



Cupping for stroke rehabilitation: A systematic review

Myeong Soo Lee^{a,b,*}, Tae-Young Choi^a, Byung-Cheul Shin^c, Chang-ho Han^d, Edzard Ernst^b

^a Division of Standard Research, Korea Institute of Oriental Medicine, Daejeon, Republic of Korea

^b Complementary Medicine, Peninsula Medical School, Universities of Exeter & Plymouth, Exeter, UK

^c Division of Clinical Medicine, School of Korean Medicine, Pusan National University, Yangsan, Republic of Korea

^d Department of Oriental Medicine, Graduate School of Oriental Medicine, Dongguk University, Seoul, Republic of Korea

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ABSTRACT

Cupping is often used for stroke rehabilitation in Asian countries. Currently, no systematic review of this topic is available. The aim of this systematic review is to summarize and critically evaluate the evidence for and against the effectiveness of cupping for stroke rehabilitation. Thirteen databases were searched from their inception through March of 2010 without language restrictions. Prospective clinical trials were included if cupping was tested as the sole treatment or as an adjunct to other conventional treatments for stroke rehabilitation. We found 43 potentially relevant articles, of which 5 studies including 3 randomized clinical trials (RCTs) and 2 uncontrolled observational studies (UOSs) met our inclusion criteria. Cupping was compared with acupuncture, electro-acupuncture and warm needling. Some superior effects of cupping were found in two of the RCTs when compared to acupuncture in hemiplegic shoulder pain and high upper-limb myodynamia after stroke. The other RCT failed to show favorable effects of cupping when compared to acupuncture and warm needling in patients with hemiplegic hand edema. The two UOSs reported favorable effects of cupping on aphasia and intractable hiccup after stroke. There are not enough trials to provide evidence for the effectiveness of cupping for stroke rehabilitation because most of the included trials compared the effects with unproven evidence and were not informative. Future RCTs seem warranted but must overcome the methodological shortcomings of the existing evidence.

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1. Introduction

Stroke is one of the common causes of death worldwide [1]. Stroke survivors often need long-term institutional care, which is a major burden for all involved. In Western medicine, no single form of complementary and alternative medicine (CAM) is in particularly common use for the management of stroke rehabilitation or recovery [2]. In Eastern medicine, acupuncture and Chinese herbs are widely used [2]. One recent survey reported that 46% of stroke patients used some forms of CAM, such as herbal medicine, acupuncture-type treatment or chiropractic treatment [3].

Cupping is a physical treatment used by acupuncturists or other therapists that uses a plastic, bamboo, or glass cup to create suction on the skin over an acupuncture point or painful area [4]. It has been said to reduce pain as well as a host of other symptoms [5–7]. In dry cupping, which pulls the skin into the cup without drawing blood, negative pressure acts on the skin and irritates subcutaneous muscles. In wet cupping the skin is lacerated so that stagnant blood is drawn into the cup. It has been claimed that cupping (both dry and wet)

drains excess fluids, loosens adhesions and lifts connective tissue, brings blood flow to stagnant skin and muscles, and stimulates the peripheral nervous system. In addition, cupping is said to reduce pain and high blood pressure and modulate neurohormone and immune systems [4,7]. Cupping is used to improve subcutaneous blood flow circulation and to stimulate the autonomic nervous system. In clinical practice, cupping is often used for stroke rehabilitation and its complications [4]. Various web sources also illustrate the benefits of cupping for stroke.

Currently, no systematic review of this subject is available. It is therefore pertinent to evaluate the effectiveness of cupping for stroke rehabilitation. The objective of this systematic review is to summarize and critically assess the evidence of cupping for stroke rehabilitation.

2. Methods

2.1. Data sources

The following databases were searched from their inception through March of 2010: Medline, EMBASE, CINAHL, PsycInfo, The Cochrane Library 2010 (Issue 2), six Korean Medical Databases (Korean Studies Information, DBPIA, Korea Institute of Science and Technology Information, Research Information Service System, KoreaMed and the Korean National Assembly Library), the Chinese

* Corresponding author. Division of Standard Research, Korea Institute of Oriental Medicine, Daejeon, 305-811, Republic of Korea. Tel.: +82 42 868 9266; fax: +82 42 863 9464.

E-mail addresses: drmslee@gmail.com, mslee@kiom.re.kr (M.S. Lee).

Medical Database (CNKI) and the Japanese Medical Database (J-Stage). Twelve major Korean traditional medicine journals were also manually searched for relevant articles. The search terms used were: cupping AND (stroke OR apoplexy OR cerebrovascular attack OR cerebrovascular accident OR cerebrovascular* OR cerebral infarction OR cerebral hemorrhage OR cerebral*) in Korean, Chinese, Japanese and English. In addition, our own files and journals (FACT – Focus on Alternative and Complementary Therapies, and Research in Complementary Medicine [Forschende Komplementarmedizin] up to March of 2010) were manually searched. Hardcopies of all articles were obtained and read in full.

2.2. Study selection

Prospective clinical trials of cupping for stroke rehabilitation were included. Trials comparing any type of cupping with any type of control intervention were included. We included trials that employed cupping an adjunct to conventional treatment. Trials with cupping as a part of a complex (mixed but not add-on) intervention were excluded. Trials were also excluded if outcome measures were not relevant to stroke rehabilitation. Trials published in dissertation and abstract form were included. No language restrictions were imposed.

2.3. Data extraction, quality and validity assessment

All articles were read by two independent reviewers (T.Y.C. and B.C.S.) who extracted data from the articles according to predefined criteria. Risk of bias was assessed using the Cochrane classification with four criteria: randomization, blinding, withdrawals and allocation concealment [8]. Considering that it is difficult for blind therapists to use cupping, we assessed patient and assessor blinding separately. Disagreements were resolved by discussion between the two reviewers by consulting a third reviewer (M.S.L.).

2.4. Data synthesis

To summarize the effects of cupping on each outcome, we abstracted the risk estimates (relative risk: RR), and mean difference and 95% confidence interval (CI) were calculated using the Cochrane Collaboration's software (Review Manager (RevMan) Version 5.0 for Windows. Copenhagen: The Nordic Cochrane Centre). For studies with insufficient information, we contacted the primary authors to acquire and verify data where possible. If appropriate, we then pooled the data across studies using random effects models (if excessive statistical heterogeneity or clinical heterogeneity did not exist). The chi-square test, and the Higgins I^2 test were used to assess heterogeneity.

3. Results

3.1. Study description

We identified 43 potentially relevant articles, of which 38 studies were excluded (Supplement 1). Key data of the included three randomized clinical trials (RCTs) and two uncontrolled observational studies (UOSs) are summarized in Table 1 [9–13]. Thirteen studies were excluded because cupping was included as part of complex treatment or because of the use of other non-proven therapies (Supplement 2). A total of 292 participants were included in these studies. All trials originated from China. One RCT assessed the effects of cupping on hemiplegic shoulder pain [9], one tested hemiplegic hand edema [10] and the other RCT assessed the effects of cupping on high upper-limb myodynamia after stroke [11]. The two UOSs tested aphasia [12] and intractable hiccup after stroke [13]. Wet cupping was used in four trials [9–12] and dry cupping was employed in one trial [13]. All RCTs tested cupping vs. several types of acupuncture.

3.2. Risk of bias

Only one RCT employed an appropriate method of sequence generation (random number table) [9], while others did not have information available [10,11]. Assessor blinding and allocation concealment were judged to have been achieved in none of the studies. None of the included RCTs incorporated patient blinding.

3.3. Outcome

Yuan [9] tested the effects of wet cupping in patients with hemiplegic shoulder pain. Patients were randomized into two groups, one receiving wet cupping plus exercise therapy and the other receiving acupuncture plus exercise therapy. After treatment, the pain intensity on the visual analogue scale (VAS) and pain frequency were significantly reduced in the cupping group compared to control groups. There was also a favorable effect of cupping on range of motion.

Zhang [10] evaluated the efficacy of wet cupping on responder's rate in patients with hemiplegic hand edema. A total of 150 patients were randomly divided into three groups receiving wet cupping ($n=34$), acupuncture ($n=36$) or warm needling ($n=80$). The main outcome was responder's rate. There was a favorable effect of wet cupping compared to acupuncture; however, warm needling had a more beneficial effect compared to wet cupping.

Ni and Shen [11] conducted an RCT to evaluate the effects of wet cupping in patients with high upper-limb myodynamia after stroke compared to acupuncture. Sixty-two patients were randomly divided to receive wet cupping ($n=31$) or acupuncture ($n=31$). The main outcome measures were responder's rate and reduction of myodynamia. The differences between the wet cupping and control groups were statistically significant in favor of wet cupping for response rate and reduction in myodynamia. The two UOSs included in the present systematic review assessed the effects of cupping for stroke rehabilitation [12,13]. One trial showed that wet cupping had positive effects on aphasia after five treatments [12]. The other UOS found that five to ten treatments of dry cupping improved the intractable hiccup after stroke [13].

3.4. Adverse events

None of the included studies mentioned adverse events.

Clinical heterogeneity among the studies (conditions of patients, etc.) prohibited us from pooling the data.

4. Discussion

Few rigorous RCTs testing the effects of cupping for stroke rehabilitation are currently available, and the existing studies do not provide much information for efficacy of cupping for stroke rehabilitation. To date, the effects of acupuncture for stroke rehabilitation have not been confirmed. Furthermore, two RCTs [9,11] evaluated here showed favorable effects of wet cupping for stroke rehabilitation while the other [10] failed. Future well-designed clinical trials are needed to decipher the effectiveness of cupping for stroke rehabilitation.

In three studies evaluated here, cupping was compared to acupuncture and warm needling [9–11]. Some superior effects of cupping were found when compared to acupuncture treatment for hemiplegic shoulder pain [9] and high upper-limb myodynamia after stroke [11]. The other RCT [10] failed to show favorable effects of cupping when compared to acupuncture and warm needling in patients with hemiplegic hand edema. These trials, however, compared the effects with unproven techniques and were not informative. One problem with clinical trials employing cupping is finding a suitable sham or placebo control [14]. Considering that the

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