Despite the advancement in modern medicine, a significant proportion of the population still continue to undergo traditional medical therapy. This is likely driven by many reasons, such as dissatisfaction with conventional medicine, family traditions, and a positive past experience with herbal therapy. Cupping therapy is one of the tools of traditional medicine that inherits its advantages and disadvantages.

While Choi et al. suggested a potential benefit of cupping therapy in treating migraine, neck pain, knee osteoarthritis, ankylosing spondylitis, plaque psoriasis, chronic urticaria, and herpes zoster, they conclude that more research is required to solidify the positive findings. In addition, its mechanism of action remains unclear. The widespread practice of traditional medicine is not met with adequate research to ascertain its safety and efficacy. In this case report, we discuss a case of a young man who presented to our clinic with keloid formation following a cupping therapy session.

CASE REPORT

A 32-year-old healthy man presented to the clinic complaining of disfigured scars. He underwent multiple cupping therapy sessions regularly for a long time. Approximately 1 year before the presentation, he had a session that resulted in the scars that prompted him to attend our clinic. The disfigured scars became noticeable 3 months after the operation. On examination, he had multiple keloid scars over the left scapula, both knees, posterior aspect of the left shoulder, and older scars of cupping therapy distributed over his back. Finally, when the patient was asked whether he was informed about the possible complications, including abnormal scarring, he denied (Figs. 1–3).

DISCUSSION

Cupping therapy was reportedly practiced since the Bronze Age in Egypt, and was mentioned through different periods in Greece, China, parts of Medieval Europe, and the Islamic world. It was thought to be effective in managing maldigestion, loss of appetite, headache, poison extraction, and abscess drainage. It involves the use of cups over skin to create a negative pressure through suction; there are up to six classifications of cupping therapy, but the main two are dry and wet cupping. While dry cupping is noninvasive, it is the wet cupping that involves incisions made over the skin to draw blood. The practitioner starts by choosing the anatomic location and applies a disinfectant agent. Then, superficial incisions are made using a number 15 or 21 blade followed by placement of the cups. Using electrical or mechanical energy, suction is applied for 3–5 minutes through the cups to draw blood from the skin incisions. Finally, the incisions are cleaned with a disinfectant agent and dressed with wound closure strips for 48 hours.

Traditional medicine could lead to serious harm, for example, herbal remedies could lead to contact dermatitis, renal failure, or liver failure. The injury induced by aquapuncture might cause cardiac tamponade.
pneumothorax, or injury of the spine; it could also transmit serious infections such as viral hepatitis. As with other forms of alternative medicine, the adverse outcomes of cupping therapy are not consistently reported. While randomized controlled trials on wet cupping (the type of cupping used in our case) show initially promising results, they are hindered by biases and methodological limitations.

Most of the complications associated with cupping therapy are mild to moderate in severity, with the most prevalent ones being scar formation followed by burn injury. Others include bullae formation, abscess formation, reversible cardiomyopathy, infection, pruritis, anemia, panniculitis, Koebner phenomenon, headache, dizziness, tiredness, vasovagal attack, nausea, and insomnia, and there is even a case report of a patient diagnosed with necrotizing fasciitis after wet cupping therapy. Moreover, the likelihood of complications is especially higher when cupping is performed by an unqualified practitioner. Other factors associated with increased risk of complications include longer duration of treatment and wet cupping, according to the systematic review by Kim et al. Our patient presented with keloid scars following a session of wet cupping therapy. Keloid is the result of abnormal scarring following aberrant healing of an insult to deep dermis. It is differentiated from hypertrophic scarring by growing beyond the wound edges. The patient was dark-skinned and had the incisions made over the shoulders and knees, all considered risk factors for keloid formation. Other factors include genetic predisposition, positive family history, and wounds inflicted during pregnancy or puberty. In the literature, the only similar case we came across was reported by Park, where a subscapular keloid developed after dry cupping.

Our patient did not undergo a proper informed consent process, nor he was educated about the possibility of keloid formation. This emphasizes the importance of the informed consent process where the patient is educated about the procedure, benefits, risks, and alternatives. Caspi et al studied the implication of informed consent among a group of complementary and alternative medicine practitioners. They concluded that there is a lack of standards and disparity in the process, content, and pattern of informed consent process among the practitioners. Unfortunately, there are no studies conducted locally to assess the impression and attitude of traditional medicine, and specifically cupping therapy, practitioners. Nonetheless, cupping therapy practitioners are required by the National Center for Complementary and Alternative Medicine in Saudi Arabia to take an informed consent from their patients before
any intervention, after cupping therapy was legalized by the Saudi authorities in early 2015. Figure 4 shows an algorithm that can be utilized by cupping practitioners to prevent abnormal scarring.

**CONCLUSIONS**

The practice of traditional medicine is continuously growing and is being integrated in the health care system of many countries. This case report narrates the case of a young man who presented to our plastic surgery clinic for multiple keloid scars following a session of cupping therapy. No formal consent process was done before the procedure, and he was not informed about the risk of keloid formation despite having multiple risk factors. Finally, we provide an algorithm to assist certified cupping practitioners in the prevention of abnormal scar formation.

Mohamed A. Mrad, MD, FRCS, MBA, FACS
Plastic and Reconstructive Surgery Section
Department of Surgery
King Faisal Specialist Hospital & Research Centre
P.O. Box 3354
Riyadh 11211, Saudi Arabia
E-mail: amirmurad@gmail.com

**ACKNOWLEDGMENT**

This case report conforms to the Declaration of Helsinki.

**REFERENCES**

1. Al Akeel MM, Al Ghamdi WM, Al Habib S, et al. Herbal medicines: Saudi population knowledge, attitude, and practice at a glance. *J Family Med Prim Care*. 2018;7:865–875.

2. Welz AN, Emberger-Klein A, Menrad K. Why people use herbal medicine: insights from a focus-group study in Germany. *BMC Complement Altern Med*. 2018;18:92.

3. Choi JY, Ang L, Ku B, et al. Evidence map of cupping therapy. *J Clin Med*. 2021;10:1750.

4. Aboushanab TS, Alsamad S. Cupping therapy: an overview from a modern medicine perspective. *J Acupuncture Meridian Stud*. 2018;11:83–87.

5. Telles S, Pathak S, Singh N, et al. Research on traditional medicine: what has been done, the difficulties, and possible solutions. *Evid Based Complement Alternat Med*. 2014;2014:495635.

6. Mehta P, Dhapte V. Cupping therapy: a prudent remedy for a plethora of medical ailments. *J Tradit Complement Med*. 2015;5:127–134.

7. Al-Bedah AMN, Elsubai IS, Qureshi NA, et al. The medical perspective of cupping therapy: effects and mechanisms of action. *J Tradit Complement Med*. 2019;9:90–97.

8. Niggemann B, Grüber C. Side-effects of complementary and alternative medicine. *Allergy*. 2005;58:707–716.

9. Kim TH, Kim KH, Choi JY, et al. Adverse events related to cupping therapy in studies conducted in Korea: a systematic review. *Eur J Integr Med*. 2014;6:434–440.

10. Al Bedah AM, Khalil MK, Posadzki P, et al. Evaluation of wet cupping therapy: systematic review of randomized clinical trials. *J Altern Complement Med*. 2016;22:768–777.

11. Benli AR, Aktas H. A complication of wet cupping therapy: vesiculobullous plaque on an erythematous base. *J Integ Med*. 2017;15:252–254.

12. Sohn IS, Jin ES, Cho JM, et al. Bloodletting-induced cardiomyopathy: reversible cardiac hypertrophy in severe chronic anaemia from long-term bloodletting with cupping. *Eur J Echocardiogr*. 2008;9:585–586.

13. Vaccaro M, Coppola M, Ceccarelli M, et al. The good and the bad of cupping therapy: case report and review of the literature. *Eur Rev Med Pharmacol Sci*. 2021;25:2327–2330.

14. Turtay MG, Turgut K, Oğuzturk H. Unexpected lumbar abscess due to scarification wet cupping: a case report. *Complement Ther Med*. 2014;22:645–647.

15. Yao Y, Hong W, Chen H, et al. Cervical spinal epidural abscess following acupuncture and wet-cupping therapy: a case report. *Complement Ther Med*. 2016;24:108–110.

16. Alajmi T, Aljulaihim A, Alzahrani M, et al. Necrotizing fasciitis following wet cupping: a case report. *Cureus*. 2021;13:e14039.

17. Gauglitz GG, Korting HC, Pavicic T, et al. Hypertrophic scarring and keloids: pathomechanisms and current and emerging treatment strategies. *Med Mol*. 2011;17:113–125.

18. Park TH. Keloid on scapular area secondary to therapeutic dry cupping. *Int Wound J*. 2015;12:615.

19. Caspi O, Shalom T, Holexa J. Informed consent in complementary and alternative medicine. *Evid Based Complement Alternat Med*. 2011;2011:170793.

20. National Center for Complementary and Alternative Medicine. Cupping. 2020. Available at https://www.nccam.gov.sa/en/practices/cupping/. Accessed June 26, 2022.

21. Ministry of Health Saudi Arabia. MOH Approves Licenses for Cupping. Available at https://www.moh.gov.sa/en/Pages/Default.aspx. 2015. Accessed June 16, 2022.