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Diabetic Leg Critical Ischemia; Early Clinical Detection and Therapeutic Cupping Prophylaxis

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Abstract

The study aimed to illustrate the value of blood-let out cupping therapy in correcting early diabetic leg critical ischemia.

Diabetic foot disease now replaced hyperglycemic coma as the major cause of diabetic mortality. The effect of medical treatment alone is far from ideal, especially in patients with diabetic foot complications; a high level amputation is inevitable. The real clue in a diabetic limb is preventing progress into complications rather than treating them. The challenge in the diabetic leg ischemia lies mainly in the accumulation of ischemic metabolites which would embarrass the micro-circulation by causing angiospasm. Withdrawal of these toxic metabolites and inflammatory mediators, being interstitial and diffuse, is not feasible via the available clinical measures; superficial scratching on the skin and suction by the traditional therapeutic cups is the only procedure to eliminate these acidic metabolites.

Three patients with diabetic leg ischemia scheduled for above knee amputation due to complete unilateral obliteration of the vessels below the knee demanded an alternative solution for their conditions via cupping therapy. They were one male starting early acute ischemia of the right foot, a female starting gangrene of the right little toe and a male patient with early gangrene of the left heel. A basic cupping session on the upper back for the purpose of sero-clearance was done for them before the definitive cupping therapeutic sessions of the ischemic leg.

Limb ischemia has been successfully corrected in all patients as documented by duplex ultrasound and amputation was cancelled.

On conclusion, cupping therapy is promising in leg ischemia and is worthy of wider practical application.

Keywords: Cupping therapy; Diabetes; Leg ischemia

Introduction

Patients with diabetic leg ischemia and the challenges constituted by the sequels and complications of the diabetic foot represent a great burden to any health institution. It has been reported that the epidemic of diabetes mellitus is rising all over the world and most of the diabetic patients are inadequately controlled [1].

Diabetes contributes to around 75-85% of the factors predisposing to foot amputations due to foot infection, ulcer or gangrene. The treatment of diabetic foot infection and ulcers is expensive, and the effectiveness of treatment varies [2]. Diabetic foot ulcer is a rising health problem constituting the most major cause of non-traumatic foot amputations. Diabetic foot disease now replaced hyperglycemic coma as the major cause of diabetic mortality [3].

Critical limb ischemia (CLI) is not only limb threatening, it is also a serious end-of-life condition to the extent that only 50-55% of patients with CLI are alive with an intact limb five years after their initial presentation [4]. Patients with foot complications are more likely to develop CLI if they are diabetic and the subsequent major amputation is higher than that in non-diabetic patients [5]. Various reports have also confirmed the risk of major amputation or death after leg bypass surgery for CLI in patients with diabetes [6].

Many treatment options for lower limb ischemia are difficult to apply for the patients with poor arterial outflow or with poor general condition. The effect of medical treatment alone is far from ideal, especially in patients with diabetic foot complications; a high level amputation is inevitable [7]. Combination of integrated traditional Chinese and Western medicine together with surgical management has been tried to improve the outcome and cost-effectiveness of treatment [2]. Meanwhile recent studies have reported that percutaneous transluminal angioplasty can be safely performed even as a day-case procedure [8]. Most reports have confirmed that the results of leg bypass surgery for CLI are poor in patients with diabetes. In all instances, aggressive surgical debridement irrespective of any anatomy

remains mandatory in diabetic foot ulceration in order to reduce the chances of infection [6].

As conventional treatment did not approach decisive or satisfactory results or even promises, different measures have been employed for the management of diabetic foot complications. Transplantation of autologous bone marrow mononuclear cells via intra-muscular and intra-arterial injection has been reported to be simple, safe and effective method for the treatment of lower limb ischemia [7]. In the same way, the safety and tolerability of intra-muscular injection of hepatocyte growth factor plasmid has been emphasized in patients with CLI, but its effect on limb tissue perfusion and wound healing still needs further accurate determination [9]. Hyperbaric oxygen therapy has been applied as an adjuvant measure in diabetic foot infection; the initial indication is 30 sessions while the effect is not precisely assessed [10].

Aim

Illustration of the effect of blood-let out (BLO) cupping therapy in correction of early diabetic leg critical ischemic situations.

Key of Study

The real clue in the matter of the diabetic limb is to stop progress sequence of events into complications rather than treating these complications. Therefore the success in the management of the diabetic limb can be achieved by dealing with the limb before it proceeds to critical ischemia or established diabetic foot complications. The challenge in the matter of diabetic leg ischemia lies mainly in the diabetic angiopathy of the micro-circulation which would render the tissues hypoxic and starving for blood and oxygen even the flow in the feeding arteries is detectable. Lack of proper tissue perfusion will lead to accumulation of ischemic acidic metabolites which would embarrass the micro-circulation by causing angiospasm [11].

Although the development of these ischemic metabolites can be easily detected through the level of cytokines since the early stages of limb ischemia; [12] withdrawal of these metabolites, being interstitial and diffuse, is not feasible via the available clinical measures. Skin scratching and suction by the traditional therapeutic cups is the only way to extract these acidic metabolites; a maneuver which would definitely lead to correction of an underlying micro-circulatory compromise.

This traditional management can be described as "functional modified multiple mini fasciotomy"; it is functional modified as it leads to release of the trapped subfascial interstitial undesired elements without an actual anatomical fasciotomy; the acidic interstitial tissue metabolites in this situation are brought out under the effect of suction. Experimental evidences denote that the cupping suction works specifically on the blood trapped within the tissues together with the acidic metabolites which are believed to be functionally obliged to this trapped blood. The expression functionally obliged means that these interstitial metabolites can never be eliminated by any means or even washed out by the circulation unless the underlying pathology which is the trapped accumulated blood within the interstitial spaces is removed.

There is no available scientific reference for this obligatory relation between these toxic acidic tissue metabolites and the trapped blood within the tissues except the observational findings of the behavior of blood which is let-out during cupping therapy; it never clots inside the body although it does not lack the ability to clot as it clots faster and harder than any other blood when it is let outside the body.

Non-clotting of blood within the tissues is due to the acidic metabolites obliged to it which prevent its clotting inside the body; same as the donated blood which never clots inside the donation bag due to the contained citrates inside. Blood responds to suction towards the cups; response of blood to suction is a property of the blood and not a property of suction as proved by the experimental finding that applying suction upon an abscess incision brings out mainly blood but not pus or exudates; if it is the property of suction, it should let-out also both exudates and pus [13,14].

Design and Settings

Multiple-case clinical study done in the period between October 2012 and May 2013 in Balghsoon Clinics in Jeddah, Saudi Arabia.

Patients and Methods

The study included three patients with diabetic leg critical ischemia, they were two males and one female patient scheduled for above knee amputation due to complete unilateral obliteration of the vessels below the knee as documented by duplex ultrasound or angiography. All patients were showing distal ischemic manifestations as concerns temperature of the leg, diminished skin sensation and mild distal leg pain. The first patient was male, 71 years old, starting early acute ischemia of the right foot with extreme coldness and areas of blanching and some grayish discoloration of the dorsum of the right foot.

The second patient was female, aged 65 years old, starting gangrene of the right little toe. The third patient was male, aged 67 years old, showing early bluish discoloration of the left heel. They all demanded an alternative less aggressive solution for their conditions via cupping therapy. An immediate decision was taken and they were scheduled for a basic cupping session on the upper back for the purpose of sero-clearance followed in 1-2 hours interval by a definitive cupping therapeutic session of the ischemic limb.

Cupping of the diseased leg included BLO from back of the leg in the prone position using 3-4 large to medium-sized cups followed by BLO from the foot in the supine position using two small-sized cups on the dorsum of the foot and below the medial malleolus; scratching and squeezing blood from the toe tips was also employed sometimes. The last session included BLO from sides of the leg while the patient in the supine position using medium-sized and small cups.

The routine aseptic measures were followed before scratching and after completing suction. Patients were re-assured that the skin scratches are tiny, superficial and minutely painful. They were also made aware that the blood removed by cupping suction is not derived from the circulation and is of no value to the body; it is on the contrary harmful as it interferes with the circulation as being trapped within the tissues.

Patient were also re-assured as concerns their fear of infection due to scratching a diabetic limb, they were informed that cupping therapy is being performed in order to protect from infection and other complications; as infection in diabetes occurs due to the poor blood supply to the limb while BLO cupping suction improves the circulation especially at the site of scratches under the cups (Figure 1).

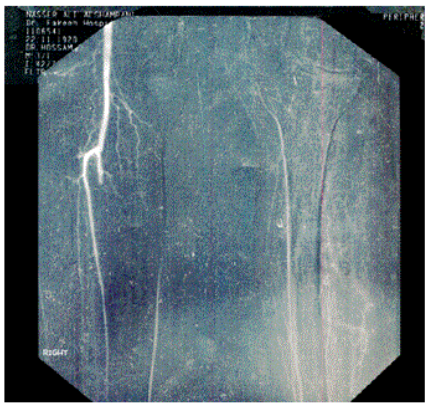

Figure 1: Shows the angiography of the first patient before cupping therapy demonstrating the obliterated anterior and posterior tibial and attenuated peroneal arteries below the knee.

Results

CLI has been successfully corrected in all patients; they showed dramatic response at the end of cupping therapy. The distal arterial pulses in the foot (dorsalis pedis and posterior tibial) were immediately detected full and bound. Clinically, the capillary circulation in the toe tips was found also good. Duplex ultrasound which was done on the next day documented patent arteries of the leg and foot with full flow impulse and the previous decision of amputation was therefore cancelled. None of the three patients needed revision of cupping treatment for the ischemic leg.

An additional cupping treatment session of the contra-lateral limb, which was the symptom-free left limb, was done for the first patient as duplex assessment had shown inadequate flow in his left leg vessels. The left leg of this patient had also demonstrated the same good response after cupping therapy (Figure 2a-2d).

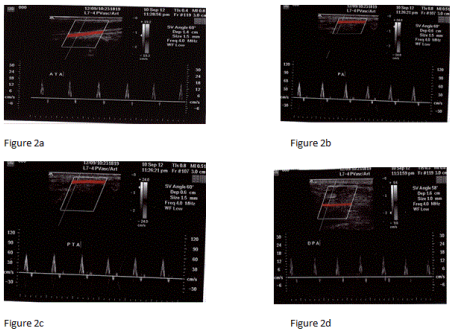

Figure 2(a-d): showing recovery of blood flow in the anterior tibial, peroneal, posterior tibial and dorsalis pedis arteries after cupping therapy as documented by duplex ultrasound of the first patient.

Ethical Considerations

An informed signed consent was taken from all patients, they were made aware about safety of the procedure of cupping The research proposal was approved and the study followed the rules of the Research Ethics Committee of Balghsoon Clinics in Jeddah, Saudi Arabia.

Discussion

Diabetes mellitus (DM) is spreading worldwide especially in developing world, it has been lately described in some countries as the fire when spreads in hay; giving the title "diabetic epidemic" an actual credibility. The overall prevalence of DM in developing countries was determined around 23-25%, which is a considerable figure. This figure is still rising and further studies are expecting it to be doubled in 10-20 years [15]. Traditional risk factors do not appear fully sufficient to explain the dramatic spread of DM; in a way that further indicates that traditional measures employed to control this challenge can never be adequate or successful.

The history of the diabetic limb demonstrates that aggressive management would never prevent the sequence of events from proceeding into CLI and diabetic foot complications. Once the complications of the diabetic foot are set up, prognosis is never pleasant. All measures applied for the management of diabetic foot complications are seldom decisive or even promising [11,12]. The literature lacks sufficient knowledge about the role of cupping therapy in cardiovascular disease. Adequate peer-reviewed information based upon scientific evidences concerning the effect of cupping therapy on cardiovascular disease is not available in literature. Most of the experience of blood-let out cupping therapy in literature includes subjective knowledge derived from individual practice which is available only in cupping modality books. Although these books rely upon sufficient scientific basis which is often well thought out, they are not however clinically peer-reviewed [1].

Cupping BLO therapy represents a fundamental cure in case of diabetic limb ischemia as it eliminates the underlying etiologic pathology which is the ischemic metabolites. These metabolites are being seen and tested at the end of every cupping procedure; even if they are not completely removed during the procedure, the circulation can wash them out being rendered un-obliged to any trapped blood within the tissues any more. The blood removed during BLO cupping therapy is being derived from within the tissues and not from the circulation as documented by the observational evidence that the procedure of BLO reaches a point where blood letting stops whatever the suction is, even in patients under anticoagulants; if it is derived from the circulation, blood-let out will not stop so long the suction is on (Figure 3a-3c) [13,14].

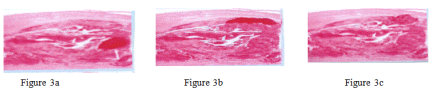

Figure 3(a-c): shows an MRI image of deep thigh hematoma (a), which was attracted towards the skin under the effect of suction (b) and disappeared rather completely after scratching and repeat suction (c) [16].

Cupping therapy of an ischemic limb should be preceded by a basic session of BLO from the upper back; the purpose of this session is sero-clearance or elimination of the undesired blood elements from the circulation. Sero-clearance is a further talent of cupping therapy as demonstrated by the experimental evidence that repeat suction after few hours without further scratching lets blood out again. The source of this new blood is nothing but the circulation; as if the circulation sacrifices some of its elements because of being undesired which has been actually examined and proved to be all expired abnormal-shaped blood cells (Figure 4) [14].

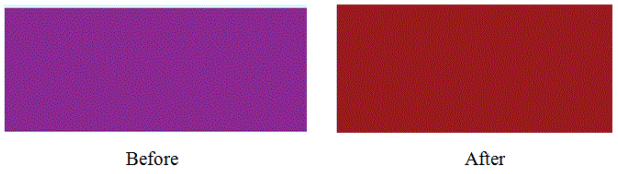

Figure 4: The digital color view of venous blood samples taken from a critically ill patient before and after BLO cupping therapy.

Sero-clearance in this way is a huge biological talent of cupping therapy as it represents the oxygen and nutrients carrying capacity of blood to cells and tissues. Sero-clearance cannot be achieved by the available clinical measures as one cubic mm of blood includes normally around 4.5 million red blood cells which is clinically un-countable; accordingly, one liter of blood contains 4.5 billion red blood cells which is beyond imagination to clear it from its undesired elements [14].

The dramatic effect of BLO cupping therapy in recovery from CLI and restoration of circulation as demonstrated in this study is clear and evident. If cupping is applied early in the course of a diabetic limb, it would not only save lives and limbs, it would also save a lot of budget, effort and patient's agony. Cupping BLO therapy could be ideal if it is applied as early as the signs of ischemia develop such as numbness of toes, burning sensation of the sole of feet or foot pain, calf muscle fatigue or cramps, edema of the foot or leg and sluggish capillary circulation of the toe tips.

Dressing with vacuum assisted closure technique has been employed to accelerate healing of diabetic foot ulcers and infection which means that other workers accepted and applied the same principle of suction in some different way [3].

The response to cupping therapy in this study was most marked in the first patient with early acute ischemia of the right foot as he did not waste any precious time among hospital corridors except seeking a second opinion; he had immediate 5 vascular surgery consultations upon the request of his son, all had the same decision of above-knee amputation. After recovery from ischemia which was documented by duplex ultrasound, his son was having the intention to proceed in a medico-legal complaint. He was informed that, according to the rules of vascular surgery, all his consultation decisions before undergoing cupping therapy included no surgical mistake and no medico-legal penalty should be considered for them.

An impression has developed according to the results of this study that cupping therapy in diabetic limb ischemia is ideal if it is decided in proper timing once early signs of ischemia are suspected or even detected and that a diabetic patient could be protected from foot complications if he is advised to undergo cupping therapy once a year or even once in life during the course of his diabetes.

Conclusion

Cupping therapy is promising in leg ischemia; the early immediate decision is vital as soon as critical ischemia is suspected or detected. Early elective therapeutic cupping prophylaxis is worthy of wider practical application in order to protect many diabetic limbs from critical ischemia and diabetic foot complications before it develop. Cupping therapy is a huge biological process and the interstitial space where a lot of biological events take place is the intelligent yard where cupping therapy exerts its biological talents. The value of this study lies in its true promising opportunity to many diabetic patients that sequels of diabetes are not necessary to be mostly miserable.

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