

RESEARCH ARTICLE

THE EFFECT OF WET CUPPING THERAPY (AL-HIJAMAH) ON SOME BLOOD COMPONENTS: A COMPARATIVE STUDY

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Abstract

Cupping therapy (CT), also known as (Al-Hijamah) is one of the therapeutic techniques that were practiced in many countries of the world in ancient times and it is still used now. The current study was aimed to evaluate some components of the venous blood and comparing the results with that in the blood withdrawn during cupping therapy (CT). The method was carried out by taking blood samples from the scarified area that were made during CT on the skin and venous blood samples. Eighteen mostly healthy male participants were selected randomly between ages 25-61 years. About 5 ml of blood samples were collected from the vein and cupping site for each participant and biochemical parameters that are blood glucose, uric acid, and cholesterol were analyzed. All studied parameters were high in the cupping blood in comparison with the venous blood where it was noted that cholesterol, triglycerides (TG), as well as low-density lipoproteins (LDL), were statistically significant at ($p < 0.001$) while high-density lipoproteins (HDL), blood sugar and uric acid were statistically significant at ($p = 0.01$), and urea was statistically significant at ($p = 0.05$), while creatinine did not give statistical significance at ($p > 0.05$). The current study is consistent with other studies. CT helps in reducing some biological parameters that may be related to some metabolic diseases, so it could maintaining human health.

Keywords: Wet cupping therapy, Biological parameters, Blood glucose, Uric acid, Cholesterol.

1. Introduction

Cupping therapy (CT), is one of the therapeutic techniques that were practiced in many countries of the world in ancient times. It is still used in many Islamic countries as traditional medicine. Recently acquiring recognition worldwide as a type of complementary medicine because of its capability to improve symptoms of several diseases. The CT is known as (Al-Hijamah) in Arabic which means to reduce in size or to restore to the original size i.e. to return the body back to its natural state. In practice, it is a type of acupuncture that involves the extraction of the stasis blood, fluids, toxins from the interstitial fluid, and skin circulation. It is stated that stagnation of these fluids resulted in pain and diseases.[1, 2]

There are two most used types of CT; retained or dry cupping and bleeding or wet cupping. In dry CT, the sucking cups are put in the specific areas in the body and negative pressure is applied. While in wet CT, the skin is

cut or scraped, and negative pressure is applied to collect the blood. Dry CT is practiced more commonly in the Far East, while wet CT was preferred in the Middle East and Eastern Europe.[1-5] It was one of the therapeutic methods used by the Egyptians (Pharaohs) as it was recorded in ancient Pharaonic inscriptions known as hieroglyphic inscriptions and the Egyptians recorded CT in the oldest books of medicine known as (Ebers Papyrus) written before about 1550 BC, similarly, it was used by the Arabs before about 5500 BC and was recorded by the Assyrians before about 3500 BC.[5] China also was among the ancient nations that used this technique of treatment, and the Chinese played a big role in the development of this technique of treatment. Early written records in China (28 A.D.) strongly support the use of CT and acupuncture. It stated that "more than half of the illnesses will be cured by acupuncture and CT.[6-10] Greeks were among the nations that used this method of treatment, as the Greek doctor Hippocrates had used CT around 400 BC.[8]

Al-Hijamah is a traditional Islamic treatment and a part of the prophetic medicine recommended by the prophet Mohammed, Peace Be Upon Him (PBUH), and it is used for the treatment of a variety of medical conditions. According to prophetic medicine, Al-Hijamah should be performed at specific times during the odd days of the full moon (days 17th, 19th, and 21st) in the lunar months (Islamic calendar) and the patients should be fasting.[9]

There are a total of eleven methods of CT designed to help the practitioner choose the most appropriate CT method for the patient.⁹ These methods are light CT, medium CT, strong CT, moving CT, light moving CT, needle CT, moxa (hot needle) CT, empty (flash) CT, full (bleeding/wet) CT, herbal CT, and water CT.

In general, the CT has an effective role in treating several diseases such as; fibromyalgia, fibrositis, cervical spondylosis, sciatica, gouty arthritis, skin-related ailments, osteoarthritis, pain, hyperlipidemia, persistent low back pain, chronic non-specific neck pain, non-specific low back pain, acute and chronic pain management, headache in migraine, cellulitis, gynecological disorders, etc.[1, 10] As well as, the CT has a positive effect on reducing total cholesterol blood levels in hypercholesterolemic patients.[11]

Observational clinical studies can often be greatly enhanced by the inclusion of biochemical analyses in stored serum samples collected from the volunteers being studied. Biochemical analyses can be used to assess risk factor exposure, to control for disturbing, or to measure the effects of bias. In randomized trials, biochemical analyses can be used to monitor the safety and biochemical efficacy of treatment. Standard guidelines for blood sample handling state that plasma or serum should be separated (within 20-30 min) from cells as soon as possible after clot formation is complete to avoid clot-induced changes in the concentration of serum analysts.[12]

The current study aimed to determine if there are differences between some biological components of the venous blood and the blood withdrawn during wet CT, to evaluate whether these differences are useful in reducing some diseases and especially the diseases in which these components play a role in their occurrences, such as cholesterol, sugar, uric acid and others which is the main cause for the emergence of many diseases that are related to the heart and arteries, such as atherosclerosis, heart attacks, and renal diseases.

2. Materials and Methods

A one-arm clinical trial, pre-and post-test interventional work has been carried out in two specialized centers for cupping therapy located in the city of Aden, Yemen, as well as in National Center of Public Health Laboratories, Khormaksar-Aden, and the laboratories of Al-Gamhuria Modern General Hospital, Khormaksar-Aden, Yemen

from December 2019 to January 2021. Wet cupping therapy was done in the specialized centers to make advertisements to receive the volunteers and check their eligibility for this study through the physical examination and the relevant questionnaires. 15 volunteers were received in the first center and 13 volunteers in the second center for cupping therapy. They were selected for these clinical trials, with the exclusion of people who have diseases that prevent cupping therapy from working for them, as well as those who take daily medications. Among the 28 people, 7 people were excluded. Before starting the cupping therapy, 3 people withdrew, and 18 people completed the study (**Fig. 1**). Blood samples (n=18) were collected from people whose ages ranged between 25 - 61 years, on average (38.8 ± 11.4). The volunteers were randomly selected from the patients who visit the CT center. The center is located in the middle of the city of Al-Haswa-Aden. As many people come to this center who are looking for CT and other types of folk medicine. The second site where the samples were taken from is the Physiotherapy and Alternative Medicine Clinic, which is located next to Al-Naqib Hospital, in the city of Al-Mansoura-Aden. Many people come to this clinic for physiotherapy sessions as well as for CT. The volunteers were also given a questionnaire containing a set of questions to collect information about the volunteers.

The devices and materials used in this study include COBAS INTEGRA 400 plus from Roche (Germany), 800 Centrifuge 4000 rpm (Germany). Deionized water made in Yemen by UMCOPHARM, polyethylene plastic bottles, tubes containing (K₃EDTA) and another tube containing Gel and Clot Activator (Italy).

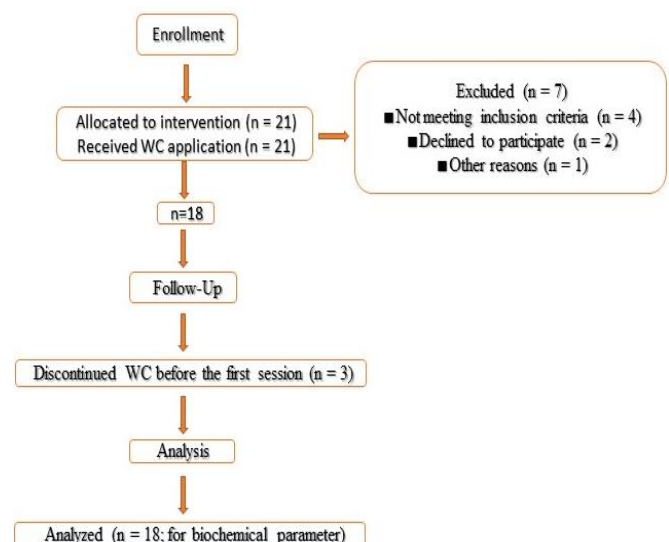


Fig. 1: Flowchart of study conditions

2.1 CT application

Al-Hijamah technique was applied on the 17th, 19th, and 21st days of the lunar months in the morning. All volunteers were overnight fasting. The participants were seated on the chair. The vacuum glass cup fitted to the

surface of the back. The skin was cleaned with the alcohol solution prior procedure. The cupping puts tightly on the cleaning area. The suction connected to the cup quickly. It was maintained until the skin pulled up within the cup. Applied pressure monitored with the height of skin dome elevation one centimeter into the cup on the time of sucking for less than two minutes. Subsequently, the suction stopped and the cup was gently removed. The cleaned skin was cut in some parallel longitude lines with the sterile blade along the vertebral column, 5-7 mm. Once again, cupping was applied. The blood oozed due to suction pressure with a duration of fewer than 3 minutes. The blood sample was removed and collected for laboratory analyses.

2.2 Method of collecting venous and CT blood from volunteers

Samples were collected from the volunteers by taking 5 ml of venous blood about five minutes before the starting of the CT by a professional person in the medical laboratories. These samples were divided into two parts, 2 ml was put in a tube containing (K_3EDTA) which is an anticoagulant, and 3 ml was placed in a tube containing (Gel and Clot Activator). About 5ml of CT blood samples were collected from the CT cups. Samples were taken from three areas on the back (Fig. 2) [13] where CT was done. The samples were also divided into two types: 2ml placed in tubes containing EDTA solution and 3 ml placed in tubes containing (Gel and Clot Activator).

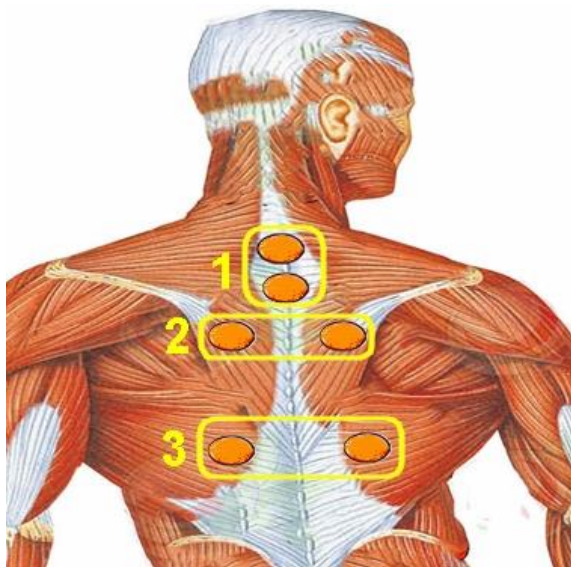


Fig. 2: The three areas on which cupping was performed (adapted from reference 13).

2.3 Biochemical parameters analysis

The blood samples were analyzed in the National Center for Public Health Laboratories, for blood parameters and blood tests. The blood samples that were collected in the tubes containing (Gel and Clot Activator), were centrifuged at 3500 rpm for five minutes, and the serum (a light-yellow color fluid) was separated after 30

minutes of sample collection. Of note (After separating the serum from the blood of CT samples, three samples from the serum were obtained). After that, a sample of the serum was tested for blood parameters such as blood sugar, blood urea, uric acid, creatinine, cholesterol, high-density lipoprotein (HDL), and low-density lipoprotein (LDL) by COBAS INTEGRA 400 plus instrument.

2.4 Statistical analysis

Statistical analysis of the results was performed using SPSS version 25. Normality and homogeneity of data were assessed with the Shapiro-Wilk test and Levene test, respectively. Two independent -samples t-test that used to compare the different time points at $P < 0.05$ was considered significant.

3. Results

All the participants in this study were healthy males. The collected information (Table 1) from the questionnaire showed that the age of the participants was between (25 - 61) years with a median age of 39.7 ± 11.7 .

Table 1. Demographic characteristics of the participants.

| Variable | Participant (N=18) |
|---------------|--------------------|
| Age (Median) | 39.7± 11.7 |
| Gender | |
| Male | 100% |
| Smoking | |
| Smoker | 46% |
| Non-smoker | 53% |
| Health status | |
| Non-patients | 100% |
| Previous CT | |
| Yes | 53.3% |
| No | 46.7% |

Tables 2 and 3 and Fig. 3, represent the level of lipid profile in the blood serum of a venous in comparison with the blood serum of CT, the values are presented as mean \pm SD. The total cholesterol in the blood of CT (197.9 ± 46.18 mg/dL) was greater than the total cholesterol in the blood of the venous (174.8 ± 39.43 mg/dL), and it is statistically significant at ($p < 0.001$). As well as, the level of triglycerides (TG) in the blood of CT (145.7 ± 72.16 mg/dL) was higher than the level of TG in the blood of the venous (112.6 ± 62.98 mg/dL) and it is statistically significant at ($p < 0.001$). The level of HDL was in the blood of CT (41.94 ± 8.08 mg/dL) and it was higher than the level of HDL in the blood of the venous (40.00 ± 8.02 mg/dL), the value is statistically significant at ($p = 0.010$). The level of LDL in the blood of CT (141.6 ± 40.13 mg/dL) was higher than the LDL in the blood of

the venous (129.6 ± 33.72 mg/dL) and it is statistically significant at (p<0.001).

The concentration of glucose, urea, uric acid, triglyceride, cholesterol, HDL, LDL, and creatinine in venous blood serum in comparison with CT blood serum are represented as mean ± SD in **Tables 2, 3**, and **Fig. 4**. It is observed that the concentration of urea and uric acid in respect to CT blood sample (24.61 ± 6.82 mg/dL and 5.50 ± 1.46 mg/dL) are greater than that in venous blood (23.78 ± 6.23 mg/dL and 5.43 ± 1.47 mg/dL) respectively, the values are statistically significant at (P=0.05, p = 0.01) respectively.

Triglyceride, cholesterol, HDL, and LDL (Table 3) follow the same pattern as previous that CT blood samples were statistically higher than venous blood. However, the creatinine concentration in the blood of a venous (0.84 ± 0.12 mg/dL) was higher than its concentration in the blood of CT (0.82 ± 0.13 mg/dL), this increase is not statistically significant (P>0.05).

The concentration of sugar in the blood of CT (102.70 ± 15.81 mg/dL) is more than the concentration of sugar in the blood of the venous (97.22 ± 12.96 mg/dL) and the difference between the values for both cases is statistically significant at (p = 0.01).

Some descriptive statistics and t-test values for the parameters under our study were represented in **Table 3**

Table 2. Normality test and homogeneity for the parameters under study.

| Organic compounds | Type of sample | Shapiro-Wilk test | | Levene's test | |
|-------------------|----------------|-------------------|----------|---------------|---------|
| | | W* | p-value | F** | p-value |
| Blood glucose | Venous blood | 0.913594 | 0.099566 | 0.194 | 0.663 |
| | CT blood | 0.825682 | 0.003586 | | |
| Blood urea | Venous blood | 0.948379 | 0.400160 | 0.243 | 0.625 |
| | CT blood | 0.965215 | 0.704433 | | |
| Uric acid | Venous blood | 0.901949 | 0.062136 | 0.008 | 0.930 |
| | CT blood | 0.895979 | 0.048922 | | |
| Creatinine | Venous blood | 0.896776 | 0.050504 | 0.064 | 0.802 |
| | CT blood | 0.940476 | 0.295259 | | |
| Cholesterol | Venous blood | 0.937858 | 0.266241 | 0.477 | 0.494 |
| | CT blood | 0.972423 | 0.841810 | | |
| Triglyceride (TG) | Venous blood | 0.791335 | 0.001149 | 0.129 | 0.721 |
| | CT blood | 0.799217 | 0.001481 | | |
| HDL | Venous blood | 0.955837 | 0.523685 | 0.064 | 0.801 |
| | CT blood | 0.978747 | 0.936167 | | |
| LDL | Venous blood | 0.938059 | 0.268372 | 0.421 | 0.521 |
| | CT blood | 0.928000 | 0.179064 | | |

Key: *W = Shapiro-Wilk value. **F = Levene Statistics

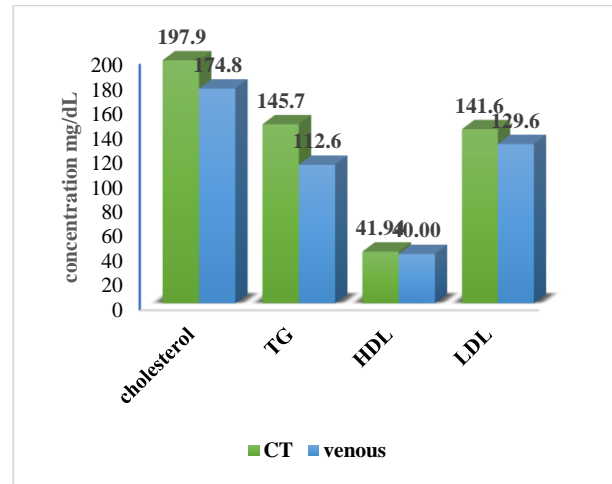


Fig. 3: The concentration (mg/dL) of serum lipid profile (Cholesterol, TG, HDL, and LDL) in volunteers.

Table 3. The descriptive statistics (n=18) and the t-test for the parameters under study.

| parameter | Group | Mean | SD (±) | Min-Max | Median | t-test | p-value |
|-------------------|--------|--------|--------|---------|--------|--------|----------|
| Total cholesterol | venous | 174.8 | 39.43 | 119-270 | 181 | 6.31 | p<0.001 |
| | CT | 197.90 | 46.18 | 123-287 | 200 | | |
| Level of TG | venous | 112.60 | 62.98 | 44-310 | 89 | 5.65 | p<0.001 |
| | CT | 145.70 | 72.16 | 79-374 | 132 | | |
| Level of HDL | venous | 40.00 | 8.02 | 26-56 | 38 | 2.89 | p = 0.01 |
| | CT | 41.94 | 8.08 | 28-57 | 42 | | |
| Level of LDL | venous | 129.60 | 33.72 | 75-202 | 127 | 4.52 | p<0.001 |
| | CT | 141.6 | 40.13 | 81-214 | 144 | | |
| Urea | venous | 23.78 | 6.23 | 14-34 | 24 | 2.05 | p=0.05 |
| | CT | 24.61 | 6.82 | 14.37 | 25 | | |
| Uric acid | venous | 5.43 | 1.47 | 3.4-8.1 | 5.15 | 2.75 | p = 0.01 |
| | CT | 5.50 | 1.46 | 3.5-8.2 | 5.25 | | |
| Creatinine | venous | 0.84 | 0.12 | 0.6-1.1 | 0.8 | 1.14 | p>0.05 |
| | CT | 0.82 | 0.13 | 0.6-1.1 | 0.8 | | |
| Blood sugar | venous | 97.22 | 12.96 | 77-133 | 98 | 2.77 | p = 0.01 |
| | CT | 102.70 | 15.81 | 84-153 | 99 | | |

Keys: Min-Max: Minimum-Maximum, SD(±): Standard Deviation for mean.

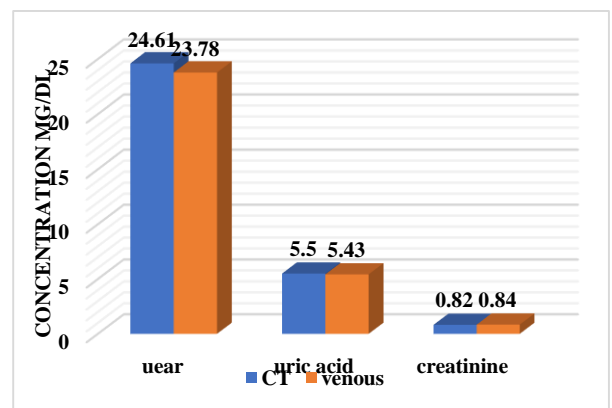


Fig. 4: Concentration of blood urea, uric acid, and creatinine in blood serum of venous and CT.

4. Discussions

It is well known that CT might be an effective treatment for several diseases because it could remove causative pathological and disease-related substances from the blood circulation and interstitial fluids. Most people in Yemen use it as traditional therapy for many diseases. It is considered to be safe, cheap, and people also believe in its effectiveness from the hadiths of the Prophet Mohammad (PBUH).[14] Therefore, the current study was focused on biochemical analysis and comparing some blood parameters of venous blood and the blood collected during the CT.

Our results revealed that the lipid profile in the blood of CT is higher than that in the blood of the vein. This is consistent with many other studies that a significant difference was found between CT blood and venous blood, in more than one aspect, including biochemical analysis of blood.[15] Also, the result of another study conducted revealed a decrease in the amount of lipid profile by taking samples of venous blood before CT, and after CT, which indicated that the blood of CT was loaded with a large amount of lipid profile, leading to a decrease in the amount of lipid profile in the venous blood after CT.[16] The blood detoxification effect of CT could be confirmed by a previous study that compared the cholesterol levels between the CT blood and the venous blood. The results indicated a higher level of cholesterol in the CT blood than in the venous blood.[17] As well, according to a study conducted in Al-Mosul-Iraq, wet cupping led to a decrease in the level of cholesterol and LDL/HDL ratio in hyperlipidemic patients without antihyperlipidemic drugs or high energy diet.[18] Also, a study in KSA revealed that using wet cupping reduce LDL and increase HDL level.[19] Another study carried on the hypercholesterolemic postmenopausal women showed that total cholesterol and LDL were reduced and HDL was increased after the CT.[20]

The current study indicated a higher concentration of both uric acid and urea in the blood of CT in comparison with the venous blood. The result was parallel with previous studies.[21,22] Wet CT revealed substantial reductions in serum urea, creatinine, and uric acid in healthy individuals so, it might help in reducing the possibility and preventing chronic renal disease.[23] It was noted that creatinine concentration in the venous blood was greater than a concentration in the blood of CT, the results were agreed with a study conducted by Bilal with co-workers al.[17] however, another intervention study conducted in Malaysia revealed that the serum creatinine showed a significant reduction at one and four months in comparison with baseline.[22] The quality of life and health of chronic renal failure patients was improved after CT with the reduction in the

serum creatinine level and other electrolytes as indicated in a study in Karachi.[24]

Al-Hijamah therapy helps in reducing blood sugar, where the concentration of blood sugar in the venous blood was lower than the concentration of blood sugar in the blood of CT, the results were similar to the study carried by Sutriyono with his team. The study concluded that CT reduces blood sugar, which helps patients with high blood sugar.[25] The earlier-mentioned intervention study that was carried out in Malaysia also indicated a reduction in fasting blood sugar.[22] As well, using wet CT in type 2 diabetic patients resulted in reducing the blood sugar and better control.[26]

In the present study for healthy people, the measured hematological parameters in the venous blood were lower than in the CT blood. The results were in line with the previous study that carried for patients with hyperlipidemia, hypertension, and diabetes, as the results showed a reduction in cholesterol, triglyceride, low-density lipoprotein, fasting blood sugar, ferritin, urea, and creatinine after wet CT.[27]

5. Conclusions

In summary, it can be concluded that CT is considered one of the traditional therapies that play a major role in maintaining health in people who do not suffer from any diseases, which may be due to the removal of the toxin and an unrecognized compound in CT blood, leading to providing a suitable balance between different vital parameters. As well, it helps in reducing some hematological parameters that may be related to some metabolic diseases. consequently, it might help in treating many diseases for instance; heart and kidney diseases and diabetes, by reducing the components in the body such as fats, components resulting from the metabolism of proteins such as uric acid and urea, and others, which are among the main causes of kidney disease and reduce blood glucose, which helps diabetic people.

Declarations

Ethical considerations

This study was done in the Faculty of Science, University of Aden, Yemen, with the approval of the University's Graduate Studies Council. The practical protocol was consistent with the Declaration of Helsinki and permitted by the local ethics committee. Participants were provided an outline of the research, and their participation in the survey was deemed informed consent.

Competing interests

The authors declare that they have no competing interests.

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مقالة بحثية

أثر العلاج بالحجامة الرطبة على بعض مكونات الدم: دراسة مقارنة

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المُلخَص

يعد العلاج بالحجامة أحد الأساليب العلاجية التي كانت تمارس في العديد من دول العالم في العصور القديمة. تهدف هذه الدراسة إلى إجراء تقييم علمي لفعالية مجموعة من المكونات الموجودة في الدم الوريدي ومقارنتها مع نفس المكونات الموجودة في دم العلاج بالحجامة من خلال أخذ عينات الدم للعلاج بالحجامة من الشقوق التي تصنع في الجسم في مناطق معينة وكذلك أخذ عينات الدم من الوريد. تم اختيار 18 فرداً من الذكور بشكل عشوائي بين سن 25 - 61. تم تجميع عينات الدم من الوريد وموقع الحجامة لكل فرد لتحليل المعلمات الدموية والكيميائية الحيوية. كان هناك اختلافاً في جميع المقاييس التي تم اختبارها في هذه الدراسة، ولكن كان هذا الاختلاف زيادة في بعض الأحيان وانخفاضاً في أوقات أخرى بين عينات الدم الوريدية وعينات دم الحجامة حيث لوحظ أن الكوليسترول و الدهون الثلاثية و كذلك البروتينات الدهنية منخفضة الكثافة كانت ذات دلالة إحصائية ($p < 0.001$) بينما كانت البروتينات الدهنية عالية الكثافة وسكر الدم وأيضاً حمض اليوريك ذات دلالة إحصائية عند ($p = 0.01$). أظهر اليوريا اختلافات ذات دلالة إحصائية عند ($p = 0.05$) بينما لم يعط الكرياتينين دلالة إحصائية عند ($p > 0.05$). كانت الكمية المسحوبة في جميع الحالات 5 مل. توافقت هذه الاختلافات مع ما تم دراسته في أبحاث سابقة. يساعد العلاج بالحجامة في تقليل تراكيز بعض المؤشرات الحيوية المرتبطة ببعض الأمراض الأيضية، وبالتالي التأثير الإيجابي على صحة الإنسان.

الكلمات المفتاحية: الحجامة الرطبة، المؤشرات الحيوية، جلوكوز الدم، حمض اليوريك، الكوليسترول.

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