Indian Journal of Traditional Knowledge
Vol. 14(3), July 2015, pp. 359-364

Dry cupping therapy decreases cellulite in women: A pilot study

Muzeyyen Arslan*[1], Nalan Kutlu[2], Merve Tepe[2], Nisa Selin Yilmaz[2], Leyla Ozdemir[3] & Senol Dane[4]

[1]TurgutOzal University School of Nursing, Ankara; [2]TurgutOzal University Hospital;
[3]Hacettepe University Faculty of Nursing; [4]TurgutOzal University Faculty of Medicine
E-mail: marslan@turgutozal.edu.tr

Received 24 September 2014, revised 22 December 2014

Some recent studies showed that lymphatic system stimulation is efficacious in the treatment of cellulite. Lymph drainage and micro circulation can be stimulated with cupping therapy. We aimed to investigate the effect of dry moving cupping therapy on the grade of cellulite on thighs. We aimed to investigate the effect of dry moving cupping therapy on the grade of cellulite on thighs. A pre-test and post-test quasi-experimental design was utilized in this study. The dry moving cupping therapy was applied on right and left thighs of forty healthy female subjects. The grade of cellulite was assessed before and three days following dry moving cupping therapy. In the present study, the mean grade of cellulite was decreased following dry moving cupping therapy comparing with before. Also, the age and weight were positively correlated with the mean grade of cellulite both before and after dry moving cupping therapy. These results indicate for the first time in humans that dry moving cupping therapy might be effective on cellulite. Dry moving cupping therapy may cause the drainage of interstitial fluid and its elements into blood and lymphatic capillaries, especially lipids in cellulite.

Keywords: Dry cupping, Cellulite, Women
IPC Int. Cl.[8]: A47G 33/00, B22D 41/00, F16C 33/58, A01K 9/00, A01D 6/00, A61K 36/00, B21D 22/00, B32B 3/00, B32B 5/00

Cellulite (gynoidlipodystrophy) is an alteration of the topography of the skin that influences particularly post pubertal women with the ratio of 80-90%[1].The presentation of the condition includes irregular skin dimpling frequently on the thigh and appearance of cottage cheese or orange peels[2]. Enlarged adipocytes, localized hypertrophy of adipocytes, weakened connective tissue, and reduced microcirculation due to compression of capillary vasculature by fat lobules are underlying pathological changes associated with cellulite[2,3]. However, being obese aggravates the presence of cellulite. The predisposing factors for the condition are genetic tendency, hormonal imbalance, drugs causing water retention, a sedentary life style, immobility, tight clothes, smoking, alcohol intake, non-balanced diet with excessive intake of fats, salt and carbohydrates, stress, anxiety, emotional disturbances, and being white[1].

Body dissatisfaction resulting from cellulite can impact women's physical and emotional health. In this era, the culture attributes strong value to the appearance of women and being attractive. The powerful and unconscious impact of media on women's body image shapes self-confidence and causes self-criticism. This fact can turn out in women as eating disorders, low self-esteem and low self-confidence. Stigmatizing experiences were significantly associated with poorer body image and psychosocial functioning[4, 5]. These women can seek medical solution for attaining the ideal appearance[6].

Among physical and mechanical methods used to cure cellulite, iontophresis, ultrasound, thermotherapy, pressotherapy, lymphatic drainage, electrolipophoresis, radiofrequency, long-wave infrared radiation, laser, pharmacological agents including metylxanthines, isoproterenol and adrenalin can be counted[1,7-9]. Besides, there are cosmetic ingredients with well documented anti-cellulite activity such as caffeine, retinol, forskolin, sacred lotus, carnitine, and escin[10, 11]. Moreover, a novel treatment method suggested that cellulite develops as a result of alterations in the lymphatic system, and lymphatic system and microcirculation should be stimulated for treating the problem. The stimulation was created with lymph drainage massage in this novel method[12-14].

Lymph drainage and micro circulation can be also stimulated with cupping therapy. Cupping therapy applies a vacuum and a negative pressure to a localized area of the skin. The suctioning effect

*Corresponding author

produced by the cup creates negative pressure and draws the skin upward[15]. This negative pressure enables to drain accumulated fluids, toxins and other chemical compounds such as lipids from interstitial fluid to blood and lymphatic capillaries[1, 15].

Potential benefits of cupping were shown for pain, herpes zoster, facial paralysis, cough and dyspnea, common cold, urticaria, acne, neuritis, lumbar disc herniation, periarthritis, mastitis, facial paralysis, and cervical spondylosis[16, 17].

Cupping therapy can be applied with a variety of types including moving cupping, retained cupping, flash cupping, wet cupping, medicinal cupping, needle cupping, and pulsating cupping[17,18]. Wet cupping therapies have two distinct methodologies. First method is puncturing and cupping method that includes five steps: skin demarcation, sterilization, puncturing, cupping and sterilization. Second method, as also known *hijamah*, is cupping, puncturing and cupping (CPC) method that includes six steps: skin demarcation, sterilization, first cupping, puncturing, second cupping and sterilization. *Hijamah* has a better analgesic effect and benefits to classic wet cupping therapy[19].

Dry moving cupping method is prominent due to combining negative pressure resulting from dry cupping therapy and massage effect from moving. The advantages of dry moving cupping therapy are being noninvasive, painless, and practical[16].

Dry moving cupping therapy can hypothetically enhance micro circulation and lymph drainage, and consequently cure cellulite. However, there is a lack of study regarding the effect of dry moving cupping therapy on cellulite in the literature. This quasi-experimental study was conducted to investigate the effect of dry moving cupping therapy on the grade of cellulite on thighs.

Materials and methods

Study design

A one group, pretest and posttest quasi-experimental design was utilized to measure change on the grade of cellulite before and after dry moving cupping therapy intervention.

Subjects (Participants)

According to power analysis performed using an alpha error level of 0.05, effect size of 0.40, testing power of 0.85, minimum study subject revealed as minimum 40 subjects. All healthy women working in one university were invited to participate in the study by an announcement. 46 women volunteered for the study. Among them, 4 excluded owing not to have cellulite, one for being obese and one for a dermatological problem. Consequently, the study was completed with 40 healthy women subjects. Inclusion criterion of the study was clinically diagnosed minimum one grade cellulite in thigh. Exclusion criteria were pregnancy and health problems such as edema, obesity (BMI:30 and above) or psychiatric, respiratory, metabolic, cardiac, dermatological, or autonomic nervous system diseases.

Settings

This study was conducted at one university hospital and its school of nursing. Healthy subjects, working in the university, recruited from different departments such as secretariat, nursing, physician. Total number of nurses was 13, physician was 1 and secretariat was 26 in this university. Data collection process, cellulite evaluation and pinch test were applied in a closed, private and suitable place in the university.

Procedures

In the beginning of the study, women's grades of cellulite on right and left thighs were evaluated with pinch test. Details about pinch test were given under the measurement heading. Moving dry cupping device was used to implement cupping therapy in this study. Women underwent moving dry cupping therapy twice a week, Wednesday and Saturday. As total duration of therapy was five weeks, cupping therapy was applied 10 times to each leg per a subject. Subjects' grades of cellulite were evaluated at third day following completion of cupping therapy.

Dry cupping device contains sterile disposable cups of 5 cm in diameter. The device creates negative pressure with manual hand-pump (Fig. 1). After creating negative pressure, the pump of the device removed and the remaining cup were applied for the therapy. Subjects were positioned supine on a mattress. Before the application of cupping therapy, thighs of the subjects were oiled with olive oil. Olive oil was used to ease the movement of the cup as a lubricant.

Cupping device was placed anterior part of low right thigh and pumped two times to enable bulging of the skin 1.5 cm in diameter[15]. Later, the device moved to the upper side of thigh. This massage with longitudinal direction was repeated 6 times for anterior part of thigh. For the next application side, cupping device was moved to external thigh. Massage on this part was initiated on low external thigh, and

Fig. 1—A view of vacuum application by dry cupping

included movements from external to inner thigh, and vice versa with a transverse direction. So, the second phase of the massage included external and anterior parts of the thigh. Following completion of massage for anterior thigh, subjects turned to prone position. The same procedure was applied for the posterior thigh. Following the completion of right thigh, the same steps were implemented on left thigh. Duration of cupping application for each thigh was 15 minutes and a total of 30 minutes for both legs. All cupping procedures were applied by physicians certificated by the British Cupping Society and Natural Health Institute[20].

Statistical analysis

The data were analyzed using the Statistical Package for Social Sciences 16.0 (SPSS). The Pearson correlation test was used to determine correlation among age, BMI and grade of cellulite. The Mann-Whitney U test was used to analyze the difference between categorical variables (smoking, drinking alcohol and exercising) and grade of cellulite.

Data collection (measurement)

The data were collected using a questionnaire developed by the researchers[3,7,11] and pinch test[21,22]. The questionnaire included the following sections: first, descriptive characteristics of participants such as age, BMI, marital status, having a child, smoking and alcohol habits, water and coffee consumption; second, medical traits such as constipation, using oral contraceptive, having hepatic or other chronic disorders. The questionnaire was applied to the subjects at the beginning of the study by researchers.

Various tests are used in cellulite analysis. Baseline and post treatment analyses included standardized high-resolution photography, skin elasticity measurements, ultrasound scanning for dermal thickness, histology, investigator global assessment scores[23]. In addition, it was observed that in the literature using the pinch test. The grade of cellulite was evaluated with pinch test developed by Nurnberger & Muller[22]. Pinch test was applied when subjects were standing and lying on supine and prone positions. Skin surface of thigh was observed at both positions. Afterward, skin and deeper tissue of thigh grasped and tightened with two hands. Pinch test was applied before and three days after the study intervention by researchers. Researchers were trained regarding evaluation of cellulite and using Pinch test prior to the study. The grades of changes on skin following examination were classified according to the test as follows:

Grade 1: The skin of the affected area is smooth while the subject is standing or lying, but the alterations to the skin surface can be seen by pinching the skin or with muscle contraction.

Grade 2: The orange skin or mattress appearance is evident when standing, without the use of any manipulation (skin pinching or muscle contraction).

Grade 3: The alterations described in stage II are present together with raised areas and nodules.

Ethical consideration

The Ethical Committee of the Faculty of Medicine of the University of Fatih approved this study. Consent forms were signed before the start of sessions in line with the principle of volunteerism.

Results

The mean age of the subjects was 32 yrs (min.19-max.56), their mean weight was 65 kg (min.48- max.84 kg), and the mean height was 166 cm (min.152- max. 173 cm). Other descriptive variables distributed as 55% were married, 45% had at least one child, 83% were smoking, 15% were drinking alcohol rarely, 38% were using oral contraceptives, and 40% were exercising regularly. Half of them drank water more than 2 L per a day. The subjects had chronic constipation with a ratio of 23%, and no other chronic disorder was detected.

Patients' mean grade of cellulite on thigh was 2.4 (SD:0.81) for pre-test and 1.68 (SD:0.57) for post-test. The decrease of grade of cellulite between pre- and post-test was statistically significant (t=10.14, p=0.00). According to the Pearson correlation test, the age and weight were positively correlated with mean grade of cellulite for both pre- and post-tests (pre-test: r=0.33, p=0.03, post-test: r=0.42, p=0.007 for age; pre-test: r=0.43, p=0.006; post-test: r=0.56, p<0.001 for weight). As seen from r values, power of the correlation between grade of cellulite, and both age and weight was higher in post-test comparing with pre-test (Figs. 2 & 3).

The difference between grade of cellulite and the variables including smoking, drinking alcohol and exercising did not reach statistical significance level before (respectively z= 0.000, p=1.000; z=-0.691, p=0.489, z=-0.252, p=0.801) and after dry moving cupping intervention (respectively z=-0.470, p=0.638; z=-0.044, p=0.965; z=-0.317, p=0.751).

Discussion

Cupping is a popular alternative therapy for a variety of ailments. It is mainly prescribed as a treatment for chronic pain, but is also indicated for a whole array of respiratory, gastroenterological, and gynecological disorders[24, 25]. In the present study, the mean grade of cellulite was decreased after cupping therapy compare to pre-test. Also, the age and weight were positively correlated with the mean grade of cellulite both before and after dry moving cupping therapy. These correlations had higher power after therapy. Although not measured in this study, the result implies that dry moving cupping therapy improved microcirculation and treat cellulite.

The literature also indicates the healing effects of cupping therapy resulting from stimulating microcirculation and lymphatic drainage[12-14]. Taibah mechanism (Taibah theory) for scientific bases of Al-hijamah and cupping therapy explained on medical bases the detailed mechanisms of action of Al-hijamah and differentiated it from other types of cupping therapy[19]. In Taibah theory, cupping therapy induces plasma clearance effect through capillary filtration to remove causative pathological substances causing various diseases. These may include neuropeptides causing headache, excess fluids with metabolic wastes, inflammatory mediators, prostaglandins and vasoactive substances. In addition to that, cupping therapy decreases interstitial fluid pressure and corrects predisposing factors[26, 27].

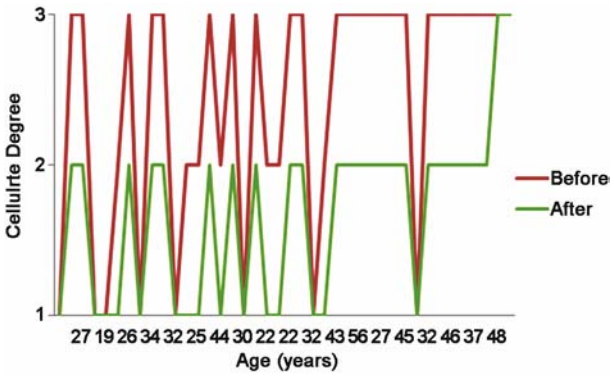

Fig. 2—A relation between age and the degree of cellulite before and after cupping therapy

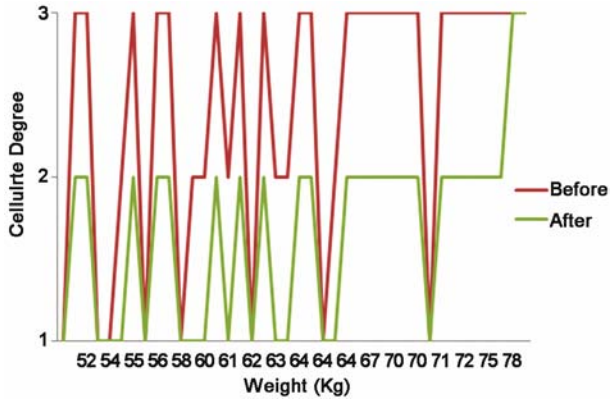

Fig. 3—A relation between weight and the degree of cellulite before and after cupping therapy

A recent animal study[28] investigated the effects of cupping on hemodynamic parameters, cardiac arrhythmias and infarct size after myocardial ischemic reperfusion injury in male rats. Ischemic reperfusion injury caused an infarct size of 50 ± 5%, whereas cupping significantly reduced infarct size of area at risk. The rate of ischemic induced arrhythmias was significantly modified by cupping therapy. Also, in another recent human study[29], the possible useful effects of wet cupping therapy on cardiac rhythm in terms of heart rate variability (HRV) was investigated. Almost all HRV parameters increased after cupping therapy compared to before cupping therapy in healthy persons. The results of this study suggested that cupping might be cardio protective indicate in humans and cupping therapy restored sympathovagal imbalances by stimulating the peripheral nervous system.

In some recent studies, the patients were assigned to a treatment regimen consisting of manual and mechanical lymph drainage and cervical stimulation using the Godoy and Godoy technique[12,13]. They suggested that this technique involving lymphatic system stimulation is

efficacious in the treatment of cellulite[12]. Dry cupping is a method of treatment that involves the application of a vacuum to a localized area of the ski. Cupping (both dry and wet) has been asserted to drain accumulated fluids, toxins and other chemical compounds such as lipids[30]. Probably, dry cupping may cause the drainage of interstitial fluid and its normal and abnormal elements into blood and lymphatic capillaries, especially lipids in cellulite. Dry moving cupping therapy can be suggested to patients and health care professionals for reducing grade of cellulite.

Conclusion

This quasi-experimental study employing a quantitative four-point grading scale indicated that dry moving cupping therapy applied 10 times for 5 weeks on each leg was efficient and safe for decreasing grade of cellulite. The treatment technique that used in this study was feasible, noninvasive, and effective.

Patients' grade of cellulite on thighs decreased significantly following dry moving cupping in this study (mean at pretest:2.4, post-test:1.68 ; $p<0.05$). Age and weight were moderately and positively correlated with grade of cellulite at pre-test. While age remained moderately and positively correlated with grade of cellulite, weight strongly and positively correlated with grade of cellulite at post-test. Patients' grade of cellulite did not change with smoking, drinking alcohol and exercising before and after study intervention ($p>0.05$).

Limitations

Our research is a pilot study aimed to determine the effectiveness of moving dry cup therapy. Therefore, more successful methods of measurement and patient follow-up will be scheduled in the planning of future studies.

Conflicts of interest

The authors declare that they have no conflicts of interests about this research.

References

1 Rossi AB & Vergnanini AL, Cellulite: a review, *J Eur Acad Dermatol Venereol,*14(4) (2000) 251-262.

2 Gold MH, Khatri KA, Hails K, Weiss RA & Fournier N, Reduction in thigh circumference and improvement in the appearance of cellulite with dual-wavelength, low-level laser energy and massage, *J Cosmet Laser Ther,*13(1) (2011)13-20.

3 Lach E, Reduction of subcutaneous fat and improvement in cellulite appearance by dual-wavelength, low-level laser energy combined with vacuum and massage, *J Cosmet Laser Ther,*10(4) (2008) 202-209.

4 Paquette MC & Raine K, Sociocultural context of women's body image, *Soc Sci Med,* 59(5) (2004)1047-1058.

5 Annis NM, Cash TF & Hrabosky JI, Body image and psychosocial differences among stable average weight, currently overweight, and formerly overweight women: the role of stigmatizing experiences, *Body Image,* 1(2) (2004)155-167.

6 Sarwer DB & Crerand CE, Body image and cosmetic medical treatments, *Body Image,*1(1) (2004) 99-111.

7 Mlosek RK, Wozniak W, Malinowska S, Lewandowski M & Nowicki A, The effectiveness of anticellulite treatment using tripolar radiofrequency monitored by classic and high-frequency ultrasound, *J Eur Acad Dermatol Venereol,* 26(6) (2012) 696-703.

8 Bagatin E, Miot HA, Soares JL, *et al*., Long-wave infrared radiation reflected by compression stockings in the treatment of cellulite: a clinical double-blind, randomized and controlled study, *Int J Cosmet Sci,*35(5) (2013) 502-509.

9 Jackson RF, Roche GC & Shanks SC, A double-blind, placebo-controlled randomized trial evaluating the ability of low-level laser therapy to improve the appearance of cellulite, *Lasers Surg Med,*45(3) (2013)141-147.

10 Dupont E, Journet M, Oula ML, *et al*., An integral topical gel for cellulite reduction: results from a double-blind, randomized, placebo-controlled evaluation of efficacy, *Clin Cosmet Investig Dermatol,*7(2014)73-88.

11 Pierard-Franchimont C, Pierard GE, Henry F, Vroome V & Cauwenbergh G, A randomized, placebo-controlled trial of topical retinol in the treatment of cellulite, *Am J Clin Dermatol,*1(6) (2000) 369-374.

12 de Godoy JM, Groggia MY, Ferro Laks L & Guerreiro de Godoy Mde F, Intensive treatment of cellulite based on physiopathological principles, *Dermatol Res Pract,* 2012 (2012) 834280.

13 de Godoy JM & de Godoy Mde F, Treatment of cellulite based on the hypothesis of a novel physiopathology, *Clin Cosmet Investig Dermatol,* 4(2011) 55-59.

14 Bayrakci Tunay V, Akbayrak T, Bakar Y, Kayihan H & Ergun N, Effects of mechanical massage, manual lymphatic drainage and connective tissue manipulation techniques on fat mass in women with cellulite, *J Eur Acad Dermatol Venereol,*24(2) (2010) 138-142.

15 Tham LM, Lee HP & Lu C, Cupping: from a biomechanical perspective, *J Biomech,*39(12) (2006)2183-2193.

16 Cao H, Han M, Li X, *et al*., Clinical research evidence of cupping therapy in China: a systematic literature review, *BMC Complement Altern Med,*10 (2010)70.

17 Cao H, Li X & Liu J, An updated review of the efficacy of cupping therapy, *PLoS One,* 7(2) (2012) e31793.

18 Cramer H, Lauche R, Hohmann C, *et al*., Randomized controlled trial of pulsating cupping (pneumatic pulsation therapy) for chronic neck pain, *Forsch Komplementmed,*18(6) (2011) 327-334.

19 El Sayed S, Mahmoud H & Nabo M, Methods of wet cupping therapy (Al-Hijamah): in light of modern medicine and prophetic medicine, *Altern Integ Med,*2(111) (2013) 2.

20 http://www.britishcuppingsociety.org/.

21 Tırnaksız F, Cellulite And Cosmetic Applications, *Anadolu University J Sci Technol,* 7(1) (2006)17-31.

22 Nurnberger F & Muller G, So-called cellulite: an invented disease, *J Dermatol Surg Oncol,*4(3) (1978) 221-229.

23 Sasaki GH, Single treatment of grades II and III cellulite using a minimally invasive 1,440-nm pulsed Nd: YAG laser and side-firing fiber: an Institutional Review Board-approved study with a 24-month follow-up period, *Aesthetic Plastic Surgery,*37(6) (2013)1073-1089.

24 Xue C & O'Brien K, *Modalities of Chinese medicine*, (London: World Scientific Publishing Co. Pte. Ltd), 2003.

25 Yoo SS, Tausk F. Cupping: East meets West, *Int J Dermatol,*43(9) (2004) 664-665.

26 El Sayed SM, Al-quliti A-S, Mahmoud HS, *et al*., Therapeutic Benefits of Al-hijamah: in Light of Modern Medicine and Prophetic Medicine, *Am J Med Biol Res,* 2(2) (2014) 46-71.

27 Zhang Z, Observation on therapeutic effects of blood-letting puncture with cupping in acute trigeminal neuralgia, *Journal of traditional Chinese medicine= Chung i tsa chih ying wen pan/sponsored by All-China Association of Traditional Chinese Medicine, Academy of Traditional Chinese Med,* 17(4) (1997) 272-274.

28 Shekarforoush S & Foadoddini M, Cardiac effects of cupping: myocardial infarction, arrhythmias, heart rate and mean arterial blood pressure in the rat heart, *Chin J Physiol,*55(4) (2012) 253-258.

29 Arslan M, Yesilcam N, Aydin D, Yuksel R & Dane S, Wet cupping therapy restores sympathovagal imbalances in cardiac rhythm, *J Altern Complement Med,* 20(4) (2014) 318-321.

30 Lee MS, Kim JI & Ernst E, Is cupping an effective treatment? An overview of systematic reviews, *J Acupunct Meridian Stud,* 4(1) (2011) 1-4.