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Effect of Cupping Therapy on Biochemical and Hematological Parameters

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ABSTRACT
Background: The word Hijama is derived from Arabic means to suckle and restore to normal state of internal equilibrium. Cupping therapy is one of the alternative and conventional therapies, which have significant association and beneficial in some clinical conditions such as Lower back pain, neck and shoulder pain, headache and migraine, knee pain and hypertension. The aim was to determine biochemical and hematological parameters in before and after cupping therapy.
Method: A comparative cross-sectional study was carried out at MLT lab of the CUSIT Peshawar from January 2023 to September 2023. A total 210 Convenient Samples collected from different Hijama center in district Peshawar. SPSS Paired T Test were used for statistical analysis.
Results: Statistically positive changes in biochemical parameters such as ALT, ALP, SBR, Uric acid, Cholesterol, Triglyceride HDL, LDL and VLDL. Biochemical parameters including Total protein, Urea and Creatinine not statistically significant in cupping therapy. Where, hematological parameters such as White blood cell count, Red Blood cells count, Hemoglobin Level, Platelets count and coagulation cascade were found significantly in cupping therapy.
Conclusion: This study concluded that the cupping therapy have positive impact on biochemical and hematological parameters. This study recommend that cupping therapy is good in certain health condition such as pain reduction, Muscle relaxation, improve blood circulation and activation of the immune system.
Keywords: Cupping Therapy, Biochemical, Hematological, Pre and Post, High-Density Lipoprotein, Low Density Lipoprotein, Prothrombin time, Activated partial thromboplastin time.

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INTRODUCTION

Cupping therapy also known as Al Hijama. The word Hijama is derived from Arabic, means to suckle and restore to normal state of internal equilibrium.[1] One of the alternative and conventional therapies that needs further scientific interpretation is wet cupping therapy.[2] Lower back pain, neck and shoulder pain, headache and migraine, knee pain, facial paralysis, brachialgia, carpal tunnel syndrome, hypertension, liver disease, diabetes, migraine and Fibromyalgia syndrome, diabetes mellitus, rheumatoid arthritis, cardiovascular disease, and asthma are among the conditions that can benefit from cupping therapy.[3,4] Clinical treatment work better when used in combination with cupping therapy which also reduces the dosage and frequency of drug and drugs interactions when using numerous medications to treat chronic conditions, as well as their side effects.[5,6] Wet cupping therapy reduces inflammatory cytokines and interstitial fluid pressure. By lowering the blood's hematocrit, hemoglobin, and red blood cell count, cupping can successfully dilute the blood in different Clinical condition such as High blood pressure, Obesity, Liver Cirrhosis.[7,8] The improvement in blood factors is caused by cupping most likely contributes significantly to the elimination of aged RBCs lymphatic fluid from the interstitial spaces. Blood flow is accelerated during cupping which removes obstacles and makes it possible for toxins to be removed from the body.[9,10] After the cupping therapy increasing the immunity and restoring the body to its normal homeostatic state.[11]

Cupping therapy restores blood circulation to cure internal biological abnormalities and improves the normal biochemical profile parameters such Alanine Amino Transferase, Alkaline Phosphatase, Cholesterol, and triglyceride etc. which is elevated in different

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diseases. It is a type of conventional treatment procedure that seeks to balance the body's systems and uses a therapeutic strategy that is supposed to inhibit disease and enhancing health.[12]

One of the world's earliest medical texts, the Ebers Papyrus, has the first description of cupping (1550 B.C.) conversely, it is thought that the custom dates back to 3000 B.C that the custom of cupping dates back to 281 AD in China.[13] Although wet cupping has a long history dating back thousands of years, the Prophet Muhammad's (PBUH) teachings contain the first recorded applications of the procedure.[14] There are numerous Hadith that mention this therapy.[15] The Prophet (PBUH) said "The best medicine with which you treat yourself is Hijama. Because of the significant associations cupping therapy has with Islam it has persisted in Muslim nations. Individuals in Islamic nations use this therapy out of religious conviction hence it is necessary to generate standardized scientific data to demonstrate its effectiveness and advantages to the general public.[16] Procedures for cupping therapy were used in accordance with the advised aseptic technique. Always pay attention to all aseptic procedures performed before, during, and after the cupping therapy process.[17] Each cupping technique alters the body's cells, tissues, or organs, which helps hormone function, regulates the immune system, flushes out dangerous chemicals, and lessens pain.[18] As per literature there is no study conducted on cupping therapy therefore This study was design to determine biochemical and hematological parameters and it association in before and after cupping therapy.

METHODOLOGY

This comparative cross-sectional study was performed in Department of Medical Laboratory Technology (MLT) at the City University of Science and Information Technology (CUSIT) Peshawar, Pakistan. Samples collected from different Hijama center located in district Peshawar. From January 2023 to September 2023. All those individuals who are willing to do their cupping therapy were included in the study whereas individuals who has done cupping therapy with in past 1 or 2 weeks and patients of cardiovascular, hypertension, diabetics, hemophilia and individual using blood thinner medication were excluded from the study. The sample size formula

n (each group) =(Po q + p11q) (z1- α/2 +z1- β)^2 (p1 – qo)

The value of alpha (1.98), The value of beta (0.84), Proportion of before cupping therapy (p0) (0.15), Proportion of after cupping therapy (p1) (0.25), Ratio of pre to post cupping therapy, n= ([(0.15*0.85) + (0.25*0.75)] * [1.96 + 0.84] ^2)/ (0.18-0.10) ^2 = (0.315*7.84)/0.01 = **210** (105 pre and 105 post cupping therapy). Convenient sampling technique was adopted. Samples collected from different Hijama center in Peshawar. A 5ml blood sample was collected in EDTA, Gel and sodium citrated tubes. The Sample was transported at 2-8°C to the laboratory. Laboratory analysis of biochemical profiles includes, Liver function test (LFTs), Renal function test (RFTs) and Lipid profile was performed through chemistry analyzer micro lab 300 in before and after cupping therapy. Hematological parameters which include Red Blood Cells counts, White Blood Cells count, Hemoglobin level, Prothrombin time and activated partial thromboplastin time were performed through Mindray BC-10 in before and after cupping therapy. Coagulation cascade parameters were performed manually. Inferential statistics paired T test were used for the data analysis through SPSS version 22.

RESULTS

Biochemical profiles results shows that there statistically significant variations in pre and post cupping therapy. such as ALT, ALP, SBR, Uric acid, Triglyceride, Cholesterol, HDL, LDL and VLDL. Some of the biochemical parameters have not statistically significant variations in pre and post cupping therapy such as total protein, Urea and Creatinine (Table 1).

Table 1: Pre and Post Biochemical Profiles Parameters in Cupping Therapy

Variables	Pre-Cupping Therapy	Post-Cupping Therapy	P-Value
ALT/SGPT	30.14 ± 4.613	27.15 ± 4.624	<0.001
ALP/SGOT	172.79 ± 43.171	149.88 ± 38.361	<0.001
Serum Bilirubin	1.36 ± 0.3193	1.045 ± 0.3106	0.012
Total Protein	60.70 ± 18.040	60.66 ± 18.063	0.372
Uric Acid	5.450 ± 0.8280	4.827 ± 0.7257	0.001
Creatinine	0.9300 ± 0.25324	0.9221 ± 0.28844	0.019
Urea	28.01 ± 4.047	27.70 ± 4.489	0.147
Triglyceride	149.68 ± 30.591	129.75 ± 28.861	<0.001
Cholesterol	157.64 ± 29.086	134.73 ± 27.975	<0.001
HDL	78.85 ± 10.114	95.13 ± 12.133	<0.001
LDL	147.07 ± 13.422	164.33 ± 16.527	<0.001
VLDL	16.53 ± 3.726	16.49 ± 3.701	0.013

Hematological parameters include red blood cells count, White blood cells count, Hemoglobin level and Platelets counts was observed in pre and post cupping therapy and the result was analyzed through SPSS 22 version paired T-test. Results are statistically significant (Table 2).

Table 2: Pre and Post Hematological Profiles Parameters in Cupping Therapy

Variables	Pre-Cupping Therapy	Post-Cupping Therapy	P-Value
White blood cells	5150.46 ± 978.525	5813.14 ± 1199.800	<0.001
Red blood cells	4.1650 ± 0.81126	4.3500 ± 0.80880	<0.001
Platelets	195038.10 ± 40175.079	201567.71.71 ± 40364.949	<0.001
Hemoglobin	12.624 ± 1.357	12.959 ±1.1920	<0.001
PT	12.15 ± 13.31	10.25 ± 1.321	<0.001
APTT	31.50 ±2.135	28.43 ± 1.191	<0.001

DISCUSSION

Cupping therapy is an ancient form of alternative medicine in which a therapist puts special cups on skin for a few minutes to create suction people get it for many purposes, including to help with pain, inflammation, blood flow, relaxation and well-being, and as a type of deep-tissue massage.[19] A study reported in Iraq and the purpose was to examine the therapeutic effectiveness of cupping therapy on few blood parameters and the patients who had just been diagnosed with high blood pressure, hyperlipidemia, diabetes, muscle aching, chest pain, and from headache. All of the mentioned clinical condition and related blood parameters changes after cupping therapy.[20] Our study shows that there is significant decrease in some biochemical parameters such as ALT and ALP enzyme (P. value of ALT is <0.001 and ALP is <0.001) that were similar study reported having biochemical analysis observed with significant reduction in the level of ALP and ALT enzymes.[3] Also, the study in Sudan country shows significantly decrease in the level of ALT. While there is no relation of protein level with cupping therapy.[21,29] However, in this study the serum bilirubin level doesn't change, therefore is concluded from the study that there is no relation between the cupping therapy and serum bilirubin.[22,23]

There are no changes observed in level of urea and creatinine. While the level of uric acid has decreased. Study shown that the level of uric acid is considerably lowered after the cupping therapy as compared to before cupping therapy.[24] Study shows that the level of the serum creatinine and level of urea decreased after cupping therapy.[25] The study also shown decrease in the level of serum uric acid.[26]

The level triglycerides and cholesterol are found significantly decreased. While the HDL and LDL are significantly increased whereas there is no changed observed in VLDL.[27] A study reported that shows decrease in the level of LDL and decrease in the level of HDL.[28] Study shown that there is significant decrease in the level triglycerides after the cupping therapy.[29,30] While the study shows significance decrease in the level of triglycerides and cholesterol after the cupping therapy.[31] Also the study shown that HDL levels was improved while levels of total cholesterol, LDL was reduced after cupping therapy as compare to before cupping.[32,33] The level of PT and APTT shows significantly decrease after cupping. Also, our study shows that there are significant changes in some hematological parameters such as RBCs, WBCs, HB and Platelets. Also, some studies shown increase in hematological parameters of RBCs, WBCs, Hb and Platelets.[34,35] Another study revealed that there was increase in the respondent's normal blood hematology values of WBCs, RBCs, HB, HCT, MCH with significant values ($P < 0.05$), indicating that there was a mean difference following cupping therapy.[36] The level of PT and APTT shows significantly decrease after cupping. Study conducted in Jordan country by shows that have shown a significantly increased in the Percentage of lymphocytes and platelets count due to blood cupping.[37] Alongside, the results have revealed that creatinine and urea levels were significantly reduced post-cupping as compared to values seen in pre-cupping. Additionally, statistically significant reduction was observed in the triglyceride levels and triglyceride/HDL-cholesterol and LDL/HDL-cholesterol. Study conducted in Iran that shown highly significant increase (p<0.001) in cholesterol, HDL, LDL and Triglyceride levels as compared to venous blood samples.[38]It is also revealed highly significant increase (p<0.001) in serum uric acid level as compared to venous blood sample. Blood sample from cupping showed insignificant increase (p<0.001) in serum SGOT and decrease (p<0.001) in serum SGPT levels.[39] This concluded that the cupping therapy have positive impact on biochemical and hematological parameters and also potential physiological influence in human body. This study contributes to the existing literature to understand base line information of cupping therapy and their correlation with different profiles.[40,41]

The limitation of this study is lack of available or reliable data, ethical limitations, limited access to data, sample size, and specific parameters investigated may restrict the generalizability of the findings. Also, some routine base parameters targeted it would be more fruitful to check some special profile in before and

after cupping therapy. This study recommend in future research endeavors should aim to address all these points mentioned in limitation and explore the effect of cupping therapy on a broader range of biochemical and hematological parameters.

CONCLUSION

This concluded that the cupping therapy have positive impact on biochemical and hematological parameters and also potential physiological influence in human body such as cupping therapy tends to drains excess fluids and toxins, loosen adhesion and revitalize connective tissue and increase blood flow to skin and muscle, stimulate peripheral nervous system, reduce pain, control high blood pressure and modulate the immune system. This study contributes to the existing literature to understand base line information of cupping therapy and their correlation with different profiles.

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