

Systematic Review of Cupping Including Bloodletting Therapy for Musculoskeletal Diseases in Korea

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To evaluate the effectiveness of cupping and bloodletting therapy in the treatment of musculoskeletal diseases. Systematic searches were conducted on KSI, KISTI, DB Pia, KIOM Database, and Koreamed until January 2007. Hand-searches included conference proceedings and our own files. There were no restrictions regarding the language of journals published in Korea. Controlled trials of dry cupping, wet cupping, or blood letting for patients with musculoskeletal disease were considered for inclusion. Trials testing other forms of dry cupping therapy were included. Methodological quality was assessed by two doctors. 20 possibly relevant studies were identified and 5 studies were included. One trial tested wet cupping for ankle sprain and reported positive result. Two trials tested blood letting for low back pain, one was positive and the other one was neutral. One trial tested the types of dry cupping for low back pain, and Ki-gong cupping therapy was superior to other two types of cupping. One trial compared wet cupping with dry cupping for low back pain and the result was negative. The effectiveness of bloodletting plus acupuncture for treating patients with low back pain is superior to acupuncture in spite of low quality. One trial of wet cupping for ankle sprain had effects in reducing pain. However, I suggest that the rigorous RCTs of cupping and blood letting therapy will be conducted in well designed features.

Key words : Cupping therapy, blood letting, systematic review

Introduction

Cupping is the technique whereby a localized vacuum applied against the skin breaks superficial blood vessels in the papillary dermis, thereby creating distinctive circular cutaneous lesions for thousands years^{1,2}. A cup is attached to the skin surface to cause local congestion through the negative pressure created by introducing heat in the form of an ignited material or manual pumping³. It is used for diagnosis, protection and treatment for many kinds of diseases such as backache, hypertension, cerebral attacks, and joint disease¹ in Asia.

Dry cupping was a procedure where the skin remains intact; wet cupping results in the actual removal of blood and this was accomplished by first incising the skin with a multibladed instrument called a scarificator⁴. After cupping, there may be blood stasis, bruise or blisters due to localized suction, which disappears several days later³. Blood letting (venesection or venepuncture) is a therapeutic technique to

prick the superficial blood vessels and draw out a proper amount of blood with a scarificator⁵. Especially, the cupping and bloodletting therapy has been ensured by National Health Insurance (NHI) since 1987 in Korea. 288(89.5%) of 322 medical doctors of Korea traditional medicine used blood letting therapeutics, and 82 (28.7%) of them practiced it over 50% of patients a day in Korean survey⁶. In the USA, acupuncturists of traditional Chinese medicine adjunctively 21% of all low back pain patients with cupping⁷. Further, as the use of alternative and complementary therapies is increasing⁸, the use of cupping may undoubtedly become more common².

However there were no systematic reviews and rigorous randomized clinical trials (RCTs) of cupping and bloodletting therapy. To evaluate the evidence for the effectiveness of cupping and bloodletting therapy for musculoskeletal disease, we conducted a systematic review of trials.

Methods

1. Data sources

Searches were performed in January 2007 using KSI, KISTI, DB Pia, KIOM Database, and Koreamed. Search terms used were cupping, blood letting, venepuncture and

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venesection. In addition, our own files were manually searched, and original articles were obtained, and all reference lists were scanned for further relevant articles.

2. Study selection

All articles were included what reported all prospective controlled trials, not just prospective randomized trials, in which patients with musculoskeletal disease were treated blood letting (venepuncture or venesection), dry or wet cupping. Trials testing other combinations of acupuncture, herb and physiotherapies were included. Observational study or trials without control were excluded. No language restrictions were applied.

3. Data extraction

Data were extracted independently by two authors (Prof. YD Kwon, Dr. HJ Cho) using a specifically designed data extraction form. For each study, trial design, randomization, blinding and handling of drop outs, inclusion and exclusion criteria, details of treatment and control procedures, main outcomes measure and main results were recorded. Differences during this process were settled by discussion.

4. Data synthesis

The mean change of pain scores and function compared with baseline were defined as primary outcome measures. They were used to assess the differences between the intervention groups and the control groups. Means and 95% confidence intervals (CI) were calculated using the Cochrane Collaboration's standard meta-analysis software (RevMan 4.2.10, Update Software Ltd., Oxford, England). For some studies, the information was insufficient. The chi-square test for heterogeneity was used to assess whether the distribution of the results was compatible with the assumption that inter-trial differences were attributable to chance variation alone. Homogeneous datasets were statistically pooled using a fixed effects model in spite of low quality.

5. Quality assessment

The quality of studies was assessed using the Jadad score⁹. Taking into account the difficulties in blinding, we used a modification of this scale¹⁰. Points were awarded for a maximum of 5 as follows: 1 point if the study was described as randomized; 1 point for appropriate method; 1 point deducted if randomization method was inappropriate; 1 point if subject was blinded to intervention; 1 point if evaluator was blinded to intervention; 1 point for description of withdrawals and dropouts. Subject blinding was assumed where the control

intervention was indistinguishable from cupping and bloodletting therapy, even if the word 'blinding' did not occur in the report. Trials with 4 or 5 points were considered to be of high quality.

Results

1. Study description

The literature searches revealed 5 possibly relevant studies. 15 studies were excluded. Key data of the remaining 5 included RCTs are summarized in Table 1. Five of these studies employed bloodletting, dry or wet cupping, One trial¹¹ of five compared wet cupping with dry cupping for low back pain and One¹² out of five studies tested the types of dry cupping for low back pain. Two^{5,13} of these studies employed venesection or venepuncture for low back pain. Three^{5,11,14} were studies combined cupping with acupuncture, and one study¹¹ of bloodletting provided acupuncture, physiological therapies and herbal medication to two groups equally. Four^{5,11-13} of these studies were related to LBP, and one¹⁴ was for ankle sprain. The treatment duration was 20 to 30 minutes in most studies.

2. Study quality

One active controlled study reported assessor blinding and scored 2 on the modified Jadad scale¹⁰, and one study scored 1 point. 4 studies scored 0 point. Subject blinding was judged to have been not achieved in all studies (Table 1). Two studies had no control groups, one of which was observational study.

3. Outcomes

Overall, One study suggested intergroup differences in wet cupping plus electrical acupuncture compared with electrical acupuncture¹⁴, and two studies^{5,13} of bloodletting therapy for low back pain were mixed results, but in meta analysis bloodletting plus acupuncture was superior to only acupuncture in spite of low quality (Fig. 1). One study¹¹ compared wet cupping with dry cupping for LBP was had no a difference. Ko¹² compared dry cupping with fire and Ki-gong cupping, which all had effectiveness.

Wet cupping combined acupuncture was compared with acupuncture for ankle sprain, which reported intergroup differences for pain on VAS and AHS scales. Wet cupping combined acupuncture was compared with dry cupping combined acupuncture for LBP, which had no intergroup difference on pain measures and function (Table 1).

Blood letting combined acupuncture was compared

against acupuncture in one study⁵⁾ which reported intergroup differences for pain rating score (PRS). Blood letting combined acupuncture, physiological therapy and herbal medication was compared to acupuncture combined physiological therapy and herbal medication in another study¹³⁾ which reported no intergroup differences for PRS and pain VAS.

reported mixed results in cupping or bloodletting. One CCTs¹¹⁾ with sample sizes <40 reported no intergroup differences on pain VAS and function in favor of wet cupping. The extent of heterogeneity in the dataset prevented a meaningful meta-analysis across almost trials except two trials.

Table 1. Controlled trials of cupping or bloodletting therapy for musculoskeletal diseases

First author (year)	Study Design Quality score	Sample size Pain site	Period of trials	Intervention groups	Control groups	Main outcomes	Results
Ko JH ¹²⁾ (2001)	CCT Open 0	50 Low back	None of report	A: BL40, BL52, GV4, BL23, A-shi+ dry cupping, no reported sessions in total	B: BL40, BL52, GV4, BL23, A-shi + fire cupping C: BL40, BL52, GV4, BL23, A-shi + Ki-gong cupping	1) Lumbar angle (flexion, extension)	1) effect size (Qi kong cupping)dry or fire cupping) No report of statistic method and P-value
Lee SH ⁵⁾ (2002)	RCT Open 1	46 Low Back	2001.09.03-09.28	A: Formula AT, GV4, GV3, BL23, BL24, BL25, BL26, BL32 + Venepuncture BL40, one time /week, 1 session in total	B: A: Formula AT, GV4, GV3, BL23, BL24, BL25, BL26, one time /week, 1 session in total	1) Pain Rating Score (PRS)	1) Intergroup difference (p<0.05)
Song HG ¹³⁾ (2004)	CCT Open 0	40 Acute Low Back Pain	2003.11.01-2004.04.30	A: Formula AT, GV4, GV3, BL23, BL24, BL25, BL26, BL32, one time /day, 5 sessions in total + Venesection, BL40,BL60,1 time/2 days, 2-3 sessions in total	B: A: Formula AT, GV4, GV3, BL23, BL24, BL25, BL26, BL32, one time /day, 5 sessions in total (Group A and B received physiological therapy and herbal medication together)	1) Pain Rating Score (PRS) 2) Pain VAS	1), 2) No intergroup differences
Son DY ¹¹⁾ (2003)	CCT Open 0	36 Acute Low Back Pain	2003.07.01-08.31	A: Formula AT + Wet cupping, BL23, BL24, BL25, BL26, one time /1-3 days, two sessions in total	B: Formula AT + Dry cupping, BL23, BL24, BL25, BL26, one time/1-3days, two sessions in total (Group A and B received physiological therapy together)	1) Pain VAS 2) Function (Oswestry Disability Index, ODI)	1) intergroup difference after 1st treatment (p<0.05). No intergroup difference after 2nd treatment 2) No intergroup difference
Hwang JS ¹⁴⁾ (2005)	RCT assessor blind 2	20 Ankle sprain	2004.05.24-12.15	A: EA, GV40,B62,B60,B61,G39 or Liv4, Sp5, K6, K3,G39+ Wet cupping, three times/week, three sessions in total within 3 weeks	B:EA,GV40,BL62,BL60,BL61,G39 or Liv4, Sp5, K6, K3,G39, three times/week, three sessions in total within 3 weeks	1) Ankle-Hindfoot Scale (AHS) 2) Numerical Rating Scale (NRS)	1,2) Intergroup difference (p<0.05)

RCT, Randomised clinical trial; CCT, Controlled clinical trial, ST, stomach; BL, urinary bladder; LI, large intestine; SP, spleen; Kid, kidney; Liv, liver; GB, gallbladder; EX, extraordnary; AT, acupuncture; EA, electroacupuncture; VAS, visual analogue scale.

Review: Cupping including Bloodletting therapy for musculoskeletal disease
 Comparison: 01 Acupuncture and bloodletting vs acupuncture for LBP
 Outcome: 01 Pain Rating Sclae(PRS)

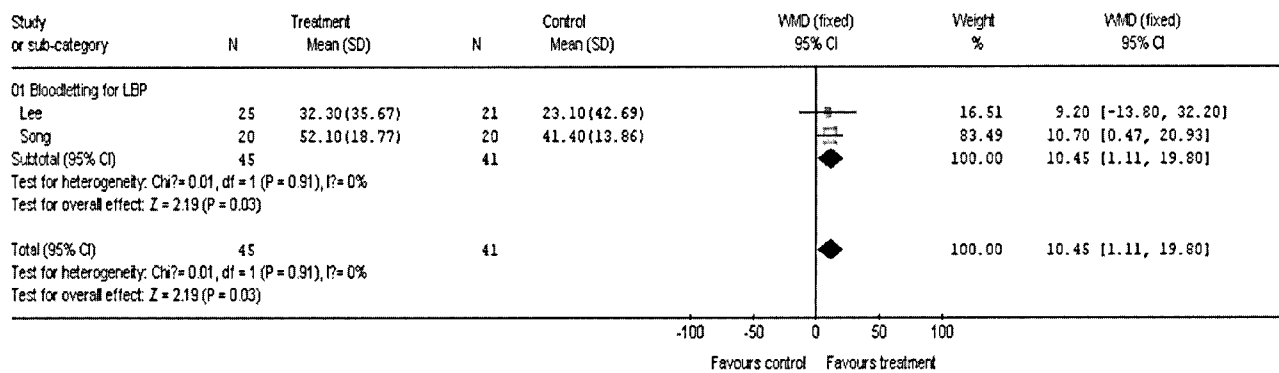


Fig. 1. Meta-analysis of controlled trials Discussion

Dry cupping by manual pump was compared with two types of cupping, which was fire and Ki-gong cupping for controls¹²⁾. That reported Ki-gong cupping was superior to dry or fire cupping.

One RCT⁵⁾ with sample sizes of 40 reported intergroup differences in favor of blood letting. One RCT¹⁴⁾ with sample sizes <40 reported intergroup differences on AHS and NRS in favor of wet cupping. Two CCTs^{12,13)} with sample sizes of 40

Discussion

Cupping is used mainly in China, the Middle East, Ethiopia, or Central and North Europe as a traditional therapy for a variety of ailments, which were acute sprain, headache, and pain for more than 5000 years^{2,15)}. In Korean traditional medicine dry or wet cupping has almost been combined with acupuncture treatment. Dry cupping produces a small artificial

vesica which irritates the cutane and subcutane connective tissue of the back, chest, abdomen, face and buttock et al whereas wet cupping is assumed to figuratively purge and detoxify the body removing the stagnant blood from the body after blood letting¹⁵⁾. Modern alliances that use a manual hand pump to create the suction are also currently available¹⁶⁾. Blood letting is described in Ling Shu (靈樞) and Su Wen (素問) of traditional Chinese medical textbooks and also named bleeding therapy or collateral pricking therapy. It is a therapeutic technique to prick the superficial blood vessels and draw out a proper amount of blood with a scarificator⁵⁾.

No attempt has been made to evaluate this treatment more rigorously by controlled clinical trials except a few studies¹⁵⁾ because there were no suitable control manipulations. Ludtke¹⁵⁾ suggested to use some simple form of massage or heat applications as control treatment. In future trials we will demonstrate whether dry or wet cupping without combined therapies is superior to active control.

A previous review in Korea presented the history of cupping or bloodletting therapy, but there was no the systematic review of clinical trials. We opted to assess quality using modified Jadad scale whereby a point is scored for subject blinding and assessor blinding separately¹⁰⁾. Of course, many other systems to assess methodological quality exists, we accepted the Jadad score because it is easy to apply score. Of the studies, only one trial was assessor blinding¹⁴⁾. Trials with inadequate levels of blinding are likely to exaggerate the treatment effects and thus limit the reproducibility of the results^{17,18)}. All studies assessed were low quality, and lack of blinding and randomization.

Cupping therapy was compared with various types of control interventions. Depending on the nature of the control intervention, different conclusions can be drawn¹⁹⁾. Wet cupping combined acupuncture seems to reduce pain compared with acupuncture¹⁴⁾ in ankle sprain, but wet cupping plus acupuncture treatment was not superior to dry cupping plus acupuncture treatment in LBP¹¹⁾. These results of wet cupping are mixed, and they had small sample size with low quality. One study¹²⁾ reported that Ki-gong dry cupping was superior to other two types (dry cupping by manual pump or fire cupping), but it was not enough data presented in this paper. Above the results, we cannot conclude that the effect of cupping therapy was superior to other treatments, because the results were mixed and couldn't be pooled for meta-analysis. We propose that the researches of cupping therapy to waiting list, cupping therapy to acupuncture, the types of cupping therapy and cupping therapy to physiological therapy will be conducted rigorously by well trained clinicians. Sensitivity

analysis including high quality trials in future will be performed. Two trials of bloodletting therapy plus acupuncture had more effect than acupuncture in meta-analysis, but before these were low quality we will conduct rigorous trial for treatment effect. Lee²⁰⁾ conducted one trial without control group, and it showed a significant difference of pain VAS between before and after treatment. This may suggest effectiveness of it can't overcome against the natural course of LBP but allow for placebo effects. However, we can acquire the effect estimate from this study to calculate the sample size for further study.

A few side effects were reported about cupping therapy, and Lee²¹⁾ reported one case of panniculitis caused by cupping, and Birol³⁾ did a case of keloid secondary to therapeutic cupping. Tuncez²²⁾ presented a case of cupping complicated with suction bullae, which resulted from holding on her skin for over 40 min and Kose²³⁾ did a case burns due to fire cupping. Wet cupping probably increases the risk of infection, as the skin barrier is compromised²⁾. Misdiagnosis has occurred among primary care givers and emergency room physicians that have suspected physical abuse when the lesions are seen in children²⁴⁾. Cupping also has unique morphological features that are easily recognized, and a experts in skin disease, dermatologists should be aware of this technique as it becomes more commonplace²⁴⁾. Nowadays in Korea, the use of disposable cup is increasing to prevent secondary contaminations.

This review has several limitations. We cannot be absolutely sure that our searches included all relevant studies, which is a limitation that indeed applies to a systematic review in general. It must be noted that design features such a placebo or blinding are difficult to incorporate for cupping or bloodletting therapy trials.

In conclusion, the evidence for the effectiveness of bloodletting plus acupuncture for treating patients with low back pain was effective although those studies were low quality. Wet cupping for ankle sprain had specific effects in reducing pain in one trial. However, we suggest that rigorous studies of cupping therapy for musculoskeletal disease such as low back pain, ankle sprain, or neck pain will be conducted in condition preserving high quality, and the respective efficacies of cupping types will be showed.

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