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Neurologic Bladder

Vessie neurologique : évaluation de l'acupuncture

1. Systematic Reviews and Meta-Analysis

1.1. Generic Acupuncture

1.1.1. Bapir 2023 (overactive neurogenic bladder)

Bapir R, Bhatti KH, Eliwa A, García-Perdomo HA, Gherabi N, Hennessey D, Magri V, Mourmouris P, Ouattara A, Perletti G, Philipraj J, Stamatiou K, Trinchieri A, Buchholz N. Efficacy of overactive neurogenic bladder treatment: A systematic review of randomized controlled trials. Arch Ital Urol Androl. 2022 Dec 28;94(4):492-506. https://doi.org/10.4081/aiua.2022.4.492

Background	Overactive bladder (OAB) symptoms of frequency, urgency and urge incontinence are frequently associated with known neurological diseases like multiple sclerosis (MS), spinal cord injury (SCI), Parkinson's disease (PD), stroke.
Objective	The aim of our study was to review the efficacy of pharmacological and non-pharmacological treatments for neurogenic overactive bladder.
Materials and Methods	We searched two electronic databases (PubMed and EMBASE) for randomized controlled trials focusing on pharmacological and non-pharmacological medical treatments for overactive bladder symptoms associated with neurological diseases published up to 30 April 2022.
Results	A total of 157 articles were retrieved; 94 were selected by title and abstract screening; after removal of 17 duplicates, 77 records were evaluated by full-text examination. Sixty-two studies were finally selected. The articles selected for review focused on the following interventions: anticholinergics (n = 9), mirabegron (n = 5), comparison of different drugs (n = 3), cannabinoids (n = 2), intravesical instillations (n = 3), botulinum toxin (n = 16), transcutaneous tibial nerve stimulation (TTNS) (n = 6), **acupuncture (n = 2)**, transcutaneous electrical nerve stimulation TENS (n = 4), pelvic floor muscle training (PFMT) (n = 10), others (n = 2). Anticholinergics were more effective than placebo in decreasing the number of daily voids in patients with PD (mean difference [MD]- 1.16, 95 % CI - 1.80 to - 0.52, 2 trials, 86 patients, $p < 0.004$), but no significant difference from baseline was found for incontinence episodes and nocturia. Mirabegron was more effective than placebo in increasing the cystometric capacity in patients with MS (mean difference [MD] 89.89 mL, 95 % CI 29.76 to 150.01, 2 trials, 98 patients, $p < 0.003$) but no significant difference was observed for symptom scores and bladder diary parameters. TTNS was more effective than its sham-control in decreasing the number of nocturia episodes (MD -1.40, 95 % CI -2.39 to -0.42, 2 trials, 53 patients, $p < 0.005$) but no significant changes of OAB symptom scores were reported. PFMT was more effective than conservative advice in decreasing the ICIQ symptom score (MD, -1.12, 95 % CI -2.13 to -0.11, 2 trials, 91 patients, $p = 0.03$), although the number of incontinence episodes was not significantly different between groups.

Conclusions	The results of the meta-analysis demonstrate a moderate efficacy of all considered treatments without proving the superiority of one therapy over the others. Combination treatment using different pharmacological and non-pharmacological therapies could achieve the best clinical efficacy due to the favorable combination of the different mechanisms of action. This could be associated with fewer side effects due to drug dosage reduction. These data are only provisional and should be considered with caution, due to the few studies included in metaanalysis and to the small number of patients.

1.1.2. Zang 2023

Zang YT, Bai MJ, Wang L, Zhang MX, Li L. Effects of acupuncture and pelvic floor muscle training on bladder dysfunction after spinal cord injury: A meta-analysis. Medicine (Baltimore). 2023 Mar 10;102(10):e33048. https://doi.org/10.1097/MD.0000000000033048

Objective	We aimed to systematically review and quantify the association between acupuncture and pelvic floor muscle exercise and bladder dysfunction rehabilitation in individuals with spinal nerve injury.
Methods	A meta-analysis was conducted using an evidence-based nursing analysis method based on clinical evidence. China National Knowledge Infrastructure, PubMed, VIP database, Wan Fang database, Cochrane Library, and other databases were searched by computer from January 1, 2000 to January 1, 2021. The literature was searched for clinical randomized controlled trials on acupuncture stimulation, pelvic floor muscle function training, and bladder function recovery training after spinal cord nerve injury. Two reviewers independently used The Cochrane Collaboration recommended randomized controlled trial risk of bias assessment tool to evaluate the quality of the literature. Then, the meta-analysis was performed using RevMan 5.3 software.
Results	A total of **20 studies** were included, with a total sample size of 1468 cases, including 734 patients in the control group and 734 patients in the experimental group. The results of our meta-analysis showed that acupuncture treatment [OR = 3.98, 95% CI (2.77, 5.72), Z = 7.49, P < .001] and pelvic floor muscle treatment [OR = 7.63, 95% CI (4.47, 13.04), Z = 7.45, P < .001] was statistically significant.
Conclusion	Acupuncture and pelvic floor muscle exercise are effective intervention and treatment methods, which have obvious effects on rehabilitation treatment of bladder dysfunction after spinal nerve injury.

1.1.3. Li 2020

Li Yueying. [System Review and Meta Analysis of Therapeutic Effects of Acupuncture on Neurogenic Bladder]. World Chinese Medicine. 2020. [212907].

Objective	To evaluate the therapeutic effects and the commonly used acupoint selection program. of acupuncture on neurogenic bladder after spinal cord injury on the basis of the existing clinical practice evidence
Methods	: Based on the method of Corchorane system evaluation, a systematic review of the randomized controlled trials of acupuncture for the treatment of neurogenic bladder after spinal cord injury was conducted. Through the evaluation of the quality of the documents that meet the inclusion criteria and the extraction of the research data, the data analysis was finally carried out using RevMan software.

Results	A total of **26 related literatures** were included in the study, including **1 778 patients** with neurogenic bladder after spinal cord injury, 895 in the treatment group and 883 in the control group. The results of Meta-analysis showed that the improvement of bladder capacity in patients with acupuncture combined with basic treatment was 1 month after the start of the trial (MD=31. 86, 95% CI=26. 63□35. 09, P=0. 03), 2 months (MD=48. 51, 95% CI=43. 33□53. 68, P=0. 000 2) and 3 months (MD=34. 84, 95% CI=9. 96□59. 71, P=0. 63), which was better than those of the basic treatment group. The improvement of residual urine volume in patients with acupuncture combined with basic treatment in the first month of the trial (SMD=-1. 51, 95% CI=-2. 09□-0. 94, P<0. 000 01), 2 months (SMD=-1. 10, 95% CI=-1. 51□-0. 69, P<0. 000 01) and 3 months (SMD=-4. 59, 95% CI=-6. 97□-2. 21, P<0. 000 01) was better than those of the basic treatment group.
Conclusion	The existing clinical research evidence indicates that acupuncture combined with basic treatment is better than the basic treatment for the recovery of neurogenic bladder after spinal cord injury. This provides a strong theoretical basis for more rigorous clinical larg e-sample multicenter randomized controlled studies in the future.

1.2. Wan 2018

Wan Dengfeng, Wang Shengyu, Huang Tao, Wang Xianyu, Liao Yanlin. [Efficacy of acupuncture and moxibustion for neurogenic bladder in patients with spinal cord injury: A meta-analysis]. Health Medicine Research and Practice. 2018;5:41-46. [201778].

目的 基于Meta分析系统评价针灸治疗脊髓损伤神经源性膀胱的有效性, 为针灸治疗脊髓损伤神经源性膀胱提供循证学依据. 方法 检索PubMed□中国期刊全文数据库(CNKI)□中国生物医学文献光盘数据库(CBM)□万方资源等数据库创库至今所有针灸治疗脊髓损伤神经源性膀胱的随机对照试验文献, 采用GRADEprofiler质量评价系统进行证据质量分级评定, 采用Revman 5.3和STATA 13.0软件对结局指标进行Meta分析. 结果 累计18篇文献符合纳入标准, 累计纳入病例1 233例, 其中治疗组619例, 对照组614例. 分析结果显示:普通针刺的疗效优于其他手段, 2组患者有效率的差异具有统计学意义(OR=4.91;95□CI:2.79□8.64;P=0.000);电针疗法的疗效优于其他手段, 2组患者有效率的差异具有统计学意义(OR =4.17;95□CI:2.18□7.97;P=0.000);灸法疗法的疗效优于其他手段, 2组患者有效率的差异具有统计学意义(OR=3.83;95□CI:2.27□6.45;P=0.000);芒针疗法的疗效优于其他手段, 2组患者有效率的差异具有统计学意义(OR=2.86;95 □CI:1.26□6.49;P□0.01);将所有纳入文献进行分析, 结果显示针灸疗法的疗效优于其他手段, 2组患者总有效率的差异具有统计学意义(OR=4.04;95□CI:2.98□5.49;P=0.000).结论 采用针灸疗法治疗脊髓损伤神经源性膀胱, 疗效确切, 值得临床推广应用. 但本研究所纳入文献中多数文献质量分级为低质量等级, 高质量文献有限, 尚需要更多高质量、多中心、大样本的临床随机对照研究验证本结论.

Objective	To evaluate the effectiveness of acupuncture in the treatment of neurogenic bladder of spinal cord injury based on the meta-analysis system, and to provide evidence-based evidence for acupuncture treatment of neurogenic bladder of spinal cord injury.
Methodology	Search PubMed, China Journal Full-text Database (CNKI), China Biomedical Literature CD-ROM The database (CBM), Wanfang resources and other databases have been used to establish a randomized controlled trial of acupuncture for the treatment of neurogenic bladder of spinal cord injury. The GRADE profiler quality evaluation system was used to evaluate the quality of evidence. The outcomes were analyzed using Revman 5.3 and STATA 13.0 software. Meta-analysis.
Results	A total of **18 articles** met the inclusion criteria, and a total of **1 233** cases were included, including 619 in the treatment group and 614 in the control group. The results showed that the efficacy of ordinary acupuncture was better than other methods, and the two groups were effective. The difference was statistically significant (OR=4.91; 95% CI: 2.79-8.64; P=0.000); electroacupuncture was superior to other methods, and the difference in efficiency between the two groups was statistically significant (OR = 4.17; 95). %CI: 2.18~7.97; P=0.000); the curative effect of moxibustion therapy was better than other methods, and the difference in effective rate between the two groups was statistically significant (OR=3.83; 95% CI: 2.2) 7□6.45; P=0.000); the effect of awn acupuncture is better than other methods, the difference of effective rate between the two groups is statistically significant (OR=2.86; 95% CI: 1.26□6.49; P<0.01); Incorporating into the literature for analysis, the results showed that the efficacy of acupuncture was better than other methods. The difference in the total effective rate between the two groups was statistically significant (OR=4.04; 95% CI: 2.98-5.49; P=0.000).
Conclusion	Acupuncture therapy. The treatment of spinal cord injury neurogenic bladder is effective and worthy of clinical application. However, most of the literatures in this study are classified into low quality grades, and high-quality literature is limited. More high quality, multicenter, large samples are needed. Clinical randomized controlled trials verify this conclusion.

1.2.1. Guo 2015 ☆

Guo Ling-Xiang, Zhang Hong. [Meta-analysis on clinical study of acupuncture treatment on neurogenic bladder]. Guiding Journal of Traditional Chinese Medicine and Pharmacy. 2015;23:90-93. [186978].

Objective	To compare the clinical curative effects of acupuncture and other traditional therapy. Methods: The clinical study of acupuncture for neurogenic bladder was collected from January 1994 to May 2014. The effect of acupuncture and other traditional therapy was compared and Meta-analysis was made.
Results	The **29 studies were included**, and the total efficiency, bladder residual urine volume and maximum bladder capacity of the two groups were analyzed and compared. Metaanalysis revealed that the indexes in experimental group were better than the control group (P <0. 05).

Conclusion	The existed limited evidences suggested that **acupuncture treatment of neurogenic bladder can significantly improve bladder capacity and residual urine volume and the total efficiency**. More high-quality randomized, double-blind, placebo-controlled trials are needed to confirm the efficacy and safety of acupuncture treatment of neurogenic bladder.

1.3. Hao 2013 Ø

Hao CZ, Wu F, Guo Y, Zhao L, Li Hq, Liao WJ, Zheng GQ. Acupuncture for neurogenic bladder after spinal cord injury: a systematic review and meta-analysis. European Journal of Integrative Medicine. 2013;5(2):100-8. [143477].

Introduction	The objective of this study is to evaluate the efficacy and safety of acupuncture for neurogenic bladder after spinal cord injury (SCI).
Methods	Data up to September 2012 were from 7 databases. Randomized-controlled clinical trials (RCTs) on acupuncture for neurogenic bladder after SCI were included.
Results	**Eight RCTs with 529 patients were identified**. One RCT reported significant effects of electroacupuncture (EA) adjuvant therapy for improving residual urine volume slip ratio compared with drug therapy plus intermittent catheterization program (ICP), (P<0.05); one reported improving of time of achieving balanced voiding compared with ICP plus physical therapy (PT) (P<0.05 or P<0.01); one reported improving of bladder capacity and residual urine volume compared with ICP plus PT (P<0.01). Two RCTs showed no significant effects of EA mono-therapy for total efficacy rate compared with drug therapy plus PT or plus PT and ICP (RR 1.26, 95% CI 0.95–1.68, P=0.11). Three RCTs showed significant effects of EA adjuvant therapy for total efficacy rate compared with ICP alone or ICP plus PT or drug therapy plus PT (RR 1.50, 95% CI 1.25–1.79, P<0.01). The methodological quality was generally poor. No trial reported adverse effects.
Conclusions	Due to the poor methodological quality of the studies and the small number of trials included in the meta-analysis, **the current evidence is insufficient to support the efficacy of acupuncture for neurogenic bladder after SCI**. Acupuncture appeared to be well tolerated, but no evidence is available to assess the safety. Further large, rigorous designed trials are needed

1.4. Special Clinical Forms

1.4.1. Post-Stroke Neurogenic Bladder

1.4.1.1. Hong 2026

Hong S, Jeong JC, Choi DJ. Effectiveness and Safety of Acupuncture for Post-Stroke Neurogenic Bladder: A Systematic Review and Meta-Analysis. Medicina (Kaunas). 2026;62(4):708. https://doi.org/10.3390/medicina62040708

Objective	This review is to systematically evaluate the clinical effectiveness and safety of acupuncture therapy for patients with post-stroke neurogenic bladder (PSNB).
Methods	We included randomized controlled trials (RCTs) evaluating any type of acupuncture treatment for PSNB. Data extraction and quality assessment using Cochrane Risk of Bias 2.0 were performed. Meta-analysis was conducted for total effective rate (TER) and urodynamic parameters.

Results	**Ten RCTs involving 727 participants** were included. Meta-analysis showed that acupuncture was associated with a reduction in residual urine volume (RUV), and increases in maximum cystometric capacity (MCC), and maximal urinary flow rate (Qmax). Acupuncture also showed a higher TER compared to control groups (RR = 1.23, 95% CI [1.15, 1.33], $p < 0.001$). However, wide 95% prediction intervals for urodynamic parameters indicated substantial uncertainty for future clinical applications. Adverse events were mild and infrequent, but only partly reported in two studies among included trials.
Conclusions	Acupuncture as an adjunctive therapy suggests potential trends for improving clinical efficacy and urodynamic parameters in PSNB patients. However, no definitive conclusions can be drawn regarding its clinical efficacy or safety due to the very low certainty of evidence, high methodological heterogeneity, and limited reporting of adverse events. Therefore, these results must be interpreted with extreme caution. Further high-quality, large-scale randomized controlled trials with standardized protocols are essential to establish robust evidence regarding its clinical effectiveness and safety.

1.4.2. Urinary Incontinence after Stroke

See corresponding item

1.4.3. Urinary Retention after Spinal Cord Injury

See corresponding item

1.4.4. Urinary Retention after Stroke

See corresponding item

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