

Effect of Cupping Therapy on Glycemic Control in Type II Diabetic Patients

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Abstract

Background: Diabetes mellitus is a group of metabolic disorders in which there are high blood glucose levels over a prolonged period. If left untreated, diabetes can cause many complications [13]. Acute complications can include diabetic ketoacidosis, hyperosmolar hyperglycemic state, or death [2]. Serious long-term complications include cardiovascular disease, stroke, chronic kidney disease, foot ulcers, and damage to the eyes [12].

Purpose: To study the effect of cupping therapy on glycemic control in diabetic patients.

Methods: Thirty type 2 diabetic patients were selected from Internal Medicine Department of Central Berket El-Sabaa Hospital to determine the effect of cupping therapy on glycemic control in diabetic patients. The practical work was done in the duration between July 2014 till September 2014.

They were diagnosed with specialized physician as T2DM patients, their age ranged from (45-55 years) and they were randomly divided into two groups equal in number. Patients were randomly assigned into two groups (A&B); each group consisted of fifteen patients. Parameters measured from both groups were HbA1c, fasting plasma glucose, postprandial plasma glucose level. Group (A) performed aerobic training for three sessions every week for 3 months and cupping therapy one time a month for 3 months while group (B) performed aerobic exercise only. Both groups were under medical treatment.

Results: There was a significance decrease in HbA1c, fasting blood glucose, and post prandial blood glucose in group A compared with group B post treatment. The percent of improvement of HbA1c, fasting blood glucose, post prandial plasma glucose for group (A) was 30.13%, 14.08%, and 23.62% and for group (B) was 18.97%, 13.03%, and 16.26% respectively. The significance decrease in the mean values post treatment ($p=0.02$), (0.04), (0.3).

Conclusion: Using cupping therapy combined with aerobic exercise is superior to aerobic exercises only regarding glycemic control in type 2 diabetic patients.

Key Words: Diabetes –Aerobic exercise – Cupping therapy.

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Introduction

DIABETES mellitus, or simply diabetes, is a group of metabolic diseases in which a person has high blood sugar. Either because the pancreas does not produce enough insulin, or because cells do not respond to the insulin that is produced [7].

Cupping therapy is an ancient medical treatment that relies upon creating a local suction to mobilize blood flow in order to promote healing. Known as Al Hijama meaning release of bad blood. The therapy is a well-known alternative treatment in Asia and Middle East and also getting reputation in many European countries and America as well. It is found effective for blood disorders, pain relief, musculoskeletal disorders, inflammatory conditions, mental and physical relaxation, depression, insomnia and other psychological problems in various researches [11].

Aerobic exercise (also known as cardio) is physical exercise of relatively low intensity that depends primarily on the aerobic energy generating process [8].

Aerobic literally means "living in air" and refers to the use of oxygen to adequately meet energy demand during exercise via aerobic metabolism. Generally, light-to-moderate intensity activities that are sufficiently supported by aerobic metabolism can be performed for extended periods of time, the intensity should be between 60%-85% of maximum heart rate [4].

Aerobic exercise strengthening the muscles involved in respiration, to facilitate the flow of air in and out of the lungs, strengthening and enlarging the heart muscle, to improve its pumping efficiency and reduce the resting heart rate, known as aerobic

conditioning, improving circulation efficiency and reducing blood pressure [1]. Reducing the risk for diabetes. One meta-analysis has shown, from multiple conducted studies, that aerobic exercise does help lower HbA1C levels for type 2 diabetics [10].

Subjects and Methods

Inclusion criteria: Current study was conducted to evaluate the effect of cupping therapy on glycemic control in diabetic patients. Thirty type 2 diabetic patients were selected from Internal Medicine Department of Central Berket El-Sabaa Hospital to determine the effect of cupping therapy on glycemic control in diabetic patients. They were diagnosed with specialized physician as T2DM patients, their age ranged from (45-55 years) and they were randomly divided into two groups equal in number (study group and control group). The study group consist of 15 patients (11 female and 4 male) who underwent cupping therapy one time a month for 3 months and aerobic exercises for three sessions every week for 3 months. The control group underwent aerobic exercise program only. Both groups were on medical treatment.

Exclusion criteria: The following patients were excluded from the study patients with contra indication to cupping therapy: Patient suffer from hepatic diseases, Anemia, Hypotension, Heart diseases, pregnancy. And patients with contra indication to aerobic exercise, (patient suffer from myocardial infarction, unstable angina). The practical work was done in the duration between July 2014 till September 2014.

Evaluation procedures: Participants were recruited with diagnosis diabetes type2 patient with BMI ($\geq 30 \text{ kg/m}^2$), Random blood glucose level equal or less than 250mg/dl, HbA1c ($\geq 6.5\%$). Measuring weigh and height to calculate BMI by using.

$$\text{BMI} = \text{Weigh kg/height m}^2$$

These parameters measured pre and post treatment after 3 months.

Treatment procedure:

1- Aerobic exercise program:

Participants in both groups underwent aerobic exercise program in the form of walking on treadmill with intensity ranged from 60-75% of HRmax. calculated from this equation: $\text{HRmax} = 208 - 0.7 \text{ age}$. The session was started by the following: Warming up phase: 5-10 minutes in the form of breathing exercises and stretching exercises. Training phase:

15-20 minutes waking on treadmill, cooling down phase 5-10 minutes the same as warming up phase. So the total of sessions was 40 minutes.

2- Cupping therapy:

Participants in study group only underwent cupping therapy one session a month for 3 months.

These points were used in the 3 sessions of the cupping therapy for 3 months.

- Point 1 is the seventh vertebra of the neck (bone of spine).
- Point 22&23 is above the pancreas gland under the rib end.
- Point 24&25 is at the beginning of the lower half of the back.
- Point 7&8 is at the middle of the back opposite to the stomach on the spinal sides.

Results

Comparing the general characteristics of the subjects of both groups revealed that there was no significance difference between both groups in the mean age, weight, height, or BMI or sex distribution ($p > 0.05$).

Table (1): Descriptive statistics and *t*-test for comparing the mean age, weight, height, and BMI of group A and B.

	Group A	Group B	MD	<i>t</i> -value	<i>p</i> -value	Sig.
	X±SD	X±SD				
Age (years)	50.93±3.08	51.06±2.21	-0.13	-0.13	0.89	NS
Weight %	82.4±3.77	80.86±2.85	1.54	1.25	0.22	NS
Height (cm)	161.93±1.48	162.26±1.83	-0.33	-0.54	0.58	NS
BMI (kg/m ²)	31.42±1.39	30.72±1.31	0.7	1.41	0.16	NS

X : Mean. *p*-value: Probability value.
SD : Standard Deviation. *t*-value : Unpaired *t*-value.
MD: Mean difference. NS : Non significant.

Table (2): Frequency distribution and chi squared test for comparison of sex distribution between both groups (A and B).

	Group A	Group B	χ^2	<i>p</i> -value	Sig.
Males	4 (27%)	6 (40%)	0.6	0.43	NS
Females	11 (73%)	9 (60%)			

χ^2 : Chi squared value.
p-value: Probability value.
NS : Non significant.

Post treatment mean values of HbA1c of both groups (group A and B):

The mean±SD HbA1c post treatment of group A was 5.24±1.09% and that of group B was 6.02±0.55%. The mean difference between both groups was -0.78%. There was a significant difference between both groups ($p=0.02$). (Table 3, Fig. 1).

Table (3): *t*-test for comparison between post treatments mean values of HbA1c of group A and B.

	HbA1c (%)	MD	<i>t</i> -value	<i>p</i> -value	Sig.
	X±SD				
Group A	5.24±1.09	-0.78	-2.43	0.02	S
Group B	6.02±0.55				

X : Mean.
MD: Mean difference.
SD : Standard deviation.
p-value: Probability value.
t-value : Unpaired *t*-value.
S : Significant.

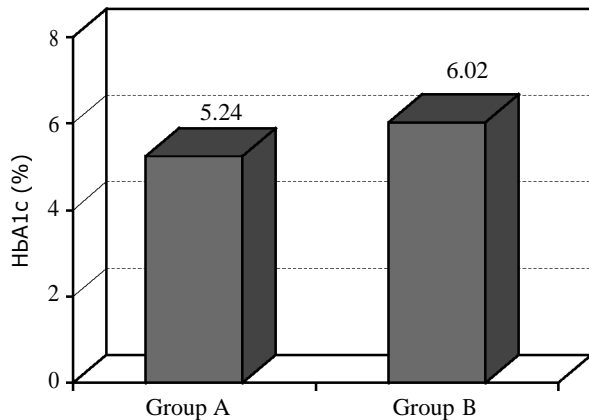


Fig. (1): Post treatment mean values of HbA1c of group A and B.

Post treatment mean values of fasting blood glucose of both groups (A and B):

The mean±SD fasting blood glucose of group A at post I was 138.06±6.87mg/dl and that of group B was 143.33±6.32mg/dl. The mean difference between both groups was -5.27mg/dl. There was a significant difference between both groups at post I ($p=0.03$). (Table 4, Fig. 2).

The mean±SD fasting blood glucose of group A at post II was 130.2±5.04mg/dl and that of group B was 135.13±5.3mg/dl. The mean difference between both groups was -4.93mg/dl. There was a significant difference between both groups at post II ($p=0.01$). (Table 4, Fig. 2).

The mean±SD fasting blood glucose of group A at post III was 126.4±4.76mg/dl and that of group B was 129.8±3.85mg/dl. The mean difference between both groups was -3.4mg/dl. There was a significant difference between both groups at post III ($p=0.04$). (Table 4, Fig. 2).

Table (4): *t*-test for comparison between post treatments mean values of fasting blood glucose of group A and B.

	Fasting blood glucose (mg/dl)		MD	<i>t</i> -value	<i>p</i> -value	Sig.
	X±SD					
	Group A	Group B				
Post I	138.06±6.87	143.33±6.32	-5.27	-2.18	0.03	S
Post II	130.2±5.04	135.13±5.3	-4.93	-2.61	0.01	S
Post III	126.4±4.76	129.8±3.85	-3.4	-2.14	0.04	S

X : Mean.
MD: Mean difference.
SD : Standard deviation.
p-value: Probability value.
t-value: Unpaired *t*-value.
S : Significant.

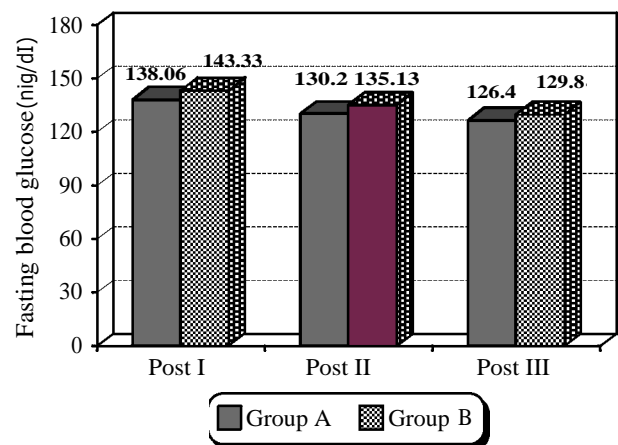


Fig. (2): Mean fasting blood glucose at post I, post II, and post III of group A and B.

Post treatment mean values of post prandial blood glucose of both groups (A and B):

The mean±SD post prandial blood glucose of group A at post I was 214.33±12.59mg/dl and that of group B was 220.46±13.67mg/dl. The mean difference between both groups was -6.13mg/dl. There was no significant difference in postprandial blood glucose between both groups at post I ($p=0.21$). (Table 5, Fig. 3).

The mean±SD postprandial blood glucose of group A at post II was 191.26±14.85mg/dl and that of group B was 203.4±13.17mg/dl. The mean difference between both groups was -12.14mg/dl. There was a significant difference between both groups at post II ($p=0.02$). (Table 5, Fig. 3).

The mean±SD postprandial blood glucose of group A at post III was 176.13±10.71mg/dl and that of group B was 184.6±9.64 mg/dl. The mean difference between both groups was -8.47mg/dl. There was a significant difference between both groups at post III ($p=0.03$). (Table 5, Fig. 3).

Table (5): *t*-test for comparison between post treatments mean values of post prandial blood glucose of group A and B.

	Post prandial blood glucose (mg/dl)		MD	<i>t</i> -value	<i>p</i> -value	Sig.
	X±SD					
	Group A	Group B				
Post I	214.33± 12.59	220.46± 13.67	-6.13	-1.27	0.21	NS
Post II	191.26± 14.85	203.4± 13.17	-12.14	-2.36	0.02	S
Post III	176.13± 10.71	184.6± 9.64	-8.47	-2.27	0.03	S

X : Mean.
MD: Mean difference.
SD : Standard deviation.

p-value: Probability value.
t-value : Unpaired *t*-value.
S : Significant.

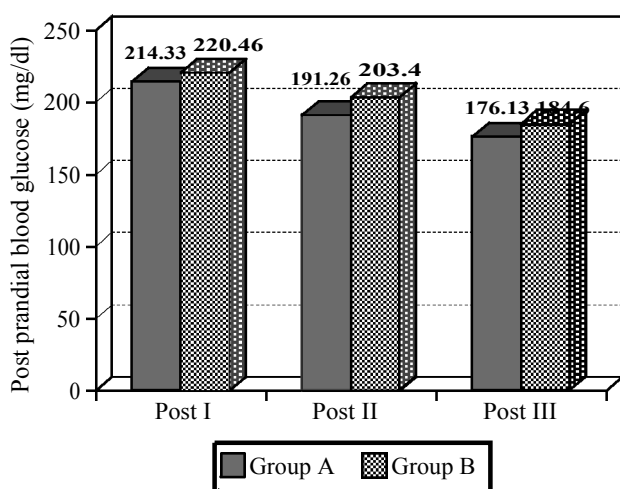


Fig. (3): Mean post prandial blood glucose at post I, post II, and post III of group A and B.

Discussion

This study was conducted to determine the effect of cupping therapy on glycemic control in type II diabetic patients.

In this study the percent of improvement of HbA1c for group (A) was 30.13%, for group (B) was 18.97%. The percent of improvement of fasting blood glucose for group (A) was 14.08%, for group (B) was 13.03. The percent of improvement of postprandial plasma glucose for group (A) was 23.62%, for group (B) was 16.26%.

In agreement with the results of the current study Savvas et al., [6] who reported that a combined training program of strength and aerobic exercise could induce positive adaptations on glucose control, insulin action, muscular strength and exercise tolerance in women with type II diabetes mellitus.

In agreement with the results of the current study Normand et al., [5] exercise training reduces HbA1c by approximately 0.66%, an amount that would be expected to reduce the risk of diabetic complications significantly.

In agreement with the results of the current study Chirali, [2] who said that cupping therapy is a physical treatment used by acupuncturists or other therapists that uses a plastic, bamboo, or glass cup to create suction on the skin over an acupuncture point.

In agreement with the results of the current study Shalabiea [9] found that in anaerobic exercise and cupping therapy reduce the glycated hemoglobin, cupping therapy only reduce fasting blood level and there is no change in post prandial blood glucose in anaerobic and cupping therapy in non-insulin dependent diabetes mellitus.

Conclusion:

It was concluded that participation in cupping therapy with aerobic exercise reduces the glycated hemoglobin, fasting blood glucose, post prandial blood glucose in type II diabetes mellitus patients more than aerobic exercise only.

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تأثير الحجامة على الهيموجلوبين السكري على مرضى السكري من النوع الثاني

الخلفية: مرض السكري هو مجموعة من الاضطرابات الأيضية التي توجد فيها مستويات عالية من الجلوكوز في الدم على مدى فترة طويلة. إذا تركت دون علاج، يمكن أن يسبب مرض السكري العديد من المضاعفات (١٣). المضاعفات الحادة يمكن أن تشمل الحمض الكيتوني السكري، حالة فرط سكر الدم المفرط، أو الموت. (٢) وتشمل المضاعفات الخطيرة على المدى الطويل مرض القلب والأوعية الدموية، والسكتة الدماغية، وأمراض الكلى المزمنة، وقرح القدم، والضرر للعيون (١٢).

الغرض: لدراسة تأثير العلاج بالحجامة على السيطرة على نسبة السكر في الدم في مرضى السكري. الطريقة: تم اختيار ثلاثين مريضاً من مرضى السكري من قسم الأمراض الباطنية في مستشفى بركت السبع المركزي لتحديد تأثير العلاج بالحجامة على السيطرة على نسبة السكر في الدم لدى مرضى السكري. تم تشخيصهم بطبيب متخصص كمرضى T2DM، تراوحت أعمارهم بين (٤٥ - ٥٥ سنة)، وتم تقسيمهم عشوائياً إلى مجموعتين متساويتين في العدد. تم تعيين المرضى عشوائياً إلى مجموعتين (A & B). تتألف كل مجموعة من خمسة عشر مريضاً. وكانت المعلمات المقاسة من كلا المجموعتين HbA1c، الجلوكوز البلازما الصيام، مستوى الجلوكوز البلازما بعد الأكل. أجرت المجموعة (أ) التدريب الهوائي لمدة ثلاث جلسات كل أسبوع لمدة ٣ أشهر والعلاج بالحجامة مرة واحدة في الشهر لمدة ٣ أشهر في حين أن المجموعة (ب) أداء التمارين الرياضية فقط. وكانت كلتا المجموعتين تحت العلاج الطبي.

النتائج: كان هناك انخفاض معنوي في HbA1c، وصيام السكر في الدم، والجلوكوز في الدم بعد الجمجمة في المجموعة أ مقارنة مع المجموعة ب بعد العلاج. وكانت نسبة التحسن في HbA1c، وصيام السكر في الدم، والجلوكوز بعد البلازما الساكنة للمجموعة (١٣) ٣٠.١٣%، ١٤.٠٨%، ٢٣.٦٢% والمجموعة (ب) ١٨.٩٧%، ١٣.٠٣%، ١٦.٢٦% على التوالي. انخفاض معنوي في متوسط القيم بعد المعاملة (٢) $(p=0.002)$ ، (٠.٠٤)، (٠.٠٣).

الاستنتاج: استخدام العلاج بالحجامة جنباً إلى جنب مع التمارين الرياضية متفوقة على التمارين الرياضية فقط فيما يتعلق التحكم في نسبة السكر في الدم في مرضى السكري من النوع ٢.