

# The good and the bad of cupping therapy: case report and review of the literature

M. VACCARO<sup>1</sup>, M. COPPOLA<sup>1</sup>, M. CECCARELLI<sup>2,4</sup>, M. MONTOPOLI<sup>3</sup>, C. GUARNERI<sup>4</sup>

<sup>1</sup>Department of Clinical and Experimental Medicine, Section of Dermatology, University of Messina, Messina, Italy

<sup>2</sup>Department of Clinical and Experimental Medicine, Section of Infectious Diseases, University of Catania, Catania, Italy

<sup>3</sup>Department of Pharmaceutical and Pharmacological Sciences, University of Padua, Padua, Italy VIMM – Veneto Institute of Molecular Medicine, Fondazione per la Ricerca Biomedica Avanzata, Padua, Italy

<sup>4</sup>Department of Biomedical and Dental Sciences and Morpho-functional Imaging, Section of Dermatology, University of Messina, Messina, Italy

**Abstract.** – Cupping therapy (CT) represents a cornerstone of traditional Chinese and Persian medicine, but it has its roots in the history of therapy. Although its exact mechanisms of action have been not fully understood, it is widely used as an alternative or complementary treatment of a broad spectrum of diseases, mainly musculoskeletal pain and muscular tension. Some practitioners use CT to cure dermatoses, but the most common adverse events occur at the skin level. We describe a case and briefly review the related literature.

*Key Words:*

Alternative medicine, Cupping, Negative pressure, Dermatitis, Differential diagnosis.

## Introduction

Complementary and Alternative Medicine (CAM) includes a wide variety of different substances and practices that are used, respectively, instead of or together with conventional therapies<sup>1</sup>. CAM spreads from the Eastern countries, such as China and Japan, to Western ones during the last decades<sup>2</sup>.

Despite their popularity, some concerns have arisen. These concerns are mostly due to the lack of adequate knowledge by physicians, which consequently leads to poor communication with practitioners and patients. Lack of knowledge is also a cause of negative outcomes and wrong clinical management<sup>3</sup>.

## Case Report

A 31-year-old man was referred to our clinic for a tele-dermatology consultation. He complained of many annular ecchymotic lesions on his right shoulder (Figure 1). The patient was positive for type II diabetes mellitus and hypertension and reported a previous history of cutaneous mycosis fungoides.

Dermatologic examination revealed painless, multiple hemorrhagic vesiculobullous patches, with a maximum diameter of 40 mm, located over the upper thorax, anterior axilla and shoulder.

His clinical history showed a previous episode of a pustular skin rash on the posterior scalp extending to the posterior right neck and shoulder. This episode occurred about three months before and a diagnosis of herpes zoster was made. The patient underwent a one-week treatment with valacyclovir, showing a prompt improvement.

He also underwent blood tests, which highlighted a normal blood count, normal erythrocyte sedimentation rate, C-reactive protein and liver and kidney functionality markers.

Although the rash improved on treatment, further investigations allowed to find out that the patient still suffered from shoulder pain. Moreover, movements were severely limited despite the use of analgesics and gabapentin.

He, therefore, underwent some courses of CT. CT consists in putting cups on skin, after disinfection of the area, and applying negative pressure using a suction pump. The cups are removed after 3-5 minutes, then re-attached under mild



**Figure 1.** A, Multiple symmetric annular ecchymotic patches on the right shoulder. B, Hemorrhagic vesicles within the lesion (particular).

suction for other 5 to 10 minutes. Surprisingly, after some time, during a CT performed five days before the appearance of the annular ecchymotic lesions for which he was referred to our center, he complained of pain, and the following day hemorrhagic vesicles appeared. Annular lesions completely healed in two weeks using mometasone furoate ointment twice a day.

## Discussion

CT is used in alternative traditional Chinese and Persian medicine for the treatment of a broad range of conditions<sup>4-6</sup>. Although it has been used all around the World for centuries, probably since ancient Egypt, the exact mechanism of action remains obscure despite an increasing number of studies and meta-analysis<sup>6</sup>.

The latest studies hypothesize that CT might cause the release of Nitric Oxide (NO) from endothelial cells. Therefore, it might induce anti-inflammatory effects and an increased vascularization. Moreover, CT seems able to stimulate local inflammation at first, then it activates the

complement system, which increases the levels of interferon and tumor necrosis factor. This might explain positive outcomes in patients with autoimmune diseases<sup>7</sup>.

In addition, CT may stimulate pain receptors with the increase of the frequency of impulses and the ultimate closure of the pain gates, leading to pain relief (*Pain-Gate Theory*)<sup>5,7</sup>.

Because of these potential properties, CT in all its varieties (dry, wet, needle, herbal/bamboo, water, moving and pulsatile) has been used in several dermatologic diseases and related symptoms, including post-herpetic neuralgia, chronic idiopathic urticaria, psoriasis and psoriatic arthritis, acne vulgaris, erysipelas and eczema<sup>8</sup>.

However, a systematic review of the available studies performed by Soliman et al<sup>8</sup> in 2018 revealed that there is only a theoretical value of CT in these conditions, in absence of randomized clinical trials and robust data. More recent studies, focused on psoriasis, neurodermatitis and chronic idiopathic urticaria, yielded similar results, as they were conducted in countries where standard and alternative treatments were carried out together<sup>9-11</sup>.

**Table I.** Summary of case reports with demographics, reason of CT and cutaneous reaction.

Reference	Sex	Age	Reason of treatment	Type of cutaneous reaction
Mataix et al <sup>12</sup>	M	65	Polymyalgia rheumatica	Ecchymotic lesions
Studdiford et al <sup>13</sup>	F	32	Chronic neck pain	Ecchymotic lesions
Lin et al <sup>14</sup>	M	55	Physiotherapy during flight	Blisters, ecchymotic lesions
Kim et al <sup>18</sup>	F	77	Lumbar stenosis	Hyperpigmentation
Yu et al <sup>22</sup>	M	40	Plaque psoriasis	Koebner phenomenon, ecchymotic lesions and purpura within the psoriatic lesions
Lee et al <sup>19</sup>	F	26	Chronic back pain	Hyperpigmentation
Turtay et al <sup>20</sup>	M	51	Lumbar stenosis	Lumbar abscess
Lee et al <sup>21</sup>	F	59	Constipation	Chronic cutaneous ulcer (by <i>Mycobacterium massiliense</i> )
Benli <sup>1</sup> and Aktas <sup>5</sup>	M	56	Back and neck pain	Vesicobullous lesions
Kluger and Frasin <sup>16</sup>	M	39	Lumbar discal hernia	Ecchymotic lesions
Pichler et al <sup>17</sup>	M	57	Hailey-Hailey disease	Erythematous lesions with scattered papulovesicular eruptions and crusted erosions on the back

On the contrary, there are a lot of reports of cutaneous adverse events secondary to CT, including ecchymotic/vesicular or blistering lesions<sup>12-17</sup>, hyperpigmentation<sup>18,19</sup>, panniculitis<sup>20</sup>, localized infection<sup>21</sup>, ulcer formation<sup>21</sup>, and koebnerization<sup>22</sup> (Table I).

With regard to our patient, the duration of therapy probably exceeded the recommended time (5-10 minutes<sup>2</sup>) causing a separation of the epidermal layer from the dermal base of skin. Tele-consultation did not ease the diagnosis. First of all, we had to rule out a re-appraisal of mycoses fungoides or herpes zoster reactivation<sup>23</sup>, whereas some dermatoses like bullous pemphigoid, factitial purpura, Sweet's syndrome, necrobiosis lipoidica, irritative/allergic contact dermatitis and drug-induced pseudoporphyria have to be also considered in differential diagnosis<sup>24-26</sup>.

In summary, this case highlights how all practitioners who perform CT need to be aware of skin complications in course and after therapy. Moreover, the risk of using CT in the treatment of cutaneous diseases, also as a complementary therapy, has to be carefully weighed up, since there are not guidelines and established protocols.

#### Conflict of Interest

The Authors declare that they have no conflict of interests.

#### Funding

No funding has been received with submitting this manuscript.

#### References

- 1) Berretta M, Della Pepa C, Tralongo P, Fulvi A, Martellotta F, Lleshi A, Nasti G, Fisichella R, Romano C, De Divitiis C, Taibi R, Fiorica F, Di Francia R, Di Mari A, Del Pup L, Crispo A, De Paoli P, Santorelli A, Quagliariello V, Iaffaioli RV, Tirelli U, Facchini G. Use of complementary and alternative medicine (CAM) in cancer patients: an Italian multicenter survey. *Oncotarget* 2017; 8: 24401-24414.
- 2) Berretta M, Rinaldi L, Taibi R, Tralongo P, Fulvi A, Montesarchio V, Madeddu G, Magistri P, Bimonte S, Trovò M, Gnagnarella P, Cuomo A, Cascella M, Lleshi A, Nasti G, Facchini S, Fiorica F, Di Francia R, Nunnari G, Pellicanò G, Guglielmino A, Danova M, Rossetti S, Amore A, Crispo A, Facchini G. Physician attitudes and perceptions of complementary and alternative medicine (CAM): a multicentre Italian Study. *Front Oncol* 2020; 10: 594.
- 3) Inci H, Inci F. Complementary and alternative medicine awareness in cancer patients receiving chemotherapy. *WCRJ* 2020; 7: e1752.
- 4) Yoo SS, Tausk F. Cupping: east meets west. *Int J Dermatol* 2004; 43: 664-665.
- 5) Wang SZ, Lu YH, Wu M, Chen KJ, Liu Y, Liu LT. Cupping therapy for diseases: an overview of scientific evidence from 2009 to 2019. *Chin J Integr Med* 2020; 10 [Epub ahead of print].
- 6) Cannavò SP, Guarneri C, Borgia F, Guarneri B. Confluent and reticulated papillomatosis and acanthosis nigricans in an obese girl: two distinct pathologies with a common pathogenetic pathway or a unique entity dependent on insulin resistance? *J Eur Acad Dermatol Venereol* 2006; 20: 478-480.
- 7) Al-Bedah AMN, Elsubai IS, Qureshi NA, Aboushanab TS, Ali GIM, El-Olemy AT, Khalil AAH, Khalil MKM, Alqaed MS. The medical perspective of cupping therapy: effects and mecha-

- nism of action. *J Tradit Complement Med* 2018; 9: 90-97.
- 8) Soliman Y, Hamed N, Khachemoune A. Cupping in dermatology: a critical review and update. *Acta Dermatovenerol Alp Pannonica Adriat* 2018; 27: 103-107.
  - 9) Sun X, Zhou X, Wei Y, Yang W, Huang N, Ding Y, Hu R, Guo S, Yang C, Weng H, Zhang Y, Chen X, Ding X, Liu L, Yin Q, Wang R, Li X, Li B. Our Choice: study protocol for a randomized controlled trial for optimal implementation of psoriasis treatment by the integration of Chinese and western medicine. *Trials* 2020; 21: 299.
  - 10) Peng L, Yu Q, Zhang J, Mi X, Lin W, Qin Y, He Y, Guo J, Xiao M, Chen M. Cupping for neurodermatitis: A protocol of systematic review and meta-analysis. *Medicine (Baltimore)* 2020; 99: e22586.
  - 11) Xiao XJ, Zhang LX, Shi YZ, Yao JP, Cao W, Liu Y, Zou ZH, Zhou SY, Chen ML, Li CX, Zheng QH, Li Y. Cupping therapy for patients with chronic urticaria: A systematic review and meta-analysis. *J Integr Med* 2020; 18: 303-312.
  - 12) Mataix J, Belinchón I, Bañuls J, Pastor N, Betloch I. Lesiones cutáneas por aplicación de ventosas con fines terapéuticos [Skin lesions from the application of suction cups for therapeutic purposes]. *Actas Dermosifiliogr* 2006; 97: 212-214.
  - 13) Studdiford J, Stonehouse A, Henry C. Cupping. *Skinmed* 2006; 5: 295.
  - 14) Lin CW, Wang JT, Choy CS, Tung HH. Iatrogenic bullae following cupping therapy. *J Altern Complement Med* 2009; 15: 1243-1245.
  - 15) Benli AR, Aktas H. A complication of wet cupping therapy: vesiculobullous plaque on an erythematous base. *J Integr Med* 2017; 15: 252-254.
  - 16) Kluger N, Fraslin JJ. Lésions cutanées secondaires à la médecine des ventouses (hijama) [Cutaneous lesions secondary to hijama (wet cupping)]. *Ann Dermatol Venereol* 2018; 145: 62-64.
  - 17) Pichler M, Perino F, Eisendle K. Cupping is contraindicated in Haily-Haily disease--the seamy site of alternative medicine. *Int J Dermatol* 2019; 58: 500-501.
  - 18) Kim KH, Kim TH, Hwangbo M, Yang GY. Anaemia and skin pigmentation after excessive cupping therapy by an unqualified therapist in Korea: a case report. *Acupunct Med* 2012; 30: 227-228.
  - 19) Lee SJ, Chung WS, Lee JD, Kim HS. A patient with cupping-related post-inflammatory hyperpigmentation successfully treated with a 1,927 nm thulium fiber fractional laser. *J Cosmet Laser Ther* 2014; 16: 66-68.
  - 20) Turtay MG, Turgut K, Oguzturk H. Unexpected lumbar abscess due to scarification wet cupping: a case report. *Complement Ther Med* 2014; 22: 645-647.
  - 21) Lee SY, Sin JI, Yoo HK, Kim TS, Sung KY. Cutaneous *Mycobacterium massiliense* infection associated with cupping therapy. *Clin Exp Dermatol* 2014; 39: 904-907.
  - 22) Yu RX, Hui Y, Li CR. Köebner phenomenon induced by cupping therapy in a psoriasis patient. *Dermatol Online J* 2013; 19: 18575.
  - 23) Munir S, Abu-Jubara D, Abu-Jubara M, Antypas C, Petro-Sakuma C. A new skin manifestation at the site of a previously healed dermatosis: a case of Wolf's isotopic response. *Cureus* 2020; 12: e11381.
  - 24) Guarneri F, Guarneri C, Cannavò SP. An unusual case of cell phone dermatitis. *Contact Dermatitis* 2010; 62: 117.
  - 25) Borgia F, Vaccaro M, Cantavenera LG, Aragona E, Cannavò SP. Ulcerative necrobiosis lipidica successfully treated with photodynamic therapy: case report and literature review. *Photodiagnosis Photodyn Ther* 2014; 11: 516-518.
  - 26) Vashi NA, Patzelt N, Wirya S, Maymone MBC, Zancanaro P, Kundu RV. Dermatoses caused by cultural practices: therapeutic cultural practices. *J Am Acad Dermatol* 2018; 79: 1-16.