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Blood Cupping in Management of Knee Osteoarthritis: A Novel Cost Effective & Safe Therapy

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ABSTRACT

Objective: To introduce a safe alternative treatment and investigate it at pathophysiological level for knee osteoarthritis and its impact on quality of life and well-being. **Study Design:** Randomized Controlled Trial. **Settings:** Department of Surgery, THQ Hospital Gojra. **Duration:** from January 2017 to January 2018. **Methodology:** 108 patients including males and females age between 45-60 years were selected. Two groups A & B included 54 patients each (27 males, 27 females) were formed. Group "A" received blood cupping therapy and group "B" (control group) was given NSAIDs. Only 8 weeks follow-up was conducted to determine treatment effects utilizing both subjective and objective assessment. **Results:** There was statistically remarkable difference between level of pain, well-being and range of motion for patients with knee osteoarthritis pre and post cupping. The viability of cupping therapy has been investigated and results demonstrated advancement because of cupping. It is emphatically suggested that further studies must be led with huge sample size and of longer duration. **Conclusion:** Blood cupping is beneficial and curative and never harmful and there is a dire need for using blood cupping in treating human diseases that are not responding well to current treatment modalities.

Keywords: Blood Cupping, Hijama, Wet Cupping, Prophetic Medicine, Knee Osteoarthritis.

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INTRODUCTION

Knee osteoarthritis is a common type of arthritis in elderly age group. Osteoarthritis has high morbidity rate with no cure practically. Knee OA impairs quality of life & increases the economic burden on patients. The oral non-steroidal anti-inflammatory drugs (NSAIDs) are the front runner for treating knee OA. NSAIDs basically reduce pain but also have side effects. These side effects may include ulcers, bleeding, kidney failure, allergic reactions and increase the risk of heart attack and stroke. Therefore, non-pharmacological treatment is more beneficial as it has less or no side effects.[1]

In the recent years, World Health Organization (WHO) has reinforced the practice of Traditional and Complementary Medicine (TCM) due to its spacious health benefits, safety and minimal side-effects compared to chemical agents.[2] The World Health Organization (2008) defines traditional medicine as "The sum total of knowledge, skills and practices based on the theories, beliefs and experiences indigenous to different cultures that are used to maintain health, as well as to prevent, diagnose, improve or treat physical and mental illnesses".[3] Eighty percent of the population in the developing world depends on traditional medicine and 70-80% of the population in developed countries utilizes complementary therapies.[2]

Blood cupping was performed in England during the early nineteenth century. However, it was infrequently used in Scotland and Ireland. Wet cupping seems to have been abolished about the same time as venesection. One can find limited record of the use of cupping into the second half of this century.[4] Blood cupping is commonly practiced in Middle East countries, China, Korea in which a glass or plastic cup is used to create suction pressure on the skin over a cupping point. It has been claimed to reduce pain and other symptoms.[5]

According to the recent Taibah theory, nanostructure of the skin (capillary) allows the skin to act as a riddle for removing and cleaning the blood and interstitial fluid from inductive diseased substances (CPS). In the Iranian traditional medicine, scholars such as Abu Ali Sina, Zakaria Razi and Jorjani have considered cupping as one of the pillars of treatment and one way to cure diseases.[6]

Before the progress of science, medical practitioners believed that phlebotomy (procedure of removing blood from the body) had a remedial effect on many diseases. Bloodletting can be done by penetrating a vein or by laceration and cupping glasses. There are two main classes of bloodletting, general and local. General bloodletting is when blood is taken from a vein (Venesection / phlebotomy) or an artery (arteriotomy) using a lancet. Many people died from this form of bloodletting because of their weakened condition. The typical amount drained was 16 - 30 ounces within 24 hours. Patients were bled until they collapsed.[7]

Cupping therapy is an ancient non pharmacological intervention for the treatment of pain. It is the application of cups on skin to draw out the bloody mixture of fluids with soluble wastes and causative pathological substances.[8] A partial vacuum is produced within the cups before application to the skin; the cups are applied to the intact skin which in turn increases local lymphatic and blood circulation to relief painful muscle tension.[7,9] Blood-cupping proceeds one step further with the

practitioner forming small incisions on the surface of the skin in order to relieve the patient from blood toxins inside the body.[10] Cupping therapy induces injury to the skin (non-infective inflammation) which in turn leads to activation of a beta fibers in the painful region and distal skin regions and leads to activation of inhibitory receptor fields of multi receptive dorsal horn neurons at the level of spinal cord. The cupping creates negative pressure at the site of application which result in local collection of filtered fluid and interstitial fluid which in turn dilutes the chemical substances, inflammatory mediators and nociceptive substances. It evacuates blood and tissue fluids muddled with potentially harmful substances.[11,12]

METHODOLOGY

Study Design: Randomized Controlled Trial.
Settings: Surgery Department, THQ Hospital Gojra-Pakistan.
Duration: from January 2017 to January 2018
Sample Technique: Simple random sampling was done by lottery method. Subjects were randomly allocated to intervention and control group and allocation was concealed through envelope method. Informed consent was taken from participants and 54 patients were included in case group and 54 were in control group, out of which 27 were males and 27 were females in both groups.
Sample Size: 108
Inclusion Criteria: Both male and female patients of 45- 60 years of age having bilateral knee OA at least for last 3 months were selected.
Exclusion Criteria: Patients with unilateral knee OA, anemia, with previous history of cardiac failure, stroke, ascites and fever were excluded from the study.
Methods: Out of 250 patients of knee OA, 108 patients were selected for study after the screening for eligibility criteria. Both male and female patients of 45- 60 years of age having bilateral knee OA at least for last 3 months were selected, based on patient records (crepitus, catching or locking of the knee), clinical symptoms (pain, joint stiffness, reduced knee joint range of motion, joint swelling), radiographic criteria (joint space narrowing, bone spur growth) and grading system (Kellgren-Lawrence) and physical examination (with no severe deformity and bone structure disorders, no history of knee replacement or intra-articular injection, no knee joint surgery, no history of intra-articular fracture according to the patient's self-report.
Subjects were randomly allocated to intervention and control group and allocation was concealed through envelope method. Informed consent was taken from participants and 54 patients were included in case group and 54 were in control group, out of which 27 were males and 27 were females in both groups.
Internationally standardized WOMAC questionnaire and SF-8 Health Survey questionnaire was used for data collection. WOMAC is a specialist collection of standardized questionnaires that was designed by health professionals in 1982 to assess the status of patients with knee OA including pain, stiffness and physical functioning of the joint.
The intervention under study was Blood Cupping while Analgesic Drugs were used for control group. Patients were treated in 4 sessions and each session with a 15 days interval. Duration of cupping therapy was 2 months and all the symptoms' improvement were collected on 4th session.
Hijama procedure was done as follows: Cleaned the knee area with alcohol swab then put the cup on the area and started suction. Gently took off the cup and made 5 very superficial incisions parallel to each other. Replaced the cup on the same area and repeated suctioning. Removed and replaced the cups for about three times, cleaned the area and did dressing. In Islamic literature, it is recommended to perform hijama on the 17th, 19th and 21st days of the Arabic calendar months (lunar month). However, we didn't follow this calendar.
Participants' data were kept confidential throughout the study and used for research purposes only. Participants were absolutely free to quit the study whenever they wanted. Patients were not blinded to their treatment; however, treatment giver, clinician who assessed those patients, data collector and data analyst was blinded.
Data analysis was done through SPSS v.17 using chi-square, paired sample t-test and independent t-test with significance level of 0.05.

RESULTS

Out of 108 participants, 100 subjects completed their follow up sessions and 8 subjects were drop out of the study. Out of these 8 drop outs, 3 didn't come to take their treatment, 1 patient changed his city, 1 patient got hospitalized and left the city for treatment and 3 patients didn't complete their follow up sessions.
The main variables of study were pain intensity, knee joint stiffness and functional mobility. The pain intensity in all patients was analyzed by visual analogue scale along with WOMAC pain questionnaire. There was a significant improvement in pain, joint stiffness and physical function after blood cupping therapy. Analgesics also reduced the pain and joint stiffness and improved physical function in control group, however; blood cupping showed better results than analgesics.

Table 1: Age among both groups

Treatment	N	Minimum	Maximum	Mean	SD
Blood Cupping	50	45	60	51	4.93720
Analgesics	50	45	60	52	5.61445

Table 2: Comparison of pain intensity

Variable	Blood Cupping						Analgesics					
Pain Intensity	N	Mean	SD	df	t - value	P - value	N	Mean	SD	Df	t - value	p - value
Pre	50	18.5600	1.93949	49	20.554	.000	50	19.4800	2.95020	49	17.033	.000
Post	50	11.9000	1.21638				50	13.4800	2.01261			

Table 3: Comparison of joint stiffness

Variable	Blood Cupping						Analgesics					
Joint Stiffness	N	Mean	SD	Df	t – value	p – value	N	Mean	SD	Df	t - value	p - value
Pre	50	7.2200	1.69381	49	11.867	.000	50	7.7800	1.64491	49	12.299	.000
Post	50	4.7000	1.32865				50	4.8200	1.50767			

Table 4: Comparison of physical function

Variable	Blood Cupping						Analgesics					
Physical Function	N	Mean	SD	df	t - value	p – value	N	Mean	SD	Df	t - value	p – value
Pre	50	63.9200	5.35606	49	30.912	.000	50	63.7200	8.72959	49	18.302	.000
Post	50	39.2600	3.03591				50	42.1400	5.71432			

We have applied independent sample t - test to check the statistically significant difference between both interventions.

Table 5: Results of independent t - test

Treatment	Blood Cupping			Analgesics			Independent t – test		
Variables	N	Mean	SD	N	Mean	SD	Df	t – value	p – value
Pain	100	15.2300	3.71417	100	16.4800	3.92475	198	2.313	.022
Joint Stiffness	100	5.9600	1.97418	100	6.3000	2.16258	198	1.161	.247
Physical Function	100	48.6200	11.39181	100	52.9300	13.09503	198	2.483	.014

Table 6: Comparison of overall health and wellbeing of participants of both treatments

Treatment	Very Good	Good	Fair	Poor	Very Poor	X^2	p – value
Blood Cupping	1	44	12	40	3	12.438	.014
Analgesics	3	26	26	38	7		

There was no inauspicious reaction after blood cupping but ecchymosis in 5 patients without infection and subsided without antibiotics. Patients told remarkably that they feel their joints are light and having good sensation of weight bearing. And they explained light headedness and sense of happiness after blood cupping.

The reason for productiveness of blood cupping likely is that it converts chronic inflammation into acute inflammation. The pain in OA restricts the movement in joints because elasticity of muscles reduces and additional burden advances the pain. Blood cupping enhances the blood supply of muscles. The improvement in pain is likely due to progress in blood circulation.[13] Our study showed the parallel results as done by (Khan et al., 2013) and (Ansari & Yasir., 2013).[14,15] Our study supports the idea that cupping therapy is less evident if muscles of intervention area are slack, then cup is filled with muscle mass and have subsidiary effect on vascularity and marginal effect on pain reduction.[16] The diminution in pain score is due to release of morphine like substances (endorphins), serotonin or cortisol which decline pain and amplify the physiological uplift of the patient and triggers the immune system.[17]

DISCUSSION

Osteoarthritis is a progressive degenerative disease of joints and knee joint is most commonly affected. Globally 100 million people suffer from osteoarthritis. A significant rise in the prevalence of knee osteoarthritis has a considerable negative impact on the economy of developing countries. Current treatments available in conventional medicine carry a significant burden of side effects. To overcome the pain in knee osteoarthritis, cupping therapy is most recommended therapy nowadays.

Cupping therapy is a conventional medical technology for thousands of years. It is an important constituent of complementary and alternative medicine in the world as acupuncture. Cupping therapy can be applied to wide number of curable diseases.[13] Application of cups acts by generating a vacuum to manage the flow of blood and to motivate life-energy. Various clinical studies have shown that cupping therapy gives

rise to discharge of beta endorphin and adrenocortical hormone into the circulation. These two hormones are useful in blocking inflammation in arthritis.[14] The operation of cupping therapy is not clear but some suggest that it leads to releasing of neurotransmitters and opioids to decrease pain perception. It removes oxidants and reduces toxicity of natural killer cells. It lessens the lab markers of disease activity and it harmonizes the immune response especially innate immunity, NK cell % and adaptive cellular immune response.[14] Blood cupping improve skin (subcutaneous) blood flow which results in stimulation of autonomic nervous system and pain is reduced.[15]

Cupping therapy is advisable for pain relief, inflammatory conditions, also for physical and mental relaxation and deep tissue massage and it is quoted up to 50% enhancement in fertility level.[16] Blood cupping therapy is safe alternative in the management of knee OA, also chronic pain in rheumatoid arthritis, chronic nonspecific pain and fibromyalgia, having almost nil side effects.[17]

Wet cupping was used for the treatment of local areas of inflammation. Wet cupping was generally conducted only by a few experienced practitioners. Wet cupping in combination with pharmaceutical medications was crucially better than medications alone in effecting a cure. The 62 new studies indicated that the ancient TCM practice of cupping persists as a principal curative demeanor in China and is gaining recognition elsewhere.[2]

Appraisal of literature for cupping therapy showed that it can alleviate pain of lumbar disc herniation, herpes zoster, cervical spondylosis, RA, brachialgia paraesthetica nocturna, CTS, acute gouty arthritis, fibrositis, fibromyalgia, persistent nonspecific low back pain, chronic non-specific neck pain, chronic osteoarthritis, acute trigeminal neuralgia, headache and migraine.[18] The wet cupping was manipulated for the treatment of local regions of swelling.[4]

In contemporary medicine, there is no therapeutic intervention that can refine both blood and interstitial fluids from toxic substances that are accountable for disease pathogenesis. Cupping therapy is eminent with emission of the surplus unwanted molecules in blood and interstitial fluids that may induce problems such as high serum iron and low density lipoproteins, which no physiological mechanism can do.[19] Our study showed parallel results as done by Khan et al and Ansari & Yasir (2013).[20,21] The reason for productiveness of blood cupping likely is that it converts chronic inflammation into acute inflammation. The pain in knee OA restricts the movement in joints because elasticity of muscles reduces and additional burden advances the pain. Our study supports the idea that cupping therapy is less evident if muscles of intervention area are slack, then cup is filled with muscle mass and have subsidiary effect on vascularity and marginal effect on pain reduction.[22] Blood cupping enhances the blood supply of muscles. There was a significant diminution in pain score due to progress in blood circulation[23] and release of morphine like substances (endorphins), serotonin or cortisol which decline pain and amplify the physiological uplift of the patient and triggers the immune system.[24] The biological benefits of cupping therapy in concurrence with the psychological uses of cupping therapy collectively persuade a feeling of physical and psychological wellbeing. The prospective for cupping therapy to treat anterior knee pain and its associated morbidity needs further research because it has promising results and is cost effective.

CONCLUSION

It is highly endorsed to vitalize the practice of blood cupping inside the hospitals in a pure medical atmosphere and by well trained professionals as blood cupping may act as a pharmacological potentiator and can be nurtured as an effective, simple and relatively safe commodity for medical and well-being purpose.

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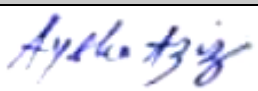
Dr. Ayesha Aziz Medical Officer Mayo Hospital, Lahore	Data collection, Manuscript Writing	
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