



The Effects of Wet Cupping on White Blood Cells Count: A Retrospective Study

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Introduction

Background:

Wet cupping is the process of using a vacuum at different points on the body but with incisions in order to remove 'harmful' blood, which lies just beneath the surface of the skin. Cupping can be used on the neck, shoulders, back, sacral area, hip, abdomen, thigh, upper arms, and calves ¹.

Although there is reason to believe the practice dates from as early as 3000 B.C., the earliest record of cupping is in Ebers Papyrus, one of the oldest medical textbooks in the world. It describes in 1,550 B.C. Egyptians used cupping. Archaeologists have found evidence in China of cupping dating back to 1,000 B.C. In ancient Greece, Hippocrates (c. 400 B.C.) used cupping for internal disease and structural problems. This method in multiple forms spread into medicine in Asian and European civilizations ².

It is known in the Arabic language as hijama. For Muslims, it has special importance because it was recommended by the Prophet Mohammed (peace be upon him) on many occasions. For example, he said, "Indeed the best of remedies you have is hijama (cupping)". ³

Cupping Therapy can be divided into two broad categories: Dry Cupping and Wet Cupping. Dry Cupping Therapy tends to be practiced more commonly in the Far-East whereas Wet Cupping is favored in the Middle East and Eastern Europe. ⁴

Dry massage cupping is similar to dry cupping, but olive oil is applied to the skin (before applying the cups) in order to allow easy movement of the cups. 70% of diseases, pains, and ailments are due to the blood being unable to reach certain parts of the body. Dry cupping and dry massaging cupping allow the blood to reach these places. ⁵

Wet cupping therapy (WCT) is a simple and economical treatment that still needs scientific interpretation. It treated diseases effectively with different etiologies and pathogeneses, e.g., rheumatoid arthritis (RA), hypertension, migraine, carpal tunnel syndrome (CTS), fibromyalgia, cellulitis, and others. ⁶

White blood cells (WBC) are a heterogeneous group of nucleated cells that can be found in circulation for at least a period of their life. Their normal concentration in the blood varies between 4000 and 10,000 per microliter. They play a most important role in phagocytosis and immunity and, therefore, in defense against infection. Leukocytes can be evaluated through several techniques of varying complexity and sophistication. Both quantitative and qualitative properties can be assessed in the laboratory. The simplest test is the WBC count and differential. ⁷

The mechanism of action of wet cupping therapy is not fully known despite its common use; wet cupping therapy might act through a lot of different mechanisms. We hypothesize that one of the mechanisms of action of wet cupping may be through the effect on differential white blood cell count and through its immunomodulatory effect as it was reported in some studies about combined therapy in RA and cellulitis. ⁹

There is a volume of anecdotal literature present; however, few scientific trials have investigated the effect of Cupping at various levels to the health.

Few studies have investigated the effect of wet cupping on White Blood Cells. The most relevant one is a study conducted in Iraq in 2014 by Al-Kazazz et al., who performed wet cupping on 10 healthy men between 23 and 58 years old. They measure total WBC and differential before the procedure and 2 weeks after it, including Total WBC and differential. The mean of Total WBC was 6430.00 ± 1597.2924 , and after cupping, it was 7801.000 ± 2155.1099 . The P value was 0.002, which was a statistically significant difference. ¹⁰

Another study conducted in Iran in 2009 by Mahdavi et al., who performed wet cupping on 56 healthy men between 20 and 40 years old. They did many blood tests before the procedure and 2 weeks after it, including Total WBC and differential. They reported a statistically insignificant decline in Total WBC count and differential after 2 weeks except for neutrophils, which showed a slight increase with mean of 62.67 % before wet cupping and 64.16% after it despite that increase of neutrophils was not statically significant with P value =0.509. ²

A study by Ahmed and colleagues was carried out in

order to evaluate the efficiency of blood-letting cupping therapy in the management of rheumatoid arthritis. Conventional therapy induced significant depression in white blood cell (WBC %) ($p < 0.001$) whereas combined therapy-induced marked ($p < 0.001$) elevation since the first month (8.44 ± 1.58) compared to baseline (6.94 ± 1.58). 8

All of these previous studies showed a statically significant elevation of total WBC and differential except the study conducted by Mahdavi et al., but we cannot generalize those results because it was a small sample size and they included only healthy men participants in the studies conducted by Mahdavi et al., Å and Al-Kazazz et al. Also, in the study carried out by Ahmed et al., the participant was only the patient diagnosed with RA. In the present study we included patients with wide verity of different complaints. To assess the effect of wet cupping on White Blood Cells count and differential in the patients who referred to al hijama clinic by comparing WBC count and differential before (at baseline) and after one month of the procedure.

Materials and Methods

Place of Study

The study was performed at King Abdulaziz University Hospital in Jeddah in the Prophetic Medicine Clinic. The clinic is supervised by the Y.A. Jameel, Scientific Chair of Prophetic Medical Applications. This clinic mainly provides wet-cupping therapy for patients referred from other clinics in the hospital who ask for hijama for different reasons.

Study design

The design of this study is a retrospective study to investigate the effect of wet cupping on White Blood Cells Count.

Data collection

The data were taken from the records of the patients who attended that clinic from January 2015 to June 2015. We included all the patients who attended the clinic during that period and excluded those who did not have a complete blood count (CBC) before receiving hijama. We also excluded those who had no CBC done after one month of hijama. After excluding those patients, the sample size was 51 participants.

Usually, there is at least a month gap before the next hijama session at the clinic.

The investigations used for comparison are Total

White Blood Cells, Basophils, Lymphocytes, Eosinophil, Neutrophils, and Monocytes. Those investigationsâ€™ readings were taken at different time points: before hijama and within one month after hijama.

Statistical analysis

Statistical analysis was done using SPSS program version 23.0. Baseline categorical variables are presented in frequencies and ratios, while continuous baseline variables are presented in means and standard deviations. Paired t-test analyses were used to compare the mean of Total White Blood Cells count and differential; Basophils, Lymphocytes, Eosinophil, Neutrophils, and Monocytes. P-value will be considered signi?cant if $p < 0.05$ at a con?dence interval of 95%.

Ethical considerations

This study was approved by the Institutional Review Board (IRB) of King Abdulaziz University Hospital. All participants who received wet cupping at the Prophetic Medicine Clinic signed a consent form indicating that their data would be used in multiple studies funded by the scientific chair. The confidentiality of data was ensured throughout the study.

Results

As shown in Table (1), the patients who were chosen for this study had a wide age range, from 21 to 80 years. Most of the participants were female. The mean values of the participantsâ€™ Total WBC count and differential; Basophils, Lymphocytes, Eosinophil, Neutrophils, and Monocytes were all within the normal ranges (Table 3). Reference ranges for differential white blood cell count in normal adults is as follows: Neutrophils - $2.0 \pm 7.0 \times 10^9/l$ (40â€™80%), Lymphocytes - $1.0 \pm 3.0 \times 10^9/l$ (20â€™40%), Monocytes - $0.2 \pm 1.0 \times 10^9/l$ (2â€™10%) , Eosinophils - $0.02 \pm 0.5 \times 10^9/l$ (1â€™6%) ,Basophils - $0.02 \pm 0.1 \times 10^9/l$ (< 1â€™2%) .11

The majority of the patients who were referred to the Prophetic Medicine Clinic had pain as their main complaint. Table 2 gives a description of the complaints that the patients had, with the frequency of each complaint.

The comparisons were drawn from the participantsâ€™ results to show the difference between their blood results before and after one month of hijama. The comparison was displayed in

mean difference with P values and confidence intervals.

As shown in table 3. The results showed a statistically significant elevation in total WBC with 95%CI -0.54 (-0.94 to -0.14) and P value of 0.009

For neutrophil, there was a statistically significant increase with 95%CI of -0.48(-0.80 to -0.17)and with P value of 0.003.

Lymphocyte showed a minimal decline in the count, but this decline was not statistically significant. Other white blood cells differential as eosinophils, basophils, and monocyte showed no statistically significant increase. Table 3 shows these results in depth.

Tables

Table 1:

Variable	Frequency	Mean (Å± SD)
age, years	51	48.22 (Å± 12.979)
Variables	Frequency	percentage
Gender		
Male	21	41.2
Female	30	58.8
Nationality		
Saudi	33	64.7
Non-Saudi	18	35.3
Marital Status		
Married	25	51.0
single	26	49.0

Table 2:

Table 1: Baseline characteristics of participants

The complaint of the participant	Frequency of the complaint	Percent of the complaint
Back pain	10	19.6
Headache and migraine	7	13.7
Hypertension	5	9.8
Diabetes Mellitus	6	11.8
Rheumatoid arthritis	8	15.7
Other complaints	15	29.4
Total	51	100.0

Table 3:

Table 2: The complaint of the participant

	Results at Baseline (before hijama) n=51		Results After one month of hijama n=51		Mean difference (Å± 95% CI)	p values
	Mean (Å± SD)	Std. Error Mean	Mean (Å± SD)	Std. Error Mean		
Total WBC	8.49 (Å± 1.77)	0.25	7.02 (Å±2.30)	0.32	-0.54 (-0.94 to -0.14)	0.009
Neutrophils	3.40 (Å± 1.44)	0.20	3.89 (Å±2.07)	0.29	-0.48(-0.80 to- 0.17)	0.003
Lymphocytes	2.33 (Å± 0.68)	0.09	2.31 (Å±0.64)	0.10	0.02 (-0.18 to 0.18)	0.837
Eosinophils	0.21 (Å± 0.16)	0.02	0.26 (Å±0.35)	0.04	-0.05(-0.16 to 0.21)	0.245
Basophils	0.038 (Å±0.027)	0.003	0.041 (Å±0.02854)	0.004	-0.004(-0.01 to 0.003)	0.286
Monocytes	0.51 (Å±0.22)	0.03	0.54 (Å±0.22)	0.03	-0.026(-0.10 to 0.05)	0.498

Table 3: Comparison between total WBC and differential count

Discussion

The diversity of the patients included in the study gives it more strength and easier generalizability because it contains a wide spectrum of age and a wide variety of different complaints. On the other hand, it would be better if we had a larger number of patients and other comparison groups after 3 months and 6 months to have an accurate measure.

If we compared the results of this study with the previously mentioned studies, we can say that the results of total WBC and differential are consistent with the study conducted by Al-kazazz et al. and Ahmed et al, which showed significant elevation in Total WBC count and Neutrophils count in comparison with the baseline results. This result are different from the study conducted by Mahdavi et al., which reported decline of Total WBC count of no statistical significance after 2 weeks of wet cupping. That results could be due to the participant included in Mahdavi's study was only healthy men and the duration was only 2 weeks after WCT.

This significant elevation of total WBC and neutrophil count can support the role of WCT in the treatment of some cellulitis cases and RA as reported. However, this significant elevation of neutrophil count is within normal range, which means that the skin infection is not a side effect of hijama if infection Control guidelines were applied. 12

It was reported that WCT increases immunity in the study conducted by Al-Kazazz et al. Also, WCT has an immunomodulatory effect, as shown in Ahmed et al., when combined with conventional therapy in RA patients. So, this present study with a wide variety of patient complaints had similar results as those studies and support that WCT has an immunomodulatory effect and increases immunity. However, further studies with more immunological investigations should be carried out to determine the mechanism of WCT in the immunity system.

Conclusion

Wet cupping causes a significant elevation of total WBC and neutrophil count. However, this elevation was within the normal level and could explain the role of WCT in infection as cellulitis. Further studies with a large sample size, control healthy group, and more immunological investigations should be carried out to determine the mechanism of WCT in the immunity system.

List of Abbreviations

WCT: Wet cupping therapy, RA: Rheumatoid Arthritis, WBCs: White Blood Cells

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