Original Article

Cupping Therapy Drains the Extra Lipids in Migraine Headache Patients

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ABSTRACT

OBJECTIVE: To determine how wet cupping affects the clinical and laboratory parameters of individuals with migraine headaches.

METHODOLOGY: This cross-sectional study was conducted at the Department of Neurology, Dr Ruth K M Pfau Hospital, Karachi and Hamdard University in collaboration with the Institute of Biochemistry, University of Sindh, Jamshoro, from January 2021 to December 2023. A total of 102 migraine headache patients aged 15 to 70 years, including 32 males and 70 females, with evidence of migraine headache and normal EEG, who confirmed the migraine, participated in the study after providing written informed consent. Patients with abnormal EEG tests younger than 15 were excluded from the study. The patients underwent wet cupping; 5ml intravenous blood samples were collected before the procedure, 5ml from the cups, and 5ml intravenous blood was collected after one week of cupping therapy. The spectroscopic method analyzed all the samples for serum lipid profile. Data analysis was performed using SPSS Version 26, with a significance level set as $p<0.05$ at a 95% confidence interval.

RESULTS: Most migraine patients were female. The wet cupping samples exhibited significant increases $p<0.05$ in lipid and liver profiles compared to pre-cupping samples, although they remained within normal ranges. No significant variations were observed in gender-specific comparisons for serum lipids. Additionally, age-wise comparisons revealed no significant differences among migraine patients of various age groups in pre-cupping and cupping samples.

CONCLUSION: Wet cupping therapy drains the extra serum lipids and reduces migraine headaches.

KEYWORDS: Migraine, Headache, Wet cupping, Intravenous, Liver function test, Lipid profile.

INTRODUCTION

The World Health Organisation (WHO) reports that migraines affect millions of individuals worldwide. The NIMH (National Institute of Mental Health) states that migraines rank among the top 20 causes of disability globally[1]. Cupping therapy (Al-Hijamah) has a long history in the Arabic and Muslim communities. It is believed to have been used by Prophet Muhammad (PBUH) over 1400 years ago to treat human ailments in several authentic sayings[2]. It is a therapeutic technique that involves using suction, usually through a fire-generated vacuum cup or vessel, on the affected area or any surface of the body to treat disease[3]. Hijamah in Arabic is the process of applying cups to migraine. Headache is one of the most prevalent human disorders worldwide[4]. Cupping does not function to eliminate blood but to extract metabolic waste known as causative pathological substances[5]. It is usually used to remove blood and fluid from abnormally elevated causes of pathological conditions, such as high lipid serum levels[6]. Some studies have indicated that wet cupping can reduce pain. A limited number of studies have been conducted to evaluate the effectiveness of wet cupping in treating migraine headaches[7]. The association between migraine and associated vascular and liver diseases has long been established. The contribution of these risk factors to this association remains unclear[8]. Therefore, there is excellent potential for wet cupping therapy to reduce disease risk factors, such as lipid profile and Liver function. Thus, this study investigated the impact of wet cupping therapy on lipid profiles and liver function tests in patients with migraine headaches.

METHODOLOGY

This descriptive cross-sectional study employed non-probability consecutive sampling. This study was conducted at the Department of Neurology, Dr. Ruth K. M. Pfau, Civil Hospital, Karachi and Hamdard

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University in collaboration with the Institute of Biochemistry, University of Sindh, Jamshoro, from January 2021 to December 2023. One hundred and two patients diagnosed with migraine headaches were included. Patients with normal EEGs confirming the migraine participated in the study after providing written informed consent. Patients with abnormal EEG tests younger than 15 years were excluded from the study. Ethical approval was obtained from the Bioethical Committee via letter no. IOB/53/2019, dated 18/1/2019. A questionnaire was administered to collect the socio-demographic characteristics of the migraine patients. Participants were asked to fast for at least 3 hours before the procedure. Approximately 5 ml of intravenous blood was collected five minutes before the wet cupping therapy procedure in a serum-separating tube, and an additional 5 ml blood sample was collected using 5 cc disposable syringes from the cupping site. After one week of cupping Therapy, another 5 ml of venous blood was collected. Before cupping, wet cupping and after-wet cupping samples were compared for selected biochemical parameters. Intravenous and wet cupping blood samples were centrifuged at 3000 rpm for 15 minutes, and the serum was stored at -68°C for lipid analysis using the Lab L19 ELISA 6000 Cobas Roche Analyzer, following the rules of the International Federation of Clinical Chemistry (IFCC).

Statistical analysis: Statistical analysis was performed using SPSS Version 26, with a p-value < 0.05 considered significant and a 95% confidence interval applied.

RESULTS

Table I illustrates the general socio-demographic characteristics of migraine headache patients. Among the 120 participants, the majority (68.60%) were females, with a mean age of 35.18. Most of the migraine headache patients were found to be literate, followed by illiterate patients. The socioeconomic status of the migraine headache patients was primarily low, followed by middle and high classes.

Table I: General socio-demographic characteristics of the migraine headache patients

Characteristics	Frequency (n=102)	Percentage %
Gender		
Male	32	31.4
Female	70	68.6
Mean age (year)	35.18 ± 12.63	
Education		
Illiterate	28	27.50
Primary	30	29.40
Secondary	13	12.70
Higher	31	30.40
Socioeconomic status		
Lower class	79	77.50
Middle class	10	9.80
Upper class	13	12.70

In the present study, the comparison of serum lipids and liver function tests in intravenous and wet cupping and after-cupping samples is presented in **Table II**. The total cholesterol concentration in wet cupping

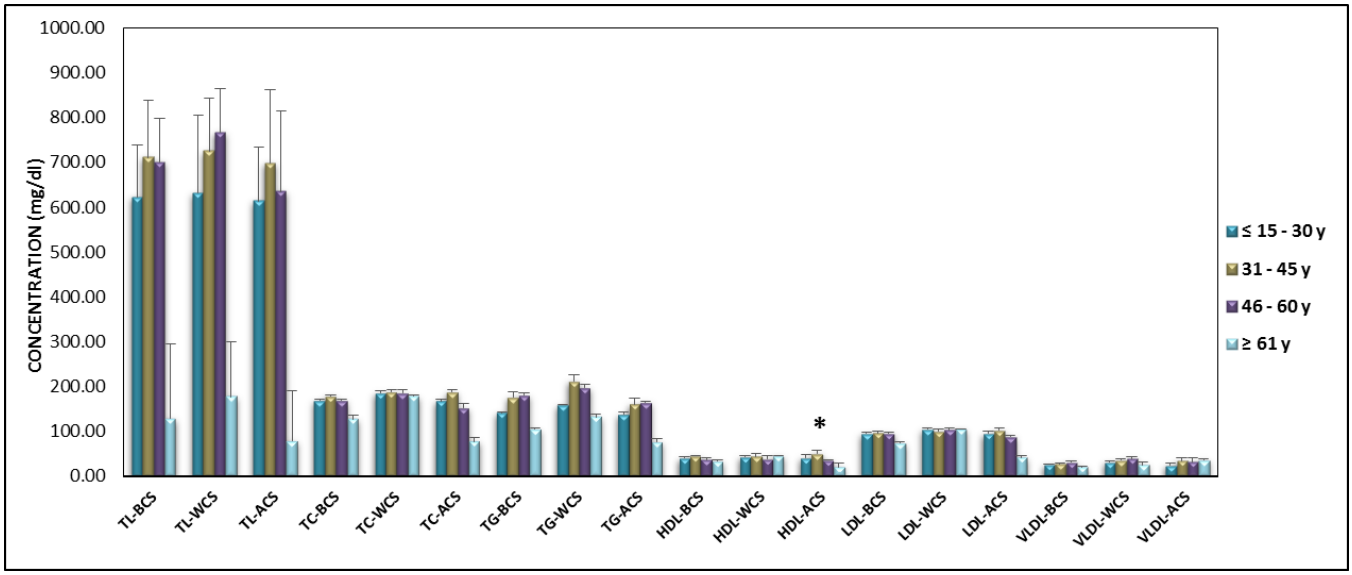
Table II: Comparison of biochemical parameters in before, wet cupping and after cupping samples of migraine headache patients

Biochemical parameters	Sample type	Migraine headache patients n=102 Mean ± SD	Male n=32 Mean ± SD	Female n=70 Mean ± SD
SERUM LIPIDS				
Total Cholesterol **< 200 (mg/dL)**	BCS	161.66±23.33	171.20±22.71^{b}	170.30±22.20^{c}
	WCS	170.62±22.30^{a}	192.88±41.04^{b}	182.63±41.04^{c}
	ACS	169.33±69.80*	148.50±45.43	178.86±76.14
Triglycerides **< 150 (mg/dL)**	BCS	117.20±23.48	129.10±21.32^{b}	160.79±85.66^{c}
	WCS	126.65±22.12^{a}	123.00±21.41^{b}	174.73±81.19^{c}
	ACS	150.81±141.7	121.28±121.8	164.31±146.9
High-Density Lipoproteins **< 40 (mg/dL)**	BCS	40.97±3.690	44.41±3.670^{b}	44.01±4.690^{c}
	WCS	44.13±4.366^{a}	41.48±2.553^{b}	40.75±4.110^{c}
	ACS	42.92±18.80*	38.55±11.77	44.94±20.83
Low-Density Lipoproteins **< 100 (mg/dL)**	BCS	81.99±9.414	96,81±29.13^{b}	85.91±10.33^{c}
	WCS	85.82±9.293^{a}	107.75±35.04^{b}	82.01±10.52^{c}
	ACS	95.28±45.97	85.88±30.89	99.59±50.54
Very Low-Density Lipoproteins **<30 (mg/dL)**	BCS	28.048±11.26	35.9±12.92^{b}	35.21±13.68^{c}
	WCS	35.43±13.36^{a}	40.57±26.51^{b}	28.04±11.40^{c}
	ACS	30.16±28.34*	24.26±24.37	32.86±29.39
Total lipids **450-1000 (mg/dL)**	BCS	170.12±34.08	170.76±32.58	169.83±34.70^{c}
	WCS	171.86±61.03^{a}	192.83±41.00	162.27±65.66^{c}
	ACS	168.39±67.41	148.68±40.26	177.40±74.54
LFTs				
Alkaline phosphatase **M= 50-136; F= 45-136 (U/L)**	BCS	86.36±23.54	87.65±24.60	92.75±23.51^{c}
	WCS	91.08±23.87^{a}	85.75±27.00	86.64±21.93^{c}
	ACS	97.14±72.11	91.00±50.83	99.94±79.34
Alanine transmarine **M=50 (U/L); F= 35 (U/L)**	BCS	17.19±7.719	21.61±9.00^{ab}	17.53±7.470^{ac}
	WCS	18.86±8.190^{a}	18.84±8.920^{b}	16.43±7.032^{c}
	ACS	19.46±17.61	21.47±18.99	18.54±16.73
Bilirubin **< 1.2 (mg/dL)**	BCS	0.332±0.140	0.434±0.140	0.340±0.153^{c}
	WCS	0.370±0.148^{a}	0.450±0.12^{a}	0.360±0.140^{ac}
	ACS	0.360±0.284	0.300±0.169	0.390±0.318

a=*p <0.05 for the comparison between intravenous and cupping samples. *= p <0.05 for comparing cupping and after -cupping samples.* ***b=****p <0.05 for comparing male patients between intravenous and cupping samples.* ***c=****p <0.05 for the comparison of female patients in the before cupping and cupping samples, ACS= After cupping sample, BCS, Before cupping sample, WCS= Wet cupping sample*

ACS= After cupping sample, BCS, Before cupping sample, WCS= Wet cupping sample, TC=Total cholesterol, TG= Triglycerides, HDL= High density lipoproteins, LDL= Low density lipoproteins, VLDL=Ver low density lipoproteins, TL= Total lipids

Figure I: Age-wise comparison of lipid profile in samples of migraine headache patients before cupping, wet cupping, and after cupping



serum significantly exceeded that in the pre-cupping samples. The low-density lipoprotein (LDL), high-density lipoprotein (HDL), triglycerides (TG), very low-density lipoprotein (VLDL), and total lipids in the wet cupping samples were significantly higher compared to the pre-cupping samples. Both (HDL and LDL) were also considerably higher in the cupping samples when compared to the after-cupping samples. In this study, serum (ALT), (ALP) and bilirubin concentrations in wet -cupping samples were significantly higher compared to the before-cupping samples. No significant variation was found when comparing before and after cupping samples and cupping samples with after cupping samples.

A statistically significant increase in cholesterol, triglycerides and (LDL), (VLDL) and (HDL) levels was observed in the wet cupping samples of females compared to intravenous samples **(Table III)**. As indicated in **Table III**, there were no noteworthy variations in lipid profile when comparing intravenous and wet cupping with after-cupping samples across genders. Among male patients, (ALP) and bilirubin levels were significantly increased in intravenous samples compared to wet cupping samples. No significant changes in (ALP) and bilirubin were observed in the male patients in either group.

All serum lipids increased significantly in the wet cupping samples compared to the intravenous samples in males with migraine headaches. The current study found that cupping Therapy drains cholesterol and (LDL) in male migraine headache patients.

There were no notable differences in serum lipid levels among the age groups of migraine headache patients in samples collected before cupping, during cupping, and after wet cupping, except for HDL. HDL

Table III: Age-wise comparison of liver function tests in samples of migraine headache patients before cupping, wet cupping, and after cupping

LFTs	Sample type	≤ 15 - 30 y Mean ± SD	31 - 45 y Mean ± SD	46 - 60 y Mean ± SD	≥ 61 y Mean ± SD	P-value > 0.05
ALP (U/L) M= 50-136 F= 45-136	**BCS**	100.84 ± 3.690	85.838 ± 4.719	93.904 ± 7.690	124.0 ± 19.0	0.071
	WCS	105.14 ± 5.197	92.428 ± 4.845	98.666 ± 8.939	94.01 ± 2.80	0.651
	ACS	105.70 ± 9.194	88.19 ± 5.143	89.141 ± 3.309	154.00 ± 6.60	**0.021**
ALT (U/L) M=50 F= 35	**BCS**	18.913 ± 6.271	20.903 ± 8.288	20.857 ± 3.188	17.00 ± 2.01	0.213
	WCS	21.642 ± 8.305	22.464 ± 7.861	21.380 ± 3.712	14.50 ± 5.50	0.120
	ACS	18.07 ± 5.903	21.520 ± 2.046	20.330 ± 3.929	19.50 ± 2.500	0.341
BILIRUBIN < 1.2 (mg/dL)	**BCS**	0.3826 ± 0.256	0.3441 ± 0.168	0.375 ± 0.261	0.375 ± 0.035	0.062
	WCS	0.4385 ± 0.266	0.3507 ± 0.148	0.4109 ± 0.254	0.320 ± 0.091	0.154
	ACS	0.3620 ± 0.281	0.3701 ± 0.301	0.3410 ± 0.278	0.431 ± 0.160	0.810

ACS= After cupping sample, BCS, Before cupping sample, WCS= Wet cupping sample, ALP= Alkaline phosphatase, ALT= Alanine transferase

levels had been significantly lower in samples collected after one week of wet cupping therapy across all age groups. Additionally, as shown in **Table III,** there had been a significant increase in ALP concentrations in the age group of >61 years and wet cupping samples compared to other age groups. When comparing the same age group in intravenous and post-wet cupping samples of migraine headache patients, the wet cupping samples showed a significant decrease in ALP levels. This emphasized the significance of wet cupping therapy, particularly in the elderly population.

DISCUSSION

In **Table I**, women are more likely to suffer from migraine, but this may be due to pathophysiology influenced by sexual hormones. For example, Progesterone and testosterone have not been studied as extensively in migraine patients and estrogen withdrawal is known to cause migraine[9]. According to a US Migraine Prevalence and Prevention Study (AMPP), 43% of women and 18% of men suffered from migraines during their lifetime[10]. These results also corroborate the present study, as we found that men were more numerous than women. Studies on the association between socio-demographic status and migraine headaches have yielded mixed results. Several studies have shown that migraine incidence is more common among lower-income and low-education groups, which is similar to the findings of this study. The low social and economic status of education and occupation is related to an increased risk of frequent and chronic headaches[11].

The research results shown in **Table II** demonstrated that wet cupping therapy significantly affected total cholesterol, TG, HDL, LDL, and VLDL. Previous studies revealed a reduction in lipid profile by sampling intravenous blood before and after wet cupping therapy; the wet cupping therapy blood was laden with elevated lipid profiles, resulting in a reduction in intravenous blood lipid profiles after wet cupping therapy[12]. The effect of wet cupping therapy on blood detoxification could also be supported by a previous study that compared wet cupping blood cholesterol levels with venous blood cholesterol levels. The results showed that in wet cupping therapy, blood cholesterol levels were higher than those in intravenous blood[13]. The same findings were also reported in the present study. Wet cupping could potentially serve as a practical approach to lowering LDL cholesterol levels in men, thereby offering a preventive impact against the development of atherosclerosis[14]. Numerous physicians assert that cupping is a preventive measure against certain cardiovascular diseases [15].

High serum cholesterol level is a significant risk factor for the development of cardiovascular disease. It is known that cholesterol levels in the expelled blood are significantly higher during cupping than in the intravenous blood[16,17]. Triglycerides, HDL, cholesterol, LDL, and VLDL concentrations show variations between the three groups, although none of the differences reached statistical significance (p-values < 0.05), as shown in **Table III**. This suggests that cupping Therapy did not significantly affect the lipid profile in female migraine headache patients[18]. Previous studies have also demonstrated that cupping blood is more detoxifying than intravenous blood[19].

CONCLUSION

Cupping contributes to the improvement of blood components in individuals. It can be presumed that a distinct variation exists in the composition of blood obtained from cupping in contrast to the blood collected intravenously before and following Therapy. Cupping Therapy helps to improve serum cholesterol levels for migraine headache patients by reducing low-density lipoprotein (LDL) and total cholesterol levels. It also helps to lower specific biochemical parameters that are associated with metabolic diseases. This means that cupping therapy may help treat various diseases, such as heart and liver diseases, by reducing the body's inflammatory components.

HUMAN ETHICAL APPROVAL AND CONSENT TO PARTICIPATE

Ethical approval for this study was obtained from the Ethical Review Committee of the University of Sindh, Jamshoro. The Institutional Ethical Committee via letter no. IOB/53/2019, dated 18/1/2019, approved the study before researching migraine headache patients. Written informed consent was obtained from each participant after explaining the study's purpose and procedure. The research was conducted with complete transparency, and every possible safety measure was taken to protect all participants from potential harm or contamination of the privacy and confidentiality of the study respondents. The blood samples of all participants were collected under the supervision of a competent and licensed healthcare professional.

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Data Sharing Statement: The corresponding author can provide the data proving the findings of this study on request. Privacy or ethical restrictions bound us from sharing the data publicly.

AUTHOR CONTRIBUTION

Soomro ZH: Responsible for the conception and design of the study
Channa NA: Responsible for the conception and design of the study, data interpretation, and substantial revisions to enhance the quality of the final work.
Shaikh M: Data collection, blood sampling, experimental analysis, prepared the initial draft of the manuscript, provided expertise in the methodology and supported the editing and proofreading.
Ahmed Z: Data collection, blood sampling, and experimental analysis.
Awan AY: Data collection, blood sampling, experimental analysis, assisted with the graphical representation of data and the preparation of figures and tables.
Solangi SP: Data collection, blood sampling, and experimental analysis.

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