

Original Article

Evaluation of Bloodletting Cupping Therapy in the Management of Hypertension

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ABSTRACT

Background: Bloodletting cupping therapy (Hijama) is a traditional alternative medicine practiced in different cultures. Claims about the therapeutic efficacy of Hijama in hypertension are contradictory. The aim of this project was to determine if Hijama therapy is beneficial in the treatment of patients with hypertension. **Materials and Methods:** In this retrospective study, 60 files for patients treated for hypertension, aged 40–60 years and whose systolic blood pressure (SBP) is at least 140 mm Hg, were used. The data from 30 patient files were obtained from three licensed Hijama centers (study group), whereas data from the rest of 30 patient files were collected from a hospital (control group). The data from Hijama centers included age, date of Hijama therapy, and blood pressure measured before each Hijama session. Both diastolic blood pressure (DBP) and SBP data were obtained over 3-month period. **Results:** The results showed a significant reduction in SBP (P value < 0.01) over three sessions of wet cupping (from 149.2 to 130.8 mm Hg), but this was not significant for DBP over three sessions ($P = 0.074$). The study also found that the mean SBP in the study group was 9.6 mm Hg less than that in the control group (130.8 vs. 140.4 mm Hg, $P = 0.019$), whereas there was no significant difference in DBP between the study group and the control group (87.0 vs. 86.0 mm Hg, $P = 0.75$). **Conclusions:** Our study shows clear relationship between Hijama and the reduction and control of SBP in patients with hypertension. Therefore, Hijama can be used as an adjunct to conventional therapy, which may allow downtitration of given doses of antihypertensive drugs. The possible association of SBP reduction by Hijama and pain reduction needs an investigation.

KEYWORDS: Bloodletting cupping therapy, diastolic blood pressure, Hijama, hypertension, retrospective, systolic blood pressure

INTRODUCTION

Bloodletting cupping (BLC) therapy (i.e., Hijama^[1]) is a traditional alternative medicine practiced in different cultures such as China, Greek, Arab, Turkish, and Persian and can be traced back to more than 2000 years.^[2-5] It has been claimed to control and prevent certain diseases and to maintain homeostasis.^[6] Regardless of its common use in many countries, the evidence to support its practice to promote patients' health and improve quality of life is incomplete.^[7,8]

Different types of cupping appear in literature, including dry cupping, wet cupping, moving cupping, and fire cupping.^[2,9-11] All types involve suction created by various means with or without bloodletting. The wet

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cupping Hijama technique includes applying suction to the desired points on the skin using plastic, bamboo, earthenware, silicone, or glass cup. Thereafter, incisions are applied to the same areas of the skin to remove and suck the blood into the replaced cups.

Studies aimed to establish or correlate the beneficial effects of Hijama therapy in various health conditions were mainly able to associate beneficial effects to different kinds of pain, including neck pain, upper shoulder pain, and low back pain.^[8,12-17] In addition, tension and migraine headache,^[18] acute/chronic inflammation, infectious diseases,^[19] immune system disorders, diabetes,^[20] anxiety and depression,^[21] sleep quality,^[22] heart rate variability,^[23] and hypertension have been investigated.^[24] Of particular interest was the control of hypertension because contradictory findings have been reported. For example, one registered clinical trial showed that there were no significant differences in the systolic blood pressure (SBP) or diastolic blood pressure (DBP) between the cupping therapy group and the control group.^[25] On the other hand, studies with larger number of participants have shown that cupping can have beneficial effects on blood pressures (BPs), although long-time benefits were not investigated.^[26]

The claim that Hijama therapy may be beneficial to patients with hypertension was based on the removal of both excess interstitial and intravascular fluid and harmful metabolic substances.^[27] It was also proposed that Hijama therapy stimulates endogenous nitric oxide production and excretion, including accumulated vasoactive substances and free radicals,^[28] which may result in reduced BP measurements. Hijama professionals believe that causes of illness can be either superficial or exist in deeper organs, which have a link with the skin at certain points.^[29] These pathologies can be removed when a negative pressure is applied through superficial clean incisions, thus enhancing the flow of blood. Such explanation, however, is superficial and is not substantiated by enough evidence.

The objective of this retrospective observational study was to assess whether applying Hijama therapy helps in the reduction of SBP and DBP compared to a control group within three session periods.

MATERIALS AND METHODS

To conduct this retrospective case-control study, ethical approval was obtained from research ethics committee of Ajman University. The participating centers and the hospital were all licensed from the Ministry of Health in the United Arab Emirates (UAE). Three Hijama centers in Ajman and Sharjah cities (UAE) were visited to obtain data from admitted patients with

hypertension seeking Hijama therapy, whereas one participating hospital in Dubai city (UAE) was used to obtain data from patients with hypertension already taking the prescribed treatment. The required consents were obtained from the patients/hospital/centers to use the data for the purpose of this research.

Sample size

Data were collected in the period between October 15, 2017, and November 15, 2017, with a sample size of 60 patients. The patients were divided into two groups: the study group (30 patients' files) and the control group (30 patients' files). The primary outcome under investigation was SBP lowering. A difference of at least 10 mm Hg between the two groups was considered significant in this study. The sample size was calculated based on study power of 85%, α error rate of 0.05, and SBP population standard deviation for hypertensive of 13 mm Hg (from literature review).

Inclusion and exclusion criteria

At Hijama centers, patient's file was used if the patient sought Hijama therapy for the primary purpose of hypertension management and continued for at least three sessions. Patients also needed to meet the following criteria for their files to be used:

1. Gender: male.
2. For Hijama centers, patients must have undergone cupping therapy for three consecutive sessions, and their BP was measured before each session. The gap between one session and another is approximately 1 month.
3. Patients who are between 40 and 60 years of age.
4. For Hijama centers, files of patients were used whether or not the patient was taking medication for hypertension, whereas for data from the hospital included patients under conventional antihypertensive treatment.
5. SBP is at least 140 mm Hg.

Patients' files were excluded if the patients had the following:

1. Kidney disease
2. Donated blood (1 month before cupping therapy)
3. Bleeding diathesis (unusual susceptibility to bleed)
4. SBP of more than 180 mm Hg

Cupping therapy

Cupping therapy specialist decides the cupping points required to treat specific diseases/conditions. For hypertension, the participating centers applied cups to the same standard sites known to the professionals. The Hijama therapy was performed in the following way: The sites where the cups are applied are first

sterilized with alcohol swabs. The cups are then placed on the selected sites, negative pressure is created by a suction pump, and then cups are left for 5 min to form congestions beneath them. After the removal of the cups, superficial incisions are made using sterilized blades on each congestion. The cups are placed again and vacuumed to remove blood from the sites until they are full. The cups are then removed. The bleeding areas are then cleansed using alcohol swabs and then bandaged.

Data analysis

One-way analysis of variance and Student's *t*-test were used for comparison and to make inferences regarding the effect of Hijama therapy on hypertension. The 95% confidence interval (CI) assuming $\alpha = 0.05$ and two-tail test were applied in the tests. Analysis was done using SPSS, version 21 (SPSS, Chicago, IL), and Excel 2013 (Microsoft Corporation, Redmond, WA, D.C.) was used for the preparation of the graph.

RESULTS

The baseline characteristics of the study and the control groups are given in Table 1. The age of the control group did not differ significantly from that of the study group ($P = 0.96$). The age range in both the study and the control groups was from 40 to 60 years. Likewise, both DBP ($P = 0.74$) and SBP ($P = 0.29$) showed similar values. In the study group, DBP ranged from 70 to 110 mm Hg, whereas in the control group, it was from 70 to 113 mm Hg. On the other hand, in the study group, SBP ranged from 140 to 170 mm Hg, whereas in the control group, it was from 140 to 172 mm Hg.

For patients undergoing Hijama therapy, SBP had improved with each session and gave best results at the third session. For example, on the third session, SBP decreased from baseline 149.2 (95% CI: 146.1–152.3 mm Hg) to 130.8 (95% CI: 127.1–134.6 mm Hg), ($P < 0.001$). Similarly, the control group undergoing conventional therapy witnessed a decrease in SBP from 151.8 to 140.4 mm Hg ($P = 0.006$). Comparing the two groups (at the third Hijama session with control group after 2 months of conventional therapy), it was clear that the Hijama group achieved better (-9.6 mm Hg) pressure reduction ($P = 0.019$).

In comparison, DBP at the third Hijama session decreased from a baseline value of 92.5 (95% CI: 88.2–96.8 mm Hg) to 87.0 (95% CI: 83.0–91.0 mm Hg); however, this was not significant ($P = 0.06$). On the contrary, DBP with conventional therapy decreased significantly from 93.4 to 86.0 mm Hg ($P = 0.014$). When comparing DBP at the third Hijama session with the control group, no

Table 1: Baseline characteristics of the study and control groups

	BLC therapy with/ without conventional treatment	Conventional treatment
Overall records analyzed	30	30
Age (years) \pm SD	50.3 \pm 7.1	50.2 \pm 6.1
Baseline SBP (mm Hg) \pm SD	149.2 \pm 8.3	151.8 \pm 10.4
Baseline DBP (mm Hg) \pm SD	92.5 \pm 11.5	93.4 \pm 9.3

SD = standard deviation

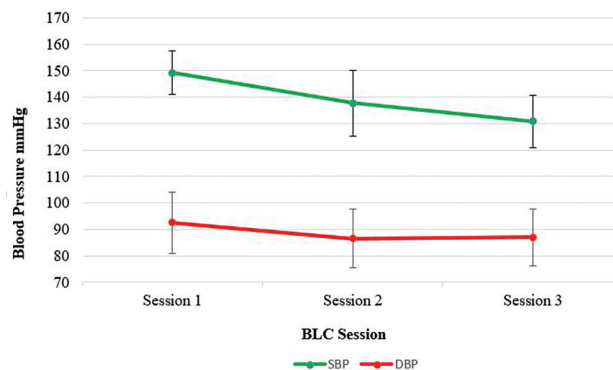


Figure 1: Changes in systolic and diastolic blood pressures over three sessions of Hijama therapy. Error bars represent standard deviation

significance was shown ($P = 0.75$). Figure 1 shows the changes in SBP and DBP over the three sessions of Hijama therapy.

The percentage of patients with hypertension who had their SBP less than 140 mm Hg at the third Hijama session was 73.3%, whereas this was 46.7% in the case of conventional treatment. This shows that much less patients would be diagnosed with hypertension at the third session compared to the conventional therapy. On the other hand, 43.3% patients who underwent Hijama therapy had their DBP less than 90 mm Hg compared to 66.7% of those with conventional treatment.

DISCUSSION

The baseline characteristics indicate that the two samples have similar characteristics to provide valid comparison. Although SBP clearly decreased with the use of Hijama therapy, this was not shown for DBP. According to the findings of one study published in 2014, there was no significant difference in SBP or DBP between the Hijama and control groups, and the authors explained this to be due to the small sample size.^[25] Another study conducted in 2015 with a larger sample size showed that Hijama therapy is effective for reducing SBP in patients with hypertension.^[26]

A more recent study has shown that while SBP changed significantly before and after wet cupping, there was no significant difference in DBP,^[30] in agreement with our results.

Ibrahim *et al.*^[31] published a study in 2016 based on the face-to-face interviews with patients having hypertension ($n = 20$) seeking complementary and alternative medicines (CAMs) other than their prescribed medicines, which indicated that 35% of the participants have tried Hijama therapy because of religious beliefs or friend's recommendation and have reported feeling better, whereas only 30% reported adhering to the treatment prescribed by their physician. The low adherence to medication reported in the study was not consistent with another study showing more than 70% adherence to antihypertensive medication.^[32] One recent review indicated that not only high proportion of patients with hypertension sought CAMs but also many used antihypertensive medications concurrently with analgesics and other herbal products.^[33] Physicians treating their patients for hypertension should consistently ask them about over-the-counter (OTC) medicines and CAMs they are using, and whether they are adhering to their prescribed medication.

Several reasons were put forward to explain how Hijama therapy could reduce BP. The removal of blood (which can be more than 50mL) by Hijama procedure reduces its volume in the arteries and will have a direct effect on BP.^[26] It is, however, unlikely that the small volume that can be compensated rapidly from cellular and extracellular fluid would have a significant lasting effect. Although it is well proven that Hijama therapy can reduce various types of pain and because pain has been associated with hypertension,^[34-37] it is possible that Hijama acts directly and/or indirectly on BP by reducing pain. Pain has the ability to increase sympathetic activity and therefore increase BP. Also, many patients are prescribed nonsteroidal anti-inflammatory drugs (NSAIDs) to control their pain. This, however, would reduce the beneficial effect of antihypertensive drugs such as the diuretics, beta-blockers, angiotensin-converting enzyme inhibitors, and perhaps the calcium-channel blockers.^[38-41] So, reducing pain would reduce the sympathetic pressor effect (direct effect) and also would reduce the intake of NSAIDs (indirect effect), which altogether would lead to BP reduction. This hypothesis requires future focused controlled clinical trials.

This study is an observation case-control study (retrospective), and to provide a greater insight into the beneficial effect of Hijama intervention, a carefully controlled clinical trial with large sample size and

appropriate length of time and Hijama sessions is recommended. Controlled clinical trials testing the effects of Hijama were previously conducted. A recent randomized controlled trial included adequate number of participants (40 participants in each study and control group), but the length of time applied in the study does not permit to generalize conclusion on the use of Hijama therapy for the management of hypertension. That study showed Hijama to be more effective than the conventional treatment alone when used for up to 4 weeks, but not 8 weeks.^[26] Prior clinical trials involving small groups of not more than 20 participants did not provide evidence of the effectiveness of Hijama therapy on hypertension. It is also difficult to isolate the individual effect of Hijama therapy on BP if the study group participants are allowed to continue using their hypertension treatment while undergoing Hijama therapy; however, asking the participants to stop their conventional treatment will be unethical, especially with the need for lead-in phase to washout the antihypertensive treatment from the system. Furthermore, a mechanistic study is required to prove or refute our theory that Hijama therapy works indirectly on BP by alleviating pain. Also, it is needed to know the session at which Hijama produces its maximum beneficial effect and adequate follow-up period to provide information about its long-term safety and efficacy.

CONCLUSION

The results of this study indicate that Hijama can be used effectively to reduce SBP. Therefore, if used in conjunction with the conventional antihypertensive agents, downtitration of the medication used will reduce the untoward side effects while attaining the required BP targets. Common adverse effects of antihypertensive drugs include cough, diarrhea or constipation, erection problems, tiredness, headache, and dizziness or lightheadedness. It is important for the physician prescribing antihypertensive medications to be aware of OTC medicines and CAMs used by their patients and whether they adhere to their prescribed drugs.

The long-term benefits from Hijama need further investigation to provide evidence of sustained effect. It is also important to provide scientific explanation of how Hijama may be able to reduce BP alone and in combination with hypertensive medications. We theorize that this effect may be related to pain reduction.

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Conflicts of interest

Each author of this manuscript declares no conflicts of interest.

Authors' Statement

We all have read and approved the manuscript and we satisfy the requirements for authorship as stated in the journal's "instructions to authors". Each author believes that the manuscript represents honest work and authors alone are responsible for the content and writing of the paper.

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