z = 2.58, P = 0.01 < 0.05].
Conclusion	Acupuncture at Dumai Point as an adjuvant treatment for acute cerebral infarction has a good effect. It is suggested that a larger randomized controlled trial can be carried out for further verification and promotion.

1.2.5. Acupuncture in the governor vessel and Yangming meridian

1.2.5.1. Xu 2024

Xu Y, Xie X, Su P, Wang J, Luo X, Niu J, Jin Z. Effectiveness of acupuncture in the governor vessel and Yangming meridian for the treatment of acute ischemic stroke: A systematic review and network meta-analysis. PLoS One. 2024 Apr 16;19(4):e0300242. https://doi.org/10.1371/journal.pone.0300242

Backgound	Acupuncture of the governor vessel and Yangming meridian are widely used in the treatment of acute ischemic stroke (AIS). However, the optimal meridian for acupuncture in the treatment of AIS remains uncertain.
Purpose	This network meta-analysis study aimed to compare the clinical effectiveness of acupuncture at governor vessel and Yangming meridian in the treatment of AIS.
Methods	All relevant studies published in CNKI, WANFANG, VIP, Sinomed, Cochrane Library, Web of Science, Pub Med, and Embase before January 13, 2024 were systematically retrieved. The two researchers independently screened the studies and extracted the data. Cochrane ROB tool was used to evaluate the quality of the studies, and Stata 14.0 software was used to conduct a network meta-analysis of neurological deficit score, activities of daily living (ADL), clinical effective rate and Fugl-meyer motor function evaluation (FMA).
Results	A total of 401 studies were obtained, and **17 studie**s met the inclusion criteria. The surface under the cumulative ranking curve (SUCRA) values of the four outcome indexes were all ranked by “Governor vessel acupuncture + Conventional neurology treatment(GVAc+CT) > Yangming meridian acupuncture + Conventional neurology treatment(YMAc+CT) > Conventional neurology treatment (CT)”. Compared to YMAc+CT and CT, GVAc+CT had the best effect in reducing the degree of neurological deficit score (SMD = -0.72, 95%CI = [-1.22,-0.21] and SMD = -1.07,95%CI = [-1.45,-0.69], respectively) and promoting the recovery of ADL((SMD = 0.59,95%CI = [0.31,0.88] and SMD = 0.96,95%CI = [0.70,1.21], respectively). Compared to CT, GVAc+CT also had a better clinical effective rate in the treatment of AIS (RR = 1.14,95%CI = [1.04,1.25]).
Conclusions	Governor vessel acupuncture combined with conventional neurology treatment has the best effect in reducing the degree of neurological deficit score and promoting the recovery of ADL in AIS patientscompared to YMAc+CT and CT. Governor Vessel acupuncture is the most preferable acupoint scheme for clinical acupuncture treatment of AIS.

1.3. Preclinical and mechanistic systematic reviews

1.3.1. Chen 2026

Chen Y, Zhu T, Li M, Tan T, Cui J. Effects of electroacupuncture on neurological outcomes and brain-gut axis-associated changes in experimental ischemic stroke models: a systematic review and meta-analysis. Front Neurosci. 2026;20:1893796. https://doi.org/10.3389/fnins.2026.1893796

Background	Ischemic stroke is a leading cause of death and disability worldwide and is frequently accompanied by brain-gut axis disturbances, including intestinal barrier dysfunction, gut microbiota dysbiosis, and immune-inflammatory imbalance. Although electroacupuncture (EA) has demonstrated neuroprotective effects in experimental stroke, its effects on brain-gut axis-related outcomes have not been systematically evaluated. To evaluate the effects of EA on neurological outcomes and brain-gut axis-related changes in animal models of ischemic stroke.
Methods	This systematic review and meta-analysis was conducted in accordance with the PRISMA 2020 statement and registered in PROSPERO (CRD420261354722). Nine databases were searched from inception to 1 May 2026. Controlled animal studies comparing EA with non-EA controls in ischemic stroke models were included. Random-effects meta-analyses were performed using Hedges' *g* standardized mean differences (SMDs) with 95% confidence intervals (CIs). Risk of bias was assessed using the SYRCLE tool, and the certainty of evidence was evaluated using an adapted GRADE framework for preclinical animal studies.
Results	Thirteen reports representing **12 independent studies** were included. EA was associated with improved neurological function (11 studies; SMD = -2.49, 95% CI: -3.50 to -1.47; *I*2 = 60.5%) and reduced infarct volume (9 studies; SMD = -3.08, 95% CI: -4.22 to -1.95; *I*2 = 56.2%). EA was also associated with increased ZO-1, occludin, and intestinal IL-10 levels and reduced D-lactate, lipopolysaccharide, intestinal IL-1β, and intestinal TNF-α levels. Qualitative synthesis suggested EA-associated changes in gut microbial diversity and taxonomic composition, although their functional significance remains uncertain. The certainty of evidence ranged from moderate to very low, and several brain-gut axis-related outcomes were supported by only a small number of studies.
Conclusion	EA-related neuroprotection in ischemic stroke may be partially associated with modulation of brain-gut axis-related processes; however, the available evidence does not establish these processes as the primary mediator. Further rigorously designed preclinical studies are needed to strengthen causal inference and facilitate clinical translation.

1.3.2. Salles 2026

Salles IC, Pellegrino MP, Kroth JB, Dos Santos CL, Tristao LS, Shinosaki JSM, et al. Noninvasive or minimally invasive neuromodulation in animal models of acute ischemic stroke: A systematic review and meta-analysis. Neuroprotection. 2026:10.1002/nep3.70056. https://doi.org/10.1002/nep3.70056

Background	Neuromodulation therapy has emerged as a potential brain cytoprotective strategy in the hyperacute phase of ischemic stroke (IS). This systematic review aimed to evaluate the cytoprotective effects of neuromodulation in animal models of IS.

Methods	A systematic search of the MEDLINE, Embase, and LILACS databases was conducted to identify in vivo preclinical studies that investigated noninvasive or minimally invasive neuromodulation therapy administered within 24 h of arterial occlusion and included a control group. The primary outcome was infarct volume, and the secondary outcomes included assessments of neurological function using validated behavioral scales. Random-effects meta-analyses were performed for all outcomes using the Cochrane Review Manager software (version 5.4.1). The protocol was prospectively registered in the International Prospective Register of Systematic Reviews database (No. CRD42020165347).
Results	Thirty studies were included in the qualitative synthesis (2347 reported animals), and 25 studies were eligible for meta-analysis. Most studies employed middle cerebral artery occlusion models. Neuromodulation techniques included **electroacupuncture**, repetitive transcranial magnetic stimulation, transcranial direct current stimulation, and **vagus nerve stimulation**. Pooled analyses demonstrated that neuromodulation significantly reduced infarct volume both in absolute (standardized mean difference [SMD]: -0.80; $p < 0.001$) and relative terms (SMD: -2.01; $p < 0.001$) and improved neurological outcomes (SMD: -1.53; $p = 0.006$). However, considerable heterogeneity was observed across studies and interventions.
Conclusion	Neuromodulation confers brain cytoprotective effects in experimental IS models; however, the high heterogeneity in stimulation parameters and outcomes limits its translational potential. Standardization of experimental protocols and reporting is required to improve reproducibility.

2. Overview of systematic reviews

2.1. Wang 2022 ☆

Wang L, Chi X, Lyu J, Xu Z, Fu G, Liu Y, Liu S, Qiu W, Liu H, Liang X, Zhang Y. An overview of the evidence to guide decision-making in acupuncture therapies for early recovery after acute ischemic stroke. Front Neurol. 2022 Oct 13;13:1005819. https://doi.org/10.3389/fneur.2022.1005819.

Background	Acupuncture is a proven technique of traditional Chinese medicine (TCM) for ischemic stroke. The purpose of this overview was to summarize and evaluate the evidence from current systematic reviews (SRs) of acupuncture for early recovery after acute ischemic stroke (AIS).
Methods	We performed a comprehensive search for SRs of acupuncture for AIS in seven electronic databases up to May 23, 2022. Two reviewers independently selected SRs, extracted data, evaluated the methodological quality using the Assessment of Multiple Systematic Reviews 2 (AMSTAR 2), and rated evidence certainty using the Grading of Recommendations, Assessment, Development, and Evaluation (GRADE).
Results	**Seven SRs** were included. The overall methodological quality of SRs was critically low. As for GRADE, 3 outcomes had moderate-quality evidence, 14 had low-quality evidence, and 12 had very low-quality evidence. Moderate-quality evidence demonstrated that initiating acupuncture therapies within 30 days of AIS onset significantly improves neurological function and the total effective rate of patients. Low-quality evidence showed that for patients within 2 weeks of AIS onset Xingnao Kaiqiao acupuncture (XNKQ Ac) could reduce disability rate and might reduce mortality. Regarding the safety of acupuncture therapies, low-quality evidence showed that there was no difference in the incidence of adverse reactions between the 2 groups, and very-low quality evidence showed that acupuncture did not promote hemorrhagic conversion.

Conclusions	In the acute and early recovery phases after AIS onset, acupuncture is a promising therapeutic strategy to improve the curative effect of current treatments, especially in the recovery of neurological function. Patients in the acute phase might receive XNKQ Ac, and patients in the early recovery phase might receive EA1, CA, or SA. However, considering the current certainty of evidence, a solid recommendation warrants further exploration.

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Last update: **10 Sep 2026 14:59**