

INPLASY PROTOCOL

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The Effectiveness of Acupuncture for Dysphagia After Stroke: A Systematic Review and Meta-Analysis

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Conflicts of interest:
The authors declare that there are no conflicts of interest regarding the publication of this paper.

Review question / Objective: This study reviewed and evaluated existing evidence of the efficacy of acupuncture as a clinical treatment for dysphagia after stroke. All RCTs of acupuncture for dysphagia after stroke were selected and excluded nonrandomized studies, observational studies, animal studies, qualitative studies, and letters. All patients conformed to the explicit clinical diagnosis criteria of stroke and dysphagia: (1) the participants were clinically diagnosed with ischemic or hemorrhagic stroke by computerized tomography or magnetic resonance imaging. (2) Dysphagia was diagnosed using a clinical bedside swallowing assessment, a videofluoroscopic swallowing study (VFSS), or a fiberoptic endoscopic examination of swallowing (FEES). For the intervention in experimental trials, acupuncture alone or acupuncture combined with other interventions was included, and other interventions included behavioral interventions, drug therapy, and electrical stimulation. The interventions should be the same between experimental and control trials, except for acupuncture in the experimental trials. The clinical symptoms had obviously improved with specific evaluation standards, such as the (1) watan swallowing test (WST); (2) standardized swallowing assessment (SSA); (3) penetration-aspiration scale (PAS); and (4) functional oral intake scale (FOIS), or by using an objective index, such as (1) VFSS and (2) endoscopic evaluation of swallowing, as the efficacy evaluation criterion.

INPLASY registration number: This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 10 October 2020 and was last updated on 10 October 2020 (registration number INPLASY2020100036).

INTRODUCTION

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stroke were selected and excluded nonrandomized studies, observational studies, animal studies, qualitative studies, and letters. All patients conformed to the explicit clinical diagnosis criteria of stroke and dysphagia: (1) the participants were clinically diagnosed with ischemic or hemorrhagic stroke by computerized tomography or magnetic resonance imaging. (2) Dysphagia was diagnosed using a clinical bedside swallowing assessment, a videofluoroscopic swallowing study (VFSS), or a fiberoptic endoscopic examination of swallowing (FEES). For the intervention in experimental trials, acupuncture alone or acupuncture combined with other interventions was included, and other interventions included behavioral interventions, drug therapy, and electrical stimulation. The interventions should be the same between experimental and control trials, except for acupuncture in the experimental trials. The clinical symptoms had obviously improved with specific evaluation standards, such as the (1) watanabe swallowing test (WST); (2) standardized swallowing assessment (SSA); (3) penetration-aspiration scale (PAS); and (4) functional oral intake scale (FOIS), or by using an objective index, such as (1) VFSS and (2) endoscopic evaluation of swallowing, as the efficacy evaluation criterion.

Condition being studied: Dysphagia is one of the most common poststroke sequelae, accounting for 27 to 64% of stroke patients and is often associated with malnutrition, pneumonia, and dehydration. The previous study has shown that dysphagia after stroke affects quality of life, carries increased risks of mortality and dependency, increases healthcare costs, and often leads to discharge from the hospital to a care home. Therefore, to accelerate the recovery of swallowing function and reduce these risks, it is very important to find an effective treatment for dysphagia. Acupuncture, as a form of alternative medicine, is a traditional treatment that is clinically effective for neurological diseases. Some randomized controlled trials have shown that acupuncture may reduce the proportion of

participants with dysphagia at the end of the trial. However, despite the high heterogeneity, the latest updated Cochrane review on swallowing therapy, which included an analysis of acupuncture, failed to show improvement in swallowing ability. There is still a lack of high-quality research on acupuncture treatment of dysphagia, and many clinical studies are still in the preliminary stage, with great differences in the acupuncture methods and the selection of acupoints in the research, leading to the inconclusive conclusion of acupuncture treatment for dysphagia.

METHODS

Participant or population: All patients conformed to the explicit clinical diagnosis criteria of stroke and dysphagia: (1) the participants were clinically diagnosed with ischemic or hemorrhagic stroke by computerized tomography or magnetic resonance imaging. (2) Dysphagia was diagnosed using a clinical bedside swallowing assessment, a videofluoroscopic swallowing study (VFSS), or a fiberoptic endoscopic examination of swallowing (FEES).

Intervention: For the intervention in experimental trials, acupuncture alone or acupuncture combined with other interventions was included, and other interventions included behavioral interventions, drug therapy, and electrical stimulation. The interventions should be the same between experimental and control trials, except for acupuncture in the experimental trials.

Comparator: For the control trials, the interventions included behavioral interventions, drug therapy, and electrical stimulation.

Study designs to be included: All RCTs of acupuncture for dysphagia after stroke were selected and excluded non-randomized studies, observational studies, animal studies, qualitative studies, and letters.

Eligibility criteria: This systematic review was conducted according to the preferred reporting items for systematic reviews and meta-analysis (PRISMA): The PRISMA Statement.

Information sources: We searched the following databases from their inception until March 2020: EMBASE (via Ovid), MEDLINE (via Ovid), the Cochrane Library (via Ovid), PubMed (via website), ScienceDirect (via website), China National Knowledge Infrastructure (CNKI) (via website), China Biology Medicine disc (CBMdisc) (via website), China Science and Technology Journal Database (VIP) (via website), and Wanfang Data (via website). Manual searches of relevant references were also conducted. The search terms were (“dysphagia”, “swallowing disorders”, “deglutition disorders” or “swallowing dysfunction”) and (“stroke”, “cerebral apoplexy” or “cerebrovascular accident”) and (“acupuncture”, “needling”, “electroacupuncture” or “warm acupuncture”).

Main outcome(s): The clinical symptoms had obviously improved with specific evaluation standards, such as the (1) watan swallowing test (WST) [14]; (2) standardized swallowing assessment (SSA) [15-17]; (3) penetration-aspiration scale (PAS) [18]; and (4) functional oral intake scale (FOIS) [19], or by using an objective index, such as (1) VFSS [20] and (2) endoscopic evaluation of swallowing [21], as the efficacy evaluation criterion.

Quality assessment / Risk of bias analysis: The included RCTs were assessed according to the Cochrane risk of bias assessment tool [22], and this process was carried out independently by the two review authors (Lida Zhong and Jin Wang). Quality was assessed as having a low, an unclear, or a high risk of bias according to seven criteria: (1) random allocation method (selection bias); (2) allocation concealment (selection bias); (3) blinding of assessors (performance bias); (4) blinding of outcome assessment (detection bias); (5) integrity of data results (attrition bias); (6) selective reporting (reporting bias); and (7)

other sources of bias. Any disagreements that arouse at any stage between the two review were resolved through discussion with a third author (Pu Wang).

Strategy of data synthesis: All statistical analyses were performed using RevMan 5.3 (<http://ims.cochrane.org/revman>). For dichotomous variables, the relative risk (RR) with its 95% confidence interval (CI) was calculated. For continuous variables, the mean difference (MD) and standardized mean difference (SMD) with their 95% CIs were calculated. The heterogeneity between each group was tested by the Cochran’s Q statistic and the I² test [23]. Studies with an I² of 25% to 50% were considered to have low heterogeneity, and I² values of 50% to 75% and > 75% were considered indicative of moderate and high levels of heterogeneity, respectively. Fixed-effect models were used to combine studies if the I² test was not significant (P for heterogeneity<0.1). Otherwise, random-effect models were used. P < 0.05 was considered statistically significant for the between-group difference.

Subgroup analysis: If substantial heterogeneity was detected, we looked for reasonable explanations, and subgroup analysis or sensitivity analysis could be applied to explore the causes of heterogeneity. If the sources of heterogeneity could not be determined, a descriptive analysis was adopted.

Sensibility analysis: If substantial heterogeneity was detected, we looked for reasonable explanations, and subgroup analysis or sensitivity analysis could be applied to explore the causes of heterogeneity. If the sources of heterogeneity could not be determined, a descriptive analysis was adopted.

Country(ies) involved: China.

Keywords: Acupuncture; Dysphagia; Stroke; Meta-Analysis; Review.

Contributions of each author:

Author 1 - Lida Zhong performed literature search, assessed study quality, undertook

data collection. Results were analyzed by Lida Zhong.

Author 2 - Jin Wang performed literature search, assessed study quality, undertook data collection.

Author 3 - Fang Li performed literature search, assessed study quality, undertook data collection.

Author 4 - Xiao Bao provided support and advice.

Author 5 - Huiyu Liu provided support and advice.

Author 6 - Pu Wang - Results were interpreted and discussed by Lida Zhong and Jin Wang.