



Effect of Cupping Therapy versus Continuous Aerobic Exercise on Lipid Profile in Hypertensive Men

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ABSTRACT

Blood pressure and lipid profile are strongly linked to function, particularly in patients with hypertension disease (HTN). That study was aimed to differentiate between the cupping therapy and continuous aerobic exercise effect on lipid profile in hypertensive men. Thirty volunteers male patient with primary hypertension selected from outpatients Desouk general hospital. Their age ranged between 40-50 years, they were divided into two equal groups: group (A) attended a program of cupping therapy one time per month for three months and group (B) attended a program of continuous aerobic exercise on a treadmill for 30 minutes, two times per week for three months. Analysis of the results revealed that there was a major decrease in blood pressure (systole and diastole) and lipid profile (Triglyceride LDL, and Total Cholesterol) and increase in HDL during the cupping therapy closely same continuous aerobic exercise. A major decrease post treatment compared with that pre-treatment ($p > 0.05$) in both groups, but there was no major difference between both groups (A, B) in pre-treatment and also post treatment ($p > 0.05$). Both cupping therapy, as well as continuous aerobic exercises, showed a significant decrease in blood pressure and lipid profile (Total Cholesterol, Triglyceride and LDL) and a significant increase in HDL post-treatment compared with that pre-treatment.



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INTRODUCTION

Cupping therapy is an ancient treatment that can be used in several different ways. Wet cupping and dry

cupping are the two main forms of cupping. The skin is drawn into the cup by negative pressure at dry cupping. In wet cupping, they also create negative pressure on the skin but with lacerations in that region that allow the dermal microcirculation of blood to draw into the cup (Lee *et al.*, 2011). The word "Hijama" in Arabic means "sucking". In the Persian Gulf, it was used not only for treatment but also for prophylaxis against diseases. It was found to be very powerful against dizziness (Guo, 2004).

Hypertension is a chronic condition in which blood pressure in the arteries is elevated. Blood pressure is expressed in the arterial system by means of two measurements, the systolic and diastolic pressures, which are the maximum and minimum. The systolic pressure happens when the left ventricle

contracts the most; the diastolic pressure occurs when the left ventricle is most relaxed before the next contraction. Normal blood pressure at rest is within the range of 100–140 mmHg and 60–90 mmHg, systolic and diastolic. Hypertension occurs when blood pressure persistently reaches 140/90 millimetres (Weber and Lackland, 2015).

Aerobic means were related to, requiring or required free oxygen and refer to the use of oxygen during exercise to sufficiently satisfy the energy demands of aerobic metabolism (James et al., 2014).

Study design

The current study had data about the lipid profile and BP of male patients with HTN. Patients signed an informed consent form before their engagement which has been attached. Research length was three months. The research has been accepted by the Faculty of Physical Therapy ethical committee, University of Cairo.

METHODOLOGY

Participants

Thirty male patients with primary hypertension stage I (mild =140-160 mmHg systole and 90-100 diastole) was involved in this analysis with age ranged 40 to 50 years. They were recruited from the outpatient Desouk general hospital. The data of BP was collected in a physical therapy clinic and the data of the lipid profile collected by three analytical laboratories. Data were collected for four times, once before the treatment programme and three times every month for three months.

Inclusion criteria

Medication allowed: ACE inhibitor and Angiotensin receptor blockers (ARBs) and all patients were aware of all procedures.

Exclusion criteria

If patient performed wet cupping or dry cupping during the past 6 months, Patients with secondary hypertension, Stage II and stage III hypertension (moderate $\geq 160/100$ mmHg to sever $\geq 180/110$ mmHg or more and Patient who associated with clinical conditions which are: renal disease, heart disease, cerebrovascular disease, diabetes, or advanced retinopathy.

Group (A)

Fifteen patients were applied to wet cupping therapy one time per month for three months.

Group (B)

Fifteen patients were applied continuous aerobic

exercise (walking) on the treadmill for thirty minutes two times per week for three months.

Equipment and Procedures

For evaluation

Laboratory instruments by using lipid profile to measure (TG, TC, HDL and LDL) once before starting treatment programme and at the end of every month for three months. The test comprises four main parameters: total cholesterol, LDL cholesterol, HDL cholesterol and triglycerides. It is usually done in a fasting blood specimen. Fasting means full dietary restriction for 12–14 hours overnight, with the exception of water and medication (Mcardle et al., 2006). Mercury Sphygmomanometer and stethoscope used to measure BP also once before starting the treatment programme and at the end of every month for three months.

For treatment

Wet cupping tools

Each cup is fitted on the crown where an air removal suction device is mounted. Suction cups are compact, break-resistant, secure and the suction force can be easily controlled with very simple adjustments. For through patient, wet cupping applied about 8-10 cups of the general body on the back. Wet cupping, also known as bloodletting, happens when the skin area where the cup is located with a particular lancet shape has an incision about 1.5 ml deep by 1.5 ml long. The cupping is accomplished by creating a vacuum in the cup that is placed on the skin either by placing a heated cup on the skin that absorbs the air inside (fire cupping) or by using a suction pump (suction cupping).

Treadmill (Profit treadmill Model: DK16)

The exercise program includes warming-up, main exercise and cooling -down. Warming-up: Low intensity exercise in the form of stretching exercise and range of motion exercises combined with breathing exercises was included for five to ten minutes. Main exercise: It was walking on a treadmill with an individual maximum heart rate for 30 minutes. Cooling down: It has been immediately after every exercise session and was continuing for five to ten minutes using the same types of activities that have been performed during the warming up.

RESULTS AND DISCUSSION

Significance level at 0.05, all of the dependent variables included in this study indicate that the population is normally distributed for all of the variables, which enables the researcher to perform a MANOVA tests under the normality assumption valid. Accord-

ing to the Box test of equality of covariances across the groups indicates homogeneity since the F-test = 1.741 with p-value > 0.05 showing that the presumption of homogeneity persists.

Descriptive and parametric statistics of blood pressure

Diastolic and systolic blood pressure (Table 1) significantly ($P < 0.05$) decreased by time within group A ($P = 0.01$ and $P = 0.0001$, respectively) and group B ($P = 0.01$ and $P = 0.0001$, respectively). However, no significant differences ($P > 0.05$) were observed (Table 1) in diastolic and systolic blood pressure mean values within each month and overall mean values also, between group A and group B.

Effects on Total Cholesterol Level

No significant differences ($P > 0.05$) in total cholesterol level (Table 2) between group A and group B within each Lab. However, total cholesterol level (Table 2) significantly differences among 3 labs within group A ($P = 0.0001$; $P < 0.05$) and group B ($P = 0.001$; $P < 0.05$). Lab 3 recorded the lowest value of total cholesterol in groups A and B compared to Lab 1 and Lab 2. Post-hoc test of total cholesterol level means differences (Table 3) between each pairwise of labs showed no significant differences between each pairwise of labs in group B. Still, there was a significant difference in group A between Lab 2 versus Lab 3 and no differences between Lab 1 versus Lab 2 and between Lab 1 versus Lab 3.

Effects on Triglyceride Level

No significant differences ($P > 0.05$) in triglyceride (Table 2) between group A and group B within each Lab. Also, no differences ($P > 0.05$) were observed in triglyceride among 3 Labs within each group.

Effects on HDL Level

No significant differences ($P > 0.05$) in HDL (Table 2) between group A and group B within each Lab. However, HDL (Table 2) significantly differences among 3 labs within group A ($P = 0.045$; $P < 0.05$) and group B ($P = 0.047$; $P < 0.05$). Lab 3 recorded the highest value of HDL in groups A and B compared to Lab 1 and Lab 2. Post-hoc test of HDL mean differences (Table 3) between each pairwise of labs showed there were significant differences between Lab 2 versus Lab 3 in group A and group B, but no differences between Lab 1 versus Lab 2 and between Lab 1 versus Lab 3.

Effects on LDL Level

No significant differences ($P > 0.05$) in LDL (Table 2) between group A and group B within each Lab. However, LDL (Table 2) significantly differences among 3 labs within group A ($P = 0.038$; $P < 0.05$) and group B ($P = 0.041$; $P < 0.05$). Lab 3 recorded the lowest value

of LDL in groups A and B compared to Lab 1 and Lab 2. Post-hoc test of LDL mean differences (Table 3) between each pairwise of labs showed no significant differences between each pairwise of labs in group A. Still, there was a significant difference in group B between Lab 1 versus Lab 2 and between Lab 1 versus Lab 3 and no differences between Lab 2 versus Lab 3.

The current research showed a substantial decrease in blood pressure (systole and diastole) and lipid profile (total cholesterol, triglyceride and LDL) and an improvement in HDL in the same continuous aerobic exercise during the cupping procedure. A small decrease in post-treatment relative to pre-treatment ($p > 0.05$) in both groups, but there was no substantial difference in pre-treatment and post-treatment ($p > 0.05$) in both groups (A, B).

The current research findings are sponsored with analysis of Park et al. (Park et al., 2005), who revealed that afternoon exercise exhibited a bigger reduction in SBP. The findings of this study accepted by Jones et al. (Jones et al., 2006). It was recorded that blood pressure was normally lowered after a workout. Still, this post-exercise hypotension may be missing or reversed with a morning workout.

The findings of this analysis were also accepted with Jones et al (Jones et al., 2009). Who concluded that afternoon workouts with intermittent rest periods lowered blood pressure rather than continuous workouts. This study's results are also close to those of Tibana et al (Tibana et al., 2012). Who found reduced SBP and DBP post resistance exercise in the night-time in obese and overweight middle-aged women.

The findings of this study were confirmed by Leon and Sanchez, who claimed that moderate to intense aerobic exercise improved the blood lipid profile (Leon and Sanchez, 2001). The results of this study are very similar to those of Roberts, who found that daily exercises and dietary changes decreased oxidative stress, increased nitric oxide availability and improved the overall metabolic profile (Roberts et al., 2002).

Regular physical activity lowers blood pressure, and existing American and European guidelines on hypertension are commonly recommended. Hypertensive patients are advised to perform a routine physical exercise such as cycling, swimming or jogging for 30 to 45 minutes a day. Regular exercise in normotensives reduces systolic blood pressure and diastolic blood pressure. This effect is even more pronounced in hypertensive patients: A recent meta-analysis showed a mean reduction of 7 mm Hg systolic and 5 mm Hg diastolic (Cornelissen and

Table 1: Comparison of diastolic and systolic blood pressure within and between two groups

Blood pressure	Measuring time	Groups (mean ±SD)		P-value
		Group A (n=15)	Group B (n=15)	
Diastolic (mmhg)	1st month	93.8±8.57	92.9±7.1	0.75
	2nd month	87.4±10.9	85.6±5.5	0.709
	3rd month	85.4±6.7	84.4±5.5	0.621
	P-value	0.01*	0.01*	
	Overall mean	87.04 ±4.1	87.1 ±5.9	0.965
Systolic (mmhg)	1st month	132.1 ±8.6	132.3 ±5.8	0.972
	2nd month	123.5 ±9.7	127.2 ±6.6	0.196
	3rd month	120.3 ±8.9	124.7 ±7.6	0.130
	P-value	0.0001*	0.0001*	
	Overall mean	123.4 ±5.7	125.6 ±6.9	0.272

Data are given as mean ±standard deviation (SD) P-value: probability value * Significant (P<0.05)

Table 2: Comparison all measured variables within and between two groups

Variables	Groups	Laboratory (mean ±SD)			P-value
		Lab 1	Lab 2	Lab 3	
Cholesterol	Group A (n=15)	196.6±9.2	199.5±10.4	190.0±9.8	0.0001*
	Group B (n=15)	187.4±9.34	175.6±10.5	170.6±9.9	0.001*
	P-value	0.491	0.117	0.179	
Triglyceride	Group A (n=15)	138.7±41.7	129±45.5	132.4±37.7	0.153
	Group B (n=15)	130.4±53.7	122.8±50.9	116.5±48.5	0.332
	P-value	0.491	0.117	0.179	
HDL	Group A (n=15)	42.4±11.35	45.6±9.31	49.4± 10	0.045*
	Group B (n=15)	51.8±7.2	49.9±9.22	53.2±10.32	0.047*
	P-value	0.052	0.177	0.267	
LDL	Group A (n=15)	136.5±35.14	136.5±38.41	129.8± 32.8	0.038*
	Group B (n=15)	133.2±37.11	117.083±38.7	111.8±36.95	0.041*
	P-value	0.790	0.152	0.144	

Data are given as mean ±standard deviation (SD) P-value: probability value * Significant (P<0.05)

Fagard, 2005).

Wet cupping has also been shown to reduce low-density lipoprotein (LDL) levels and total cholesterol and to increase high-density lipoprotein (HDL) levels (Mustafa et al., 2012).

Dunn studied the results of a 6-month aerobic exercise training program, which improved from 50 per cent to 85 per cent of full aerobic capacity for 20–60 minutes three days a week, and recorded substantial reductions in total cholesterol (-0.3 mmol

/ L, p\0.001) and total: HDL cholesterol (-0.3, p\0.001) (Dunn et al., 1997).

Zarei carried out a significant RCT in Iran, examining the efficacy of wet cupping in the treatment of hypertension. Its purpose was to research the impact of wet cupping on blood pressure in patients diagnosed with hypertension. The evaluation of the methods of systolic and diastolic blood pressure inside the cupping community revealed a substantial difference in systolic blood pressure (SBP),

Table 3: Post-hoc test between pairwise of laboratory within each group

Variables	Groups	P-values of post-hoc test		
		Laboratory 1 vs. Laboratory 2	Laboratory 1 vs. Laboratory 3	Laboratory 2 vs. Laboratory 3
Cholesterol	Group A	NS	NS	S
	Group B	NS	NS	NS
HDL	Group A	NS	NS	S
	Group B	NS	NS	NS
LDL	Group A	NS	NS	NS
	Group B	S	S	NS

P-value: probability value S: significant(P<0.05) NS:non-significant (P>0.05)

but not in diastolic blood pressure (DBP). Furthermore, the comparison of the means of differentiating systolic and diastolic blood pressure between the cupping and the control groups revealed a substantial difference between the groups for SBP (Aleyeidi et al., 2019).

A 2015 study with a larger sample size indicated that Hijama therapy has been effective in reducing SBP in hypertensive patients. A more recent study found that while SBP significantly changed before and after wet cupping, there was no significant difference in DBP, Zarei agrees with our findings (Zarei et al., 2012).

In 2016, Ibrahim published a study focused on face-to-face interviews with patients with hypertension (n=20) seeking alternative and complementary medicines (CAMs) other than their approved medicines, which indicated that 35 percent of participants tried Hijama therapy due to religious beliefs or a friend's recommendation and reported feeling better, whereas only 30 percent reported adherence to their physician's prescribed treatment. The low adherence to medication reported in the study was not consistent with another study showing adherence to antihypertensive medication by more than 70 percent (Ibrahim et al., 2016).

CONCLUSIONS

Accordingly, Findings of this study suggested the following conclusion: Both cupping therapy, as well as continuous aerobic exercises, showed a significant decrease in blood pressure and lipid profile (Total Cholesterol, Triglyceride and LDL) and a significant increase in HDL post-treatment compared with that pre-treatment, it gives the expected good effect of cupping therapy comparing to continuous aerobic exercise as an alternative treatment for patients who are bedridden or can't do aerobic exercise due to any health problems.

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Conflict of Interest

The authors declare that they have no conflict of interest for this study.

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