Comparative Clinical Evaluation of Hijaamah (*Cupping Therapy*) in the Treatment of Knee Osteoarthritis

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Abstract

In Unani medicine, Hijaamah (Cupping Therapy) has been traditionally used for variety of applications including management of osteoarthritis, the most common form of arthritis and is a major cause of morbidity, limitation of activity, and healthcare utilization, especially in elderly patients. Although this treatment approach has been used for many centuries, there is little scientific data on its effectiveness. The aim of this study was to validate the efficacy of cupping therapy in knee osteoarthritis. This study was a randomized parallel group comparative trial conducted with the approval of Institutional ethical committee, to compare the combined efficacy of cupping therapy (Ilaj-bil-Hijamat) and the traditional Unani herbal formulations against the same traditional formulation alone. Intervention was carried out in 40 patients, 20 in each group completed the study over a period of 6 weeks. The outcome measures included; Visual Analogue Scale (VAS), Knee injury and osteoarthritis outcome score (KOOS), range of motion, and 15- meter walking time were used to assess clinical efficacy. The test group received cupping therapy along with a Unani formulation. The other group (control) received the Unani formulation only. The test group demonstrated highly significant improvements in evaluated parameters when compared with baseline values. Statistically significant differences were observed in KOOS total score and its sub scores (P<.001), VAS (P<.001) at the 6th week when compared with the control group. The Cupping therapy seems to be an effective treatment for reducing pain and other symptoms of knee osteoarthritis and improving physical function with no major adverse effects.

Keywords: Cupping therapy, Osteoarthritis, Hijamah, Unani medicine, Waja-ul mafasil.

Introduction

The word “hijama” is derived from “hajm” which means “sucking” (Ibn Manzur,YNM; Ahmad, 2006; Nayab, 2011). Hijaamah (Cupping Therapy) is the process of applying cups to various points on the body by removing the air inside the cups to form a vacuum (negative pressure) in order to treat certain diseases (Kamaluddin,2004; Ahmad, 2006). Cupping (hijama) has been practiced for over thousands of years and can be traced back to the ancient Egyptians, Babylonians and ancient Chinese civilizations. Cupping is an ancient mode of therapy for various ailments, practiced and recommended by ancient healers (Azam, 2007). Cupping therapy is a widely employed mode of treatment; classified in alternative

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medicine and gaining popularity worldwide. Physicians are practicing it and hundreds of patients of various diseases have been reported to be benefited from cupping therapy. It has some religious roots too (Ahmad, 2006). It was the most recommended medical remedy by the Messenger (sallallaahu alayhi Wasallam) who said, "Indeed the best of remedies that you have is cupping" (Bukhari) (Husaini, 2003; Ehsanullah, 2006). The Chinese expanded the use of the cupping technique to surgery. Other ancient cultures including the Egyptians and early Greeks are all embraced the therapeutic value of cupping. Hippocrates (400 B.C.) used cupping for internal disease and structural problems (alhijamah.com). Famous Unani scholars like Rhazes, Avicenna, Galen, Jurjani, Allama Kabeer-Uddin, Ibn-e-Habal Baghdadi practiced cupping therapy and mentioned this important treatment modality in their books. Rhaze quotes in his book Al-Hawai-al-Kabeer, "In the treatment of hip joint arthritis, when humors are thick and difficult to evacuate, the use of mahjama is advised and it is very beneficial" (shah, 1892). The Cupping technique soon spread throughout Asian and European civilizations. Each country is having their own name for cupping therapy and having their own methods of cupping (History-of-cupping; alhijamah.com). Presently, cupping therapy has been claimed to treat various disorders successfully, such as carpel tunnel syndrome, nonspecific low back pain, sciatica, arthritis, digestive, respiratory, skin diseases and menstrual disorders (Anjum, 2003; Alam, 2011). This therapy reduces inflammation, pain and stiffness and hence improves the joint function in diseases like osteoarthritis (OA). There is lack of scientific evidence of efficacy of cupping; hence this study was aimed to evaluate the significance of this unique technique.

Osteoarthritis (OA) refers to a clinical syndrome of joint pain accompanied by varying degrees of functional limitation and reduced quality of life (Louis, 2010). It is by far the most common form of arthritis and one of the leading cause of pain and disability worldwide (Royal College of physicians, 2008; Johanne, 2011). It was previously thought to be a normal consequence of aging, thereby leading to the term degenerative joint disease. Now it is realized that osteoarthritis results from a complex interplay of multiple factors, including joint integrity, genetics, local inflammation, mechanical forces, cellular and biochemical processes (Neuprez, 2007); Anjum, 2003; Rehman, 2009). The subcommittee on Osteoarthritis of the American college of Rheumatology Diagnostic and therapeutic criteria committee defined OA as "A heterogeneous group of condition that leads to joint symptoms and signs which are associated with defective integrity of articular cartilage, in addition to related changes in the underlying bone at the joint margins" (Anonymous, 2000). Clinically the condition is characterized by pain, tenderness, crepitus, limited movements, and occasionally effusion and variable degree of local inflammation (Wall, 1994; Altman, 1986; Issel, 2001).

In literature of Unani medicine, osteoarthritis (OA) is not mentioned as such, instead it is described under the broad entity of Waja-ul-Mafasil which includes the entire joint disorders. Observations suggest that Waja-ul-Mafasil barid has obvious resemblance to osteoarthritis in such a way that the signs and symptoms of balghami and saudavi type of Waja-ul-Mafasil (Waja-ul-Mafasil barid) have more similar features with OA (Nayab, 2011; Faris, 2010; Shiffa *et al.*, 2013).

Unfortunately, there is no cure for osteoarthritis, although it may be possible to reduce cartilage loss and slow the progression of the disease (Faris, 2010). The major goals of treatment are pain control with minimal adverse effects, maintenance or improvement of joint mobility and function and improved health related quality of life. Treatment should be personalized to individual. A non-pharmacological intervention including physiotherapy, occupational therapy, weight loss and exercise can be used to alleviate the symptoms associated with osteoarthritis. These are often used in combination with pharmacological interventions. But the symptomatic treatment often fails to provide satisfactory relief. Furthermore in modern medicine, Non- Steroidal Anti-Inflammatory Drugs (NSAIDS) are the main stay of treatment of OA. Nevertheless, these NSAID have many adverse effects like gastric ulceration, gastro-intestinal bleeding and perforations (Shiffa *et al.*, 2013). Considering the large number of people suffering from OA, limitations in conventional medical management and the known adverse effects associated with NSAIDS and Glucocorticoids use, indicate a real need for safe and effective treatment of arthritis patients, for which unani medicine is the best answer because they have been used successfully on humans without any reported major adverse effects over centuries. These challenges drive us to explore alternative modes of treatment having the least or no side effects for this painful condition.

Material and Methods

This study was a randomized, parallel group, comparative trial carried out at Aligarh UP. The protocol was approved by Institutional ethical committee for clinical trials in Unani drugs of Dept of Moalejat, A.K. Tibbiya College, AMU, Aligarh. Patients were enrolled from Unani OPD_s in AKTC AMU Aligarh. Each participant was informed about the trial. They were further given a description of anticipated risks and discomforts. Then informed written consent was obtained from each participant in the prescribed format prior to performance of the study related procedures (i.e. Physical examination, laboratory screening and other investigational procedures) and before administration of any study related medication. The study included individuals aged >40 but <70 yrs, either sex, fulfilling the following criteria.

Inclusion criteria were as follows: diagnosed with OA of the knee of at least 6 months duration fulfilling American College of Rheumatology criteria; knee pain VAS- pain after walking (50 feet) in a flat surface >30 mm and < 90 mm, Kellgren-Lawrence Radiographic Grading Scale of Osteoarthritis; patients who were willing to discontinue all NSAIDs or other analgesic medication taken for any condition; patients who had given their written informed consent & agreed to follow the protocol voluntarily were included.

Exclusion criteria were as follows: Pregnancy and Lactation; patients who were on steroid drug therapy; history of surgery of the joint involved, tidal lavage or arthroscopy of either knee within the past 12 months; hypersensitivity/ allergy to food &/ drug; intra-articular (IA) corticosteroid injection of either knee; acute medical or surgical conditions which could affect the outcome of the study such as cardiac, renal, hepatic diseases. Ongoing use of prohibited medication including NSAID, other oral analgesic, muscle relaxant, or low-dose antidepressant for any chronic pain management; history of alcohol or drug abuse, excessive smoking (more than 10 cigarettes/day); established/ diagnosed neurological or psychiatric disorders and those who were not willing to be randomized are also excluded from the study.

Allocation of patients to study group

The total of 40 patients were randomly allocated to test and control groups containing 20 patients in each.

Interventions

The test group received cupping therapy (4 cups two in medial side and other 2 in lateral side of the knee joint around the patella of both knees, every weeks for four weeks along with a Unani formulation i.e. safoof (powder), 6 gm twice daily for 42 days. While the control group received the same Unani formulation alone in same dose for same period.

Unani formulations: It has the combination of seeds of four plants i.e Methi (*Trigonella foenum-graecum*), Haloon (*Lepidium sativum*), Kalonji (*Nigella sativa*) and Ajwain desi (*Trachyspermum ammi*) in equal quantity. All drugs were procured from Dawakhana Tibbiya College, Aligarh Muslim University Aligarh and after proper identification of the drugs were cleaned from all impurities and a safoof was prepared in pharmacy section of Ajmal Khan Tibbiya college Hospital.

Application procedure

The Cupping was performed weekly on the affected joints for 20 minutes; clinical sign, symptoms and relief were assessed on each visit. Basic cupping therapy

equipment was utilized including a hand suction pump, plastic cups set .The transparent plastic cup with a capacity of 200 ml was used four cups were applied on the knee on each side. During cupping, the skin was sucked up to the level of ¼ to ½ cups. The place where the Cupping was to be applied was cleaned of hairs and draped properly. Presence of hairs may cause leaking of air into the cup and loosening of the cup grip. The cups are placed on the skin that has previously been oiled and then moved along the meridians back and forth. up and down the main meridian until skin becomes red The back and forth movement promotes circulation, after that cups are placed and remain in place as long as the congestion is visible (indicated by reddening of the skin).

Outcome measures

Outcome measures were Visual Analogue Scale (VAS), Knee injury and Osteoarthritis Outcome Scores (KOOS), Active Range of Motion (AROM), 15 meter walking time and Kellegran-Lawrence radiographic grading scale.

VAS is a straight horizontal line of fixed length, usually 100 mm. The ends are defined as the extreme limits of the parameter to be measured (symptom, pain, health) orientated from the left (worst) to the right (best).

The Knee injury and Osteoarthritis Outcome Score (KOOS) questionnaire is an extension of the Western Ontario and McMaster Universities Osteoarthritis Index (WOMAC), the most commonly used outcome instrument for assessment of patient-relevant treatment effects in osteoarthritis. It is intended to be used over short- and long-term time intervals; to assess changes from week to week induced by treatment (medication, operation, physical therapy) or over years following a primary injury or OA.KOOS consists of 5 subscales; Pain, other Symptoms, Activities of Daily Living (ADL), Sport and Recreation Function (Sport/Rec) and knee-related Quality of Life (QOL). KOOS has been used in patients 13-79 years of age. KOOS includes WOMAC Osteoarthritis Index LK 3.0 in its complete and original format. KOOS takes 10 minutes to complete. It uses simple language and similar one-word responses for each item.

Range of motion (ROM) is a description of how much movement exists at a joint. ROM was measured before and after the treatment, by Universal Goniometer. The subjects were positioned prone with Knee suitably stabilized and active range of motion was taken with the Universal Gonimeter. The stationary arm holding the protractor was placed parallel with a stationary body segment (pointing towards greater trochentar) and the moveable arm moves along a moveable body segment (pointing towards the medial malleolus). The final ranges were recorded.

Patients were asked to walk across 15-m distance at their natural speed. Three readings were taken and the mean was calculated and recorded.

Laboratory investigations were performed before treatment (at baseline) and after treatment (after 42 day), which included Hematological assessment; TLC, DLC, ESR, Hb %, LFT, KFT.

Results were analyzed by using Statistical analysis was done according to the type of data; paired-t-test was applied to evaluate the paired data within the group; Unpaired-t-test test was applied to find statistical difference between the groups. The analysis of the observational data was performed and presented in the form of graphs and tables by using *Graph Pad instat 3* and *Microsoft® Excel (2007)* software.

Results

Total 40 patients completed the study, 20 in each group.32 patients were female while 08 patients were male. Mean age of participants was 47.8 ± 8.3 years in control group and 48.75 ± 7.4 years in test group. Mean BMI of participants was 28.2 ± 3.3Kg / m^2 in group control group, while in group test it was 27.9 ± 3.3 Kg / m^2. Differences of baseline characters between two groups were not statistically significant (Table 1).

Table 1: Baseline characteristics of study patient

Variables	Test group (n = 20)	Control group (n = 20)
Age (Years)	48.75 ± 7.4	47.8 ± 8.3
Male	12	04
Female	08	16
BMI (Kg/ m^2)	27.9 ± 3.3	28.2 ± 3.3
KOOS Pain score	37.7 ± 7.8	36.5 ± 10.1
KOOS Symptoms score	42.05 ± 11.2	44.7 ± 14.0
KOOS ADL score	38.55 ± 14.3	37.3 ± 12.1
KOOS Sports / Rec. score	22.85 ± 9.9	24.5 ± 12.4
KOOS Quality of Life (QOL)	35.85 ± 11.9	36.6 ± 13.7
KOOS Total score	35.0 ± 10.4	35.9 ± 12.2
AROM Right Knee joint	120.3 ± 10.4	121.7 ± 9.9
AROM Left Knee joint	119.5 ± 11.0	121.30 ± 9.7
Visual Analogue Scale (VAS)	66.0 ± 9.9	65.5 ± 10.2
Walking time (s)	25.9 ± 4.2	24.9 ± 2.7
K-L grading scale	1.8 ± 0.8	1.9 ± 0.8

Values are expressed in means ± SEM

Test group had extremely significant improvement in KOOS pain score, symptoms score, activities of daily living, sport/recreational score, quality of life score, and KOOS total score at 3rd week and 6th week. Visual Analogue Scale also showed a highly statistically significant improvement in the test group at 3rd week and 6th week. Statistically significant improvement was observed in AROM in right and left knee joints at 3rd week and 6th week. Walking time was also improved significantly. These parameters were compared with baseline values and the values are represented in (Table 2) with their standard Error of Mean (SEM).

In control group, statistically significant improvement was observed at 3rd week and 6th week in KOOS pain, score, KOOS symptoms score, KOOS ADL, KOOS QOL, KOOS total score, AROM, VAS, walking time, when comparing with base line findings (Table 3).

There were statistically significant improvements found in KOOS pain, score, KOOS symptoms score, KOOS ADL, KOOS sports/rec, KOOS QOL, KOOS total score, AROM, VAS, walking time in test group when compared with control group (Table 4)

Table 2: Outcome measures for the test group before treatment (BT), 3rd week, after treatment (AT).

	BL	3rd week	6th week
KOOS Pain Score	37.8±7.8	58.3±9.8	74.1±9.6
KOOS Symptom Score	42.1±11.2	58.6±9.1	76.15±9.4
KOOS ADL Score	38.55±14.26	57.1±9.8	75.80±8.00
KOOS Sports / Rec. Score	22.9±9.9	40.5±9.0	54.7±13.02
KOOS QOL Score	35.85±11.87	55.5±8.9	76.65±9.29
KOOS Total Score	35.00±10.36	53.2±7.9	71.50±6.10
AROM of Right Knee	120.3±9.8	—	124.9±10.52
AROM of Left Knee	119.5±11.0	—	124.0±11.2
VAS Score	66.0±9.97	—	30.75±7.59
Walking Time	25.9±4.22	—	21.3±3.40
Kellgren–Lawrence (K-L) Radiographic Grading Scale	1.8 ± 0.8	—	1.8 ± 0.8

Values are expressed in means ± SEM

Table 3: Outcome measures for the control group before treatment (BT), 3rd week, after treatment (AT)

	BT	3rd week	AT
KOOS Pain Score	36.5±10.1	45.8±10.4	54.6±11.3
KOOS Symptom Score	44.7±14.0	48.8±12.0	55.6±12.8
KOOS ADL Score	37.3±12.07	46.1±10.9	55.4±12.12
KOOS Sports/Rec. Score	24.5±12.4	29.8±11.1	34.7±12.2
KOOS QOL Score	36.55±13.68	41.5±10.4	50.4±11.44
KOOS Total Score	35.90±12.15	43.2±11.8	50.50±10.14
AROM of Right Knee	121.7±9.9	-	123.6±9.8
AROM of Left Knee	121.30±9.7	-	123.1±9.8
VAS Score	65.5±10.22	-	53.45±13.55
Walking Time	24.9±2.7	-	22.5±2.96
Kellgren–Lawrence (K-L) Radiographic Grading Scale	1.9±0.8	-	1.9±0.8

Values are expressed in means ± SEM

Laboratory Investigations

There was no statistically significant difference in ESR count was noticed before and after treatment in test group (mean value and SEM at baseline 23.1 ± 6.2; after treatment 23.6 ± 5.2) and Control group (mean value and SEM at baseline 23.5 ± 5.03; after treatment 23.3 ± 4.9), P >0.05. There was no change in the number of CRP in both the groups throughout the therapy. X-ray was performed and it showed no significant changes.

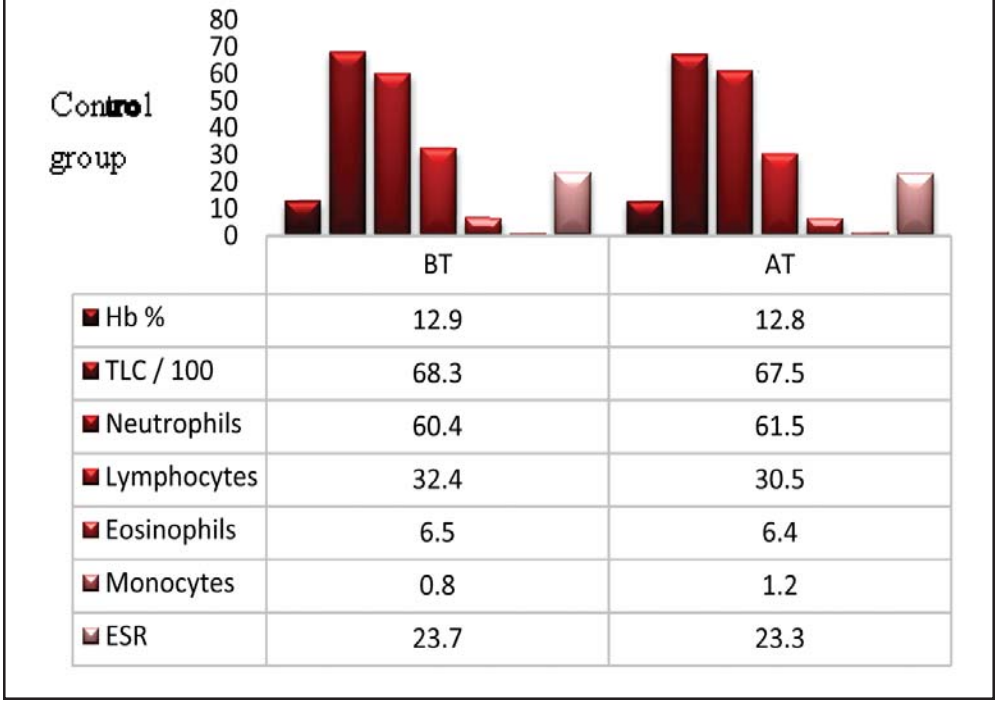
Laboratory investigations were performed before and after the treatment (42 days), which include haematology, liver function test (LFT), kidney function test (KFT).

These laboratory parameters were taken to evaluate the safety of the treatment. Hematological assessment such as Hb%, TLC, Neutrophils, Lymphocytes, Eeosinophils ,Monocytes were not changed significantly when compared both, before and after treatment (Fig. 1&2).

There was no statistically significant change in Liver function test (LFT) Total bilirubin, SGOT, SGPT and Alkaline Phosphatase in the subjects before and after the treatment and between the two groups (Fig 3&4).

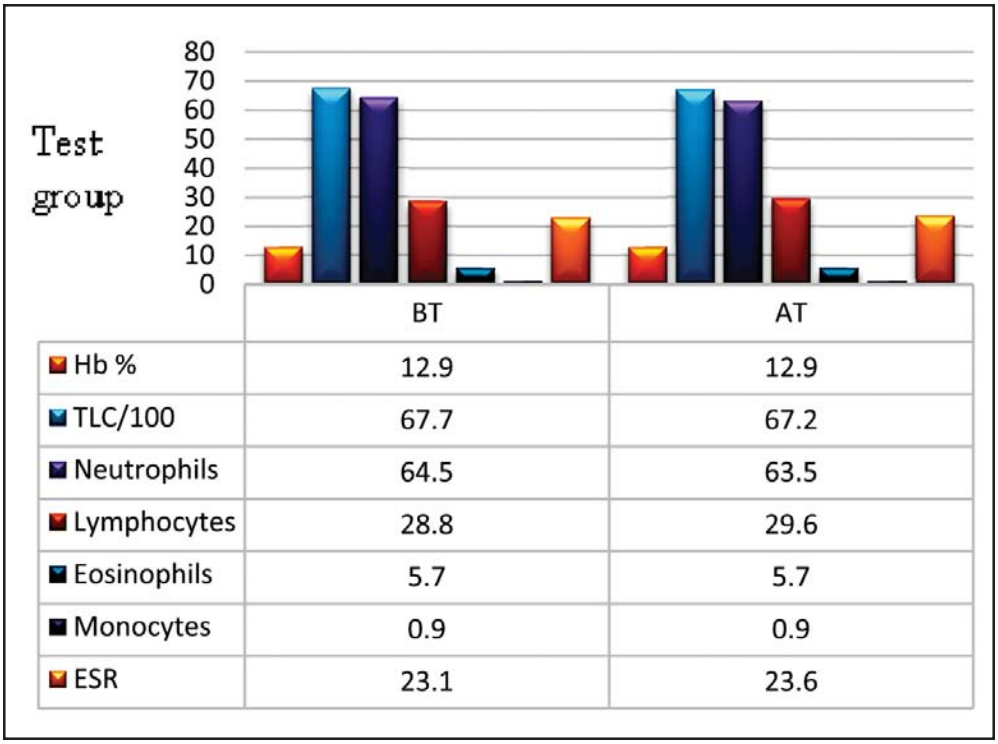
End point	Test group C			Control group A			P value Group A Vs Group C
		% age of Change			% age of Change		
KOOS Pain Score							t =7.0
Baseline (BL)							P<.001
3rd week	37.8±7.8	NC	t = -17.8	36.5± 10.1	NC	t = -11.8	
6th week	58.3±9.8	20.5	p = 0.000	45.8±10.4	9.2	p = 0.000	
	74.1±9.6	36.3		54.6±11.3	18.1		
KOOS Symptom Score							t =8.7
							P<.001
Baseline (BL)	42.1±11.2	NC	t = 14.98	44.7±14.0	NC	t = 8.114	
3rd week	58.6±9.1	16.5	p = 0.000	48.8±12.0	4.1	p = 0.000	
6th week	76.15±9.4	34.1		55.6±12.8	10.9		
KOOS ADL Score							t =8.7
Baseline (BL)							P<.001
3rd week	38.55±14.26	NC	t = 16.157	37.3±12.07	NC	t = 10.708	
6th week	57.1±9.8	18.6	p = 0.000	46.1±10.9	8.8	p = 0.000	
	75.80±8.00	37.3		55.4±12.12	18.1		
KOOS Sports/ Rec. Score							t = 7.8
							P<.001
Baseline (BL)	22.9±9.9	NC	t = -12.6	24.5±12.4	NC	t = - 9.7	
3rd week	40.5±9.0	17.6	p= 0.000	29.8±11.1	5.3	p = 0.000	
6th week	54.7±13.02	31.8		34.7±12.2	10.2		
KOOS QOL Score							t = 7.8
Baseline (BL)							P < 0.001
3rd week	35.85±11.87	NC	t = -16.251	36.55±13.68	NC	t = - 6.012	
6th week	55.5±8.9	19.7	p= 0.000	41.5±10.4	5.0	p = 0.000	
	76.65±9.29	40.8		50.4±11.44	13.9		
KOOS Total Score							t = 13.1
Baseline (BL)							P < 0.001
3rd week	35.00±10.36	NC	t = -27.717	35.90±12.15	NC	t = - 14.701	
6th week	53.2±7.9	18.2	p= 0.000	43.2±11.8	7.3	p= 0.000	
	71.50±6.10	36.5		50.50±10.14	14.6		
VAS Score			t = 16.073			t = 8.923	t = 8.9
Baseline (BL)	66.0±9.97	NC	p = 0.000	65.5±10.22	NC	p = 0.000	P < 0.001
3rd week	—			—			
6th week	30.75±7.59	35.3		53.45±13.55	12.1		

! Not Significant (P > 0.05) *Significant (P < 0.05) **Very Significant (P < 0.001)



	BT	AT
Hb %	12.9	12.8
TLC / 100	68.3	67.5
Neutrophils	60.4	61.5
Lymphocytes	32.4	30.5
Eosinophils	6.5	6.4
Monocytes	0.8	1.2
ESR	23.7	23.3

Figure 1: Effect on CBC (Hb %, TLC, Neutrophils, Lymphocytes, Eosinophils, Monocytes, ESR), before and after treatment in control group



	BT	AT
Hb %	12.9	12.9
TLC/100	67.7	67.2
Neutrophils	64.5	63.5
Lymphocytes	28.8	29.6
Eosinophils	5.7	5.7
Monocytes	0.9	0.9
ESR	23.1	23.6

Figure 2: Effect on CBC (Hb %, TLC, Neutrophils, Lymphocytes, Eosinophils, Monocytes, ESR), before and after treatment in test group

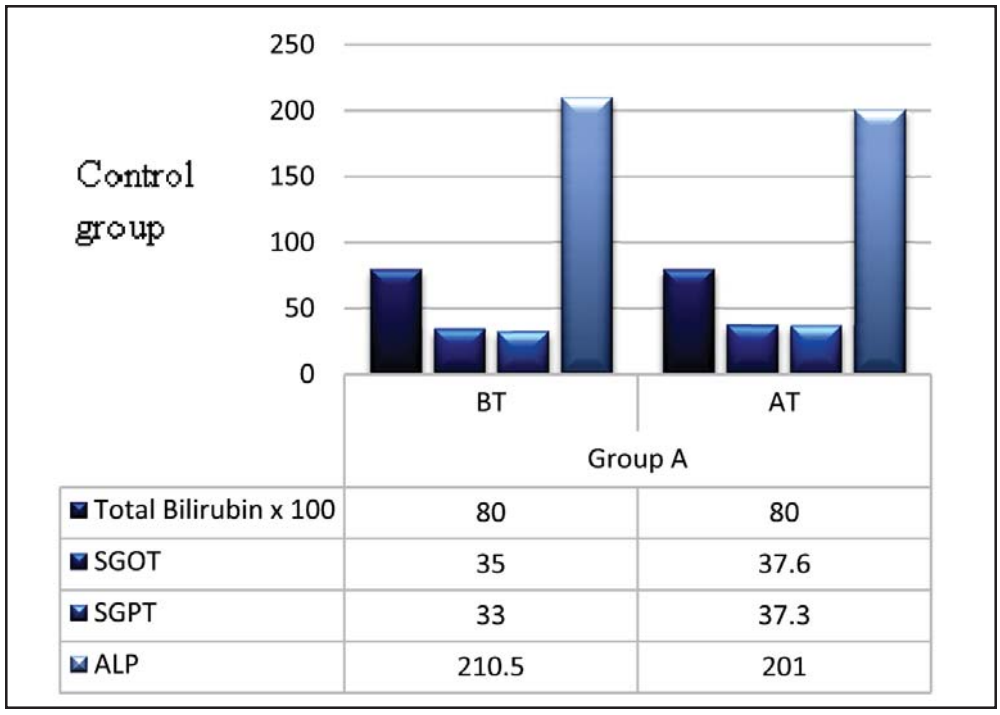


Figure 3: Effect on LFT, serum glutamine oxalo-acetic transaminase (SGOT), serum glutamine pyruvic transaminase (SGPT) and alkaline phosphatase ALP before and after treatment in control group.

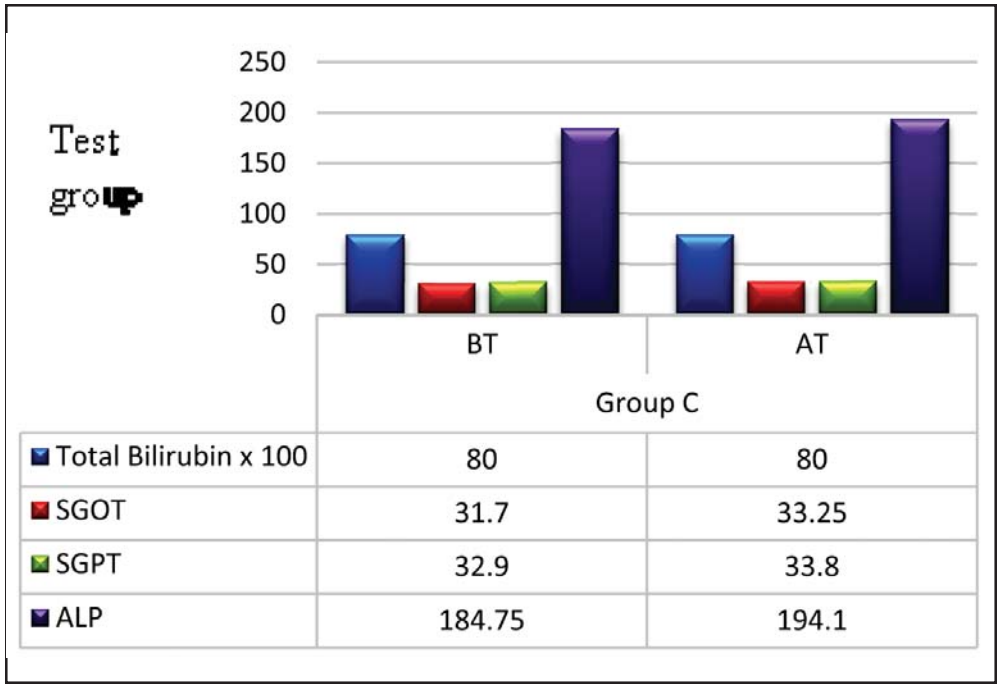


Figure 4: Effect on LFT, serum glutamine oxalo-acetic transaminase (SGOT), serum glutamine pyruvic transaminase (SGPT) and alkaline phosphatase ALP before and after treatment in test group.

In addition there was no statistically significant difference in kidney function test (KFT) such as serum Creatinine Uric Acid and Blood urea, in both groups as well as in between the groups at the end of treatment (Fig 5&6).

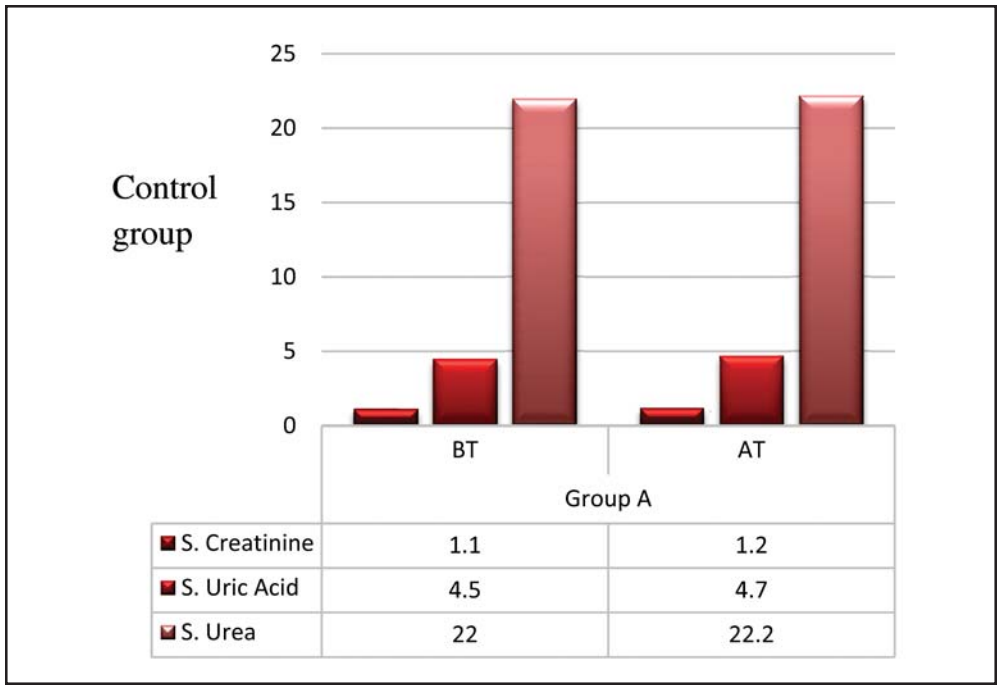


Figure 5: Effect on KFT (s.creatinine serum uric acid, and urea) before and after treatment in control group

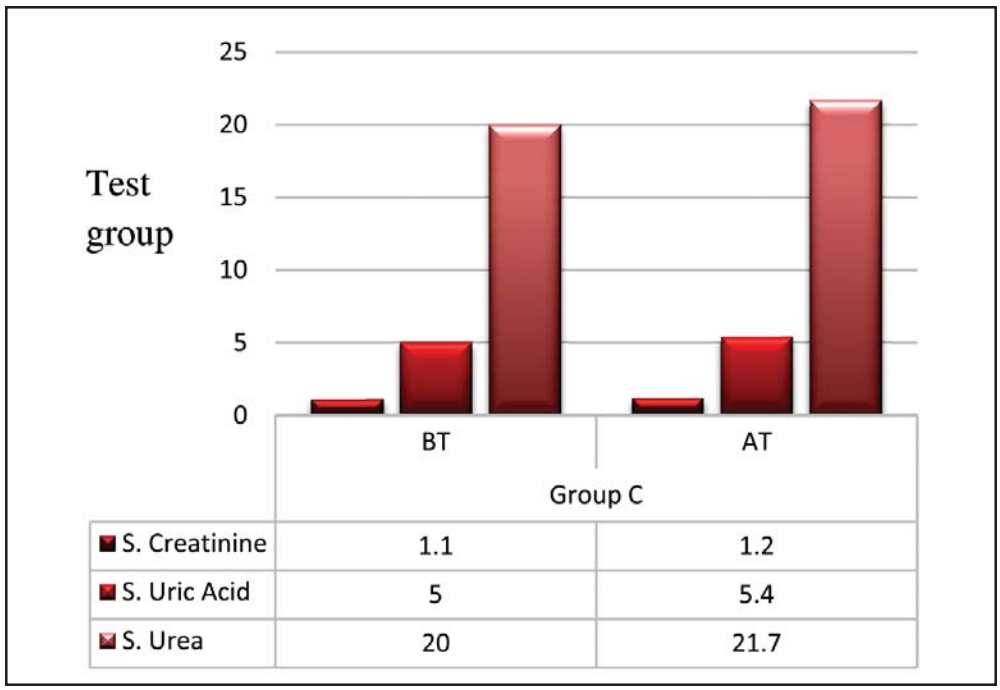


Figure 6: Effect on KFT(serum creatinine, serum uric acid, and urea) before and after treatment test group

Discussion

Osteoarthritis (OA) is a chronic disorder of synovial joints in which there is progressive softening and disintegration of articular cartilage and bone at the joint margins (osteophytes), cyst formation and sclerosis in the subchondral bone, mild synovitis and capsular fibrosis (Kelley, 1992; Issel, 2001; Anonymous, 1986). OA is the most common type of musculoskeletal disorder, and the fourth leading cause of the economic burden on healthcare (Johanne, 2011). It is a threat to the physical, psychological, social and economic well being of human beings. It often deprives people of their freedom and independence. With the advancement in medical science and health awareness schemes, the mortality rate has declined but the prevalence rate is still high, due to unavailability of absolute treatment (Shiffa *et al.*, 2013).

Unfortunately, there is currently no cure for osteoarthritis; the available treatment produces severe adverse effects on the long term use. The major goal of treatment is to reduce cartilage loss and slow the progression of the condition and minimize pain and other symptoms (Brandt K, 1996), in addition to that the treatment should be tolerable when used for longer period with less adverse effects and toxicity. Treatment for OA focuses on relieving pain, improvement of joint mobility and function, and improved health related quality of life and can include pharmacological and non pharmacological interventions including physiotherapy, occupational therapy, weight loss, and exercise (Felson, 2000; Issel, 2001).

According to the concept of Unani system of medicine diseases are either due to humoral discordance or superfluous humors inside the body. The humours which are in disproportion gets collected in various parts of the body and results in abnormal functioning or diseases in that specific part (Ibn-e-Sina, 1932).. Various eminent scholars as Allama nafees, Ibn-e-sinha, Hakeem Akbar Arzanj, Ismail Jurjani have described that the saba-e-faaili (active cause) of waja-ul-mafasil is su-e-mizaj maddi and the most commonly predominating khilt is Balgham (Jurjani, 1878). Observations suggest that waja-ul-mafasil barid has obvious resemblance to osteoarthritis in such a way that the signs and symptoms of Balghami and saudavi type of waja-ul-mafasil (barid) have more similar features with OA (Nayab, 2011; Faris, 2010; Shiffa *et al.*, 2013). Hkm akbar arzani and Ismail jurjani have described that if any patients of waja-ul-mafasil does not responds to any therapy then Mahajam nari should be induced which causes to pull out the causative matter from innermost areas and it is an important therapy for pain relief (Azam, 2007). Considering its vital role and successful use in Unani medicine, the present study was designed and conducted to rationalize this idea scientifically.

In this randomized, controlled trial, patients who were in the test group experienced clinically significant improvement in most of the evaluated parameters. They had decreased perception in most of the evaluated parameters. They had decreased perception in pain and other symptoms of osteoarthritis. Furthermore, they experienced improved functional ability and day to day performance. In osteoarthritis, pain is the earliest and leading symptom for which patient frequently visits a physician. In this study extremely significant improvement was found in KOOS pain score 20.5% at 3rd week 36.3% at 6th week in test group, while in control group there was 9 .2% improvement at 3rd week 18.1% at 6th week when compared with baseline. This shows pain relief more in test group. The same kind of observations were recorded in KOOS symptom score, KOOS ADL score, KOOS Sports/Recreational activity score, KOOS QOL score, KOOS Total score, Pain and other symptoms of osteoarthritis are interconnected with each other. Whenever pain is relieved, than it leads to relieve other symptoms like morning stiffness, swelling, tenderness, etc. Physical function is attributed mainly to the reduction in pain, as it is the chief symptom, which produces other complications.

The improvement in other outcome measures test group showed extremely statistically significant improvement in active range of motion before and after treatment. Similarly walking time also improved significantly in test group. These improvements could also be due to decrease of pain and inflammation.

In test group and control group no significant improvement was observed in ESR and Arthritic profiles when comparing both groups at the end of treatment. Pre and post treatment X-ray were performed and showed on significant change, probably due to short duration of therapy. It is important to mention that the main limitation of this study was the placebo effects of cupping therapy could not be ruled out.

As far as the safety of the therapy was concerned, hematological and biochemical parameters were evaluated before and after the therapy. During the whole therapy period no significant change was seen in Hb %, TLC, Neutrophils, Lymphocytes, Eeosinophils ,Monocytes and ESR, KFT, LFT.

Conclusion

There was statistically significant improvement observed in reduction of pain, other symptoms, and physical functions during treatment and even after treatment. Therefore, Hijaamah (Cupping Therapy) seems to be an effective treatment for reducing pain and other symptoms of knee osteoarthritis and restoring the physical functions, moreover the therapy was found to be safe and well tolerated.

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References

Azam, M, 2007. Occurence of Waja-ul-Mafasil in different temperaments and role of Hijamat Bila Shurt (Non Invasive Cupping) in its management. Thesis Dept of Kulliyat, AKTC, AMU, Aligarh.

Ahmad, 2006. Clinical study on Hijamat-Bil-shart (Wet Cupping andevaluation of its efficacy in the Treatment of Waja-ul-Mafasil (Arthritis). Thesis, Faculty of Medicine (U) Jamia Hamdard, New Delhi.

Altman, R., Asch, E., Bloch, D., Bole, G., Borenstein, D., Brandit, 1986. Development of criteria for the classification and reporting of Osteoarthritis. Diagnostic and therapeutic critreria Committee of the American Rheumatism Association. *Rheum.* 1039-1049.

Alam, Manzaar, M., 2011, Clinical study of Chronic Bronchitis and efficacy of a Unani formulation in its management with special refrence to cupping. Thesis, Dept of Moalijat, A.K. Tibbiya College, AMU, Aligarh.

Anonymous, 1986. Classification of osteoarthritis of the knee. Diagnostic and therapeutic criteria committee of the American Rheumatism Association. *Arthritis Rheum*. 29: 1039.

Anonymous, 2000. Recommendations for the medical management of osteoarthritis of the hip and knee: Update. American college of Rheumtology Sub committee on osteoarthritis guidelines, *Arthritis Rheum*, 43: 1905.

Abbas, Zaidi, S.M., 2007. Safety and efficacy of leeching therapy for symptomatic knee osteoarthritis using Indian medicinal leech. *Indian Journal of Traditional Knowledge* 8(3): 437-442.

Anjum, N., 2003, Clinical study on Ilaj-Bil-Hijamat (Cupping) and evaluation of its efficacy in the treatment of Waj-ul-Mafasil (Arthritis).Thesis, Faculty of Medicine (U), Jamia Hamdard, New Delhi.

Bhat, M.D., Rabia, M., 2009-2012. Ilaj-Bit-Tadbeer (Regimental Therapy): An overview. *Unimed Kulliyat* 5: 2249-5703.

Brandt, K., Altman, R., Hochberg, M., Moskowitz, R., Bellamy, N. & Bloch, D.A., 1996, Design and conduct of clinical trials in patients with osteoarthritis. *Osteoarthritis Cartilage* 4: 217.

Ehsanullah, M., 2006, Ilaj-Bit-Tadbeer. Matbah Rabbani Printers, Katra Shaikh Chand, Lal Kuan, Delhi, pp. 238-351.

Faris, A., Azeez, 2010.Therapeutic evaluation of a unani formulation in Waja-ul-Mafasil (Osteoarthritis) with estimation of retinol in the patients. MD Thesis, Faculty of Medicine (U), Jamia Hamdard, New Delhi.

Felson, D.T., Lawrence, R.C., Dieppe, P.A., Hirsch, R., Helmick, C.G. & Jordan, J.M., 2000. Osteoarthritis: New insights, Part 1: the disease and risk factors. *Ann Intern Med.* 135: 635.

Husaini, A., 2003. Muajizat-ul-Shifa bil- Hijamat wal Kasat-ul-Hawa, Maktabat-ul-quran, Cairo, pp. 5-10.

History-of-cupping.html http://carewellunanihospital.blogspot.in/2012/04

Ibn Manzur,YNM. Lisan-ul-Arab, Vol 12. Sadir Berirut, p. 117.

Issel, Bacher, K.J., Braunwald, E., Fauci, A.S., Kasper, D.L., Longo, D.L., Jameson, J.L., 2001. Harrison's Principles of Internal Medicine, Vol I. McGraw Hill, pp. 595-615.

Ibn-e-Sina, 1932. Alqanoon fit Tib, 2nd ed, Vol 3, (G. H.Kantoori, Urdu translation). Matba Nami Munshi Naval Kishore, Lucknow, U.P., India.

Jurjani, 1878. Ahmad Hassan, Zakhira Khwarzam Shahi, Vol-II. (Urdu translation by Hadi Hussain Khan). Matba Munshi Naval Kishore, Lucknow, pp. 649-645.

Johanne ,Martel, Pelletier and Jean-Pierre Pelletier, 2011. Epidemiology of osteoarthritis. Osteoarthritis Research Unit, University of Montreal Hospital Research Centre, Notre-dame Hospital, Montreal, Quebec, Canada.

Kelley, W.N., 1992. Textbook of Internal Medicine. Philadelphia: Lippincott-Raven, London, pp. 919-923.

Kamaluddin, 2004. Basic Principles of Regimental Therapy of Unani Medicine. Matba M.R. Press, New Delhi, pp. 61-62.

Louis Solomon, D. Warwick, Alan Graham Apley (1914-1996). Apleys System of Orthopedics and fractures, 9th edition .British Library in Cataloguing in Publication Data, pp. 234-236.

Nayab, 2011, M. Mohd Anwar , M.A. Qamri , 2011. Clinical study on Waja-ul-Mafasil and evaluation of efficacy of Hijamat-Bila-Shurt in the treatment. *Indian Journal of Traditional Knowledge* 10 (4): 697-701.

Neuprez, Reginsyer, J.Y, Bruyere O., 2007. Current role of glucosamine in the treatment of Osteoarthritis. *Rheumatology* 731-735.

Royal College of physicians, 2008, Osteoarthritis national clinical guideline for care and management in adults. Printed in Great Britain by The Lavenham Press Ltd, Sudbury, Suffolk.

Rehman, 2009. Clinical study on Munzij & Mushil Therapy in Osteoarthritis with special refrence to evaluation of its antioxidant activity. Thesis, Faculty of Medicine (U), Jamia Hamdard, New Delhi.

Shah, A, 1892, Qanoon-e-Ilaj, Matba Islamia, Lahore, pp.149-153.

Shiffa, M., 2013. Comparative clinical evaluation of leech therapy in the treatment of knee osteoarthritis. *European journal of Integrative medicine,* 261-269.

Wall, P.D. & Melzack, R., 1994. Textbook of Pain, 3rd edition, Churchill Levingston, pp. 387-97.