Burns Induced by Cupping Therapy in a Burn Center in Northeast China

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Abstract: Cupping therapy as a curative skill has been developed and applied throughout history. Despite reports of adverse effects, this therapy is considered to be relatively safe with no systemic reviews documenting negative side effects. The aim of this study was to explore methods that avoid the adverse effects sometimes associated with this therapy. Methods. Clinical records of 14 outpatients and inpatients that visited the First Hospital of Jilin University (Changchun, China) for management of burn injuries caused by cupping therapy were retrospectively reviewed. Characteristics, history of injury, and treatment of each patient was collected and analyzed. Results. Burn injury induced by cupping therapy was not uncommon. Most of the injuries were mild to moderate and cured by conservative methods without severe complications. The use of wet cupping was more prevalent among injured patients than dry cupping. Conclusion. Cupping therapy as an ancient alternative treatment is still popular with a large number of devoted practitioners. Although there is the potential for injury during the application of this therapy, this is mostly preventable. Standardized training for health care professionals and increased the awareness among the public about the proper methods to administer this therapy to avoid adverse effects is important.

Key words: cupping therapy, burns, alternative medicine
**Keypoints**

- Cupping is thought to realign and balance the flow of vital energy or life force called *qi*,
- Although advocates promote its curative effects in the management of chronic disease and pain, a number of adverse reports related to the application of this therapy, such as burns, anemia, skin pigmentation, epidural abscess, iatrogenic bullae, and acquired hemophilia A have been reported.
- Clinical records from both outpatients and inpatients who visited the First Hospital of Jilin University from October 2008 to August 2012 for the management of burn injuries induced by cupping therapy were retrospectively reviewed.

The body. The practitioner diagnoses any imbalances in the *qi* and attempts to restore them with cupping therapy (Figure 2). A flammable substance, such as alcohol, herbs, or paper, is placed in a cup made of glass, metal, wood, or bamboo. The material inside the cup is set on fire to create a vacuum. As the fire goes out, the cup is placed upside down over *qi* pathways on the body to treat various health conditions according to traditional Chinese medicine. Broadly speaking, there are 2 types of cupping: dry cupping and wet cupping (ie, controlled bleeding). The dry cupping procedure commonly involves creating a small area of low air pressure next to the skin. In wet cupping therapy, mild suction is created using a cup and a pump, or heat suction, on the selected area and left for a specific number of minutes. The cup is then removed and small superficial skin incisions are made using a cupping scalpel. A second suction period is used to carefully draw out a small quantity of blood.

Although there is a paucity of large-scale, rigorously designed randomized controlled trials to warrant its efficacy, cupping therapy as a prevalent traditional complementary and alternative treatment maintains popularity all over the world, especially in Asian and Middle East countries. Cupping is mainly recommended for treating pain; herpes zoster; some respiratory conditions such as bronchitis, asthma, and congestion; and arthritis. Although advocates promote its curative effects in the management of chronic disease and pain, a number of adverse reports related to the application of this therapy, such as burns, anemia, skin pigmentation, epidural abscess, iatrogenic bullae, and acquired hemophilia A have been reported. Fleshy sites on the body, such as the back and stomach and, to a lesser extent, the arms and legs, are the preferred sites for treatment and, subsequently, are where injuries most often occur. Although there are some case reports about burns caused by cupping therapy, most are single cases and no systemic review is available. This study looked at the medical records of outpatients and inpatients who presented to the First Hospital of Jilin University for management of burn injuries induced by cupping therapy.

**Methods**

Clinical records from both outpatients and inpatients who visited the First Hospital of Jilin University from October 2008 to August 2012 for the management of burn injuries induced by cupping therapy were retrospectively reviewed. This study received Institutional Review Board approval from the First Hospital of Jilin University. Fourteen records (9 males, 5 females) with a mean age of 38.8 years (range from 15 to 61 years) were available. Nine of these were outpatients and 5 were inpatients. Characteristics, history of injury, and treatment of each patient were collected (Table 1).

**Results**

Burn injury induced by cupping therapy is often treated on the burn and plastic reconstruction unit at the First Hospital of Jilin University. Most of the injuries in this study were mild or moderate and could be treated with conservative methods without severe complications (10 out of 14, 71.4%) and 4 patients had sequelae after healing. A 54-year-old female (patient 4) developed hypopigmentation and a 61-year-old male (patient 14) developed hyperpigmentation. Two patients developed scars in this case series (patients 11 and 13). The mean contact time of the cup with the skin was 8.9 minutes (range 3 to 30 minutes). The mean time to healing of the subsequent burn injury was 9.9 days (range 3 to 23 days). Compared to wet cupping, dry cupping was more prevalent among this group of patients (12 out of 14, 85.7%).

**Typical case presentation.** A 28-year-old man (patient 2) received burns on his back when he was treated with cupping therapy intended to relieve tiredness from hard physical work and was sent to the authors’ department for definitive management. According to the account of the patient, the practitioner used too much alcohol to moisten the inner surface of the cupping glass. The cupping procedure lasted for 8
minutes which, according to the medical history provided by the practitioner was within the average time tolerated by most individuals. The patient felt severe pain on his back during the therapy and, when the practitioner removed the cupping glasses, burns were found on the patient's back. The practitioner attributed the burns to high sensitivity of the patient's skin. The patient was diagnosed with a superficial dermal burn affecting 1% total body surface area (Figure 3). The patient was treated as an inpatient and his burn managed in the author's clinic. Dressings were changed daily in the clinic and the wound healed within 7 days. There was no evidence of scarring or pigmentation.

### Discussion

Although it is believed that cupping therapy dates from as early as 3000 B.C., the earliest record of cupping is in Ebers Papyrus which describes Egyptians use of cupping in 1550 B.C. This ancient treatment of cupping therapy is still popular in many countries and regions. The therapy has its origins in the belief that human ailments were the reason evil spirits entered into the body or mind, and could be withdrawn by “sucking” these diseases out. Moreover, Greek physician Hippocrates held a belief that organs congested by 1 of the 4 cardinal humors, (ie, blood, phlegm, yellow bile, and black bile) could be relieved by expelling

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**Table 1. Background characteristics of the patients.**

<table>
<thead>
<tr>
<th>No.</th>
<th>Gender</th>
<th>Age</th>
<th>Indication /purpose</th>
<th>Cupping method</th>
<th>Location</th>
<th>Contact time (minutes)</th>
<th>Time before treatment (hours)</th>
<th>Burn degree</th>
<th>TBSA (%)</th>
<th>Time to healing (days)</th>
<th>Complications</th>
</tr>
</thead>
<tbody>
<tr>
<td>1*</td>
<td>M</td>
<td>43</td>
<td>Back pain</td>
<td>Dry</td>
<td>Back, shoulder</td>
<td>10</td>
<td>1.5</td>
<td>1st, 2nd (a)</td>
<td>2</td>
<td>5</td>
<td>None</td>
</tr>
<tr>
<td>2*</td>
<td>M</td>
<td>28</td>
<td>Relieve tiredness</td>
<td>Dry</td>
<td>Back</td>
<td>8</td>
<td>3</td>
<td>2nd (a)</td>
<td>1</td>
<td>7</td>
<td>None</td>
</tr>
<tr>
<td>3*</td>
<td>M</td>
<td>39</td>
<td>Improve health</td>
<td>Dry</td>
<td>Back</td>
<td>5</td>
<td>2</td>
<td>1st, 2nd (a)</td>
<td>2</td>
<td>6</td>
<td>None</td>
</tr>
<tr>
<td>4</td>
<td>F</td>
<td>54</td>
<td>Insomnia</td>
<td>Dry</td>
<td>Back, neck</td>
<td>6</td>
<td>2.5</td>
<td>2nd (a), 2nd (b)</td>
<td>7</td>
<td>16</td>
<td>Hyppopigmentation</td>
</tr>
<tr>
<td>5*</td>
<td>M</td>
<td>33</td>
<td>Improve health</td>
<td>Dry</td>
<td>Back</td>
<td>7</td>
<td>6</td>
<td>1st</td>
<td>3</td>
<td>3</td>
<td>None</td>
</tr>
<tr>
<td>6*</td>
<td>F</td>
<td>23</td>
<td>Improve health</td>
<td>Dry</td>
<td>Back</td>
<td>6</td>
<td>3</td>
<td>1st, 2nd (a)</td>
<td>5</td>
<td>7</td>
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</tr>
<tr>
<td>7*</td>
<td>F</td>
<td>15</td>
<td>Back pain</td>
<td>Dry</td>
<td>Back</td>
<td>9</td>
<td>1</td>
<td>1st</td>
<td>1</td>
<td>4</td>
<td>None</td>
</tr>
<tr>
<td>8</td>
<td>M</td>
<td>57</td>
<td>Improve health</td>
<td>Dry</td>
<td>Back</td>
<td>10</td>
<td>0.5</td>
<td>2nd (a)</td>
<td>2</td>
<td>9</td>
<td>None</td>
</tr>
<tr>
<td>9*</td>
<td>F</td>
<td>40</td>
<td>Hypertension</td>
<td>Dry</td>
<td>Back</td>
<td>11</td>
<td>6</td>
<td>1st, 2nd (a)</td>
<td>4</td>
<td>11</td>
<td>None</td>
</tr>
<tr>
<td>10</td>
<td>F</td>
<td>44</td>
<td>Back pain</td>
<td>Dry</td>
<td>Back, shoulder</td>
<td>8</td>
<td>5</td>
<td>2nd</td>
<td>3</td>
<td>8</td>
<td>None</td>
</tr>
<tr>
<td>11</td>
<td>M</td>
<td>21</td>
<td>Dog bite</td>
<td>Wet</td>
<td>Left forearm</td>
<td>3</td>
<td>56</td>
<td>2nd</td>
<td>1</td>
<td>23</td>
<td>None</td>
</tr>
<tr>
<td>12*</td>
<td>M</td>
<td>46</td>
<td>Improve health</td>
<td>Dry</td>
<td>Back</td>
<td>6</td>
<td>7</td>
<td>1st, 2nd (a)</td>
<td>5</td>
<td>7</td>
<td>None</td>
</tr>
<tr>
<td>13*</td>
<td>M</td>
<td>39</td>
<td>Sting and infection</td>
<td>Wet</td>
<td>Right forearm</td>
<td>30</td>
<td>96</td>
<td>2nd</td>
<td>1</td>
<td>19</td>
<td>Hypertrophic scar</td>
</tr>
<tr>
<td>14</td>
<td>M</td>
<td>61</td>
<td>Stroke rehabilitation</td>
<td>Dry</td>
<td>Back, shoulder, neck</td>
<td>6</td>
<td>4.5</td>
<td>2nd (a), 2nd (b)</td>
<td>6</td>
<td>18</td>
<td>Hyppopigmentation</td>
</tr>
</tbody>
</table>

TBSA: Total body surface area; *: Outpatient; 1st: first degree burn; 2nd (a): superficial second degree burn; and 2nd (b): deep second degree burn
the causative pathology to the skin’s surface using cup- ping therapy.  

The balance of the *yin* and *yang* is affected by hot or cold, excess or deficiency, and internal or external factors, and traditional Chinese medicine supposes certain skin areas become hypersensitive when organ function is impaired. Theses points connected with a particular organ are linked to form a meridian, and ancient Chinese medicine practitioners supposed that cupping therapy could influence the circulation of the body to maintain a balance between the *qi* life-force antipoles *yin* and *yang*, thereby restoring health or alleviating illness. In the presence of illness or injury, proponents of cupping therapy think the *qi* has been disturbed. The cupping practitioner diagnoses any imbalances in the *qi* by analyzing the patient’s complaints and feeling the pulse of the patient, then attempts to restore them. Cupping is recommended for treating pain, herpes zoster, bronchial congestion, and arthritis. Moreover, cupping is also supposed to be effective in easing depression.

There are 2 classic types of cupping therapy: dry or wet. Dry cupping pulls local underlying soft tissue up into a cupping vessel, whereas in wet cupping, an incision is made to let blood outflow before cupping is applied.

Most of the patients in this study sustained dry cupping and only 2 wet cupping therapies were performed (patient 11 and 13). This outcome is different from the results of the review study by Cao and colleagues in
which wet cupping was used in a majority of the study population. Dry cupping therapy is usually recommended because it is considered more gentle and safe. In addition, most people in modern times receive cupping therapy not to treat an illness, but rather in the hope that the procedure will make them more healthy and robust. These individuals seek out practitioners as they do not want to hurt themselves by making the incisions necessary for wet cupping therapy. However, since most of the practitioners of cupping therapy in China are specially trained by other practitioners instead of being certified by an official institution, they may lack the required knowledge and skills essential to properly perform cupping therapy. Different customs and traditions may also account for the variety of cupping therapy methods, including the materials and equipment used, the contact time of the cup with the skin, dry or wet cupping, and so on.

There are a number of reasons cupping therapy enjoys worldwide popularity as a complementary therapy. It has been utilized for thousands of years and is deeply rooted in people’s minds as a beneficial treatment. Because people are already accustomed to this traditional medicine, they don’t always pay much attention to its effectiveness; it could even be considered a placebo from some perspectives. Individuals living with chronic pain may turn to cupping therapy when modern medicine offers little or no relief, or when they are worried about the side effects of long-term prescription drug use. As an alternative therapy, cupping is easily accessible and more affordable than pharmaceuticals.

Burn injuries induced by cupping therapy have been reported in previous studies. Iblher and Stark reported a case of a 59-year-old Greek woman who received cupping treatment from her husband for management of her chronic back pain. During the treatment, the petroleum container fell and spilled the contents over the patient, whose skin subsequently caught on fire. Sandler and Haynes reported a case of an 11-year-old girl who experienced a burn injury after she received cupping therapy for treatment of back and shoulder pain. The treatment was administered by the girl’s mother, who inverted small glasses flamed with alcohol on the skin of the child’s back. Kose and colleagues reported a case of a 30-year-old male who tried to relieve his back pain by applying cupping therapy himself. Burned cotton soaked with alcohol from the cup spread over his back and caught fire. Sagi et al reported a case of a 57-year-old woman with diabetes who underwent cupping therapy administered by her husband to treat leg pain. During one of the treatments, her husband mistakenly used an alcohol container as a cupping glass and lit the alcohol on fire, resulting in a burn injury to the woman. Kulahci et al reported a case of a 32-year-old man who suffered from burns...
when receiving cupping therapy from his mother to treat back pain.

Despite several single case reports of cupping therapy-related burn injuries, no systematic reviews of this adverse effect are available. Based on the authors' experiences, burn injuries that occurred during cupping therapy are usually a result of one of the following:

1) The practitioner uses too much alcohol to moisten the inner surface of the cupping vessel (this is the most common reason for the injuries of the patients who present to the author's department with burns from cupping and often causes small burns).

2) The container that holds the alcohol is accidentally knocked over during cupping therapy.

3) The materials used to start the fire needed to produce the vacuum effect cause a burn injury. Practitioners usually use a piece of paper or cotton that is soaked with alcohol to heat the air before application. In some cases, a hasty practitioner applies the cupping vessel to the acupuncture point before the alcohol has burned away which subsequently results in a burn.

4) Therapy may last for too long (ie, more than 30 minutes) or the skin is too sensitive to heat (eg, in some older people skin becomes thin and vulnerable, while in some children skin is too tender to bear the hot cups). In some wet cupping therapies, the barrier function of the skin has disappeared due to the incision made, and the freshly exposed soft tissue is non-resistant to heat.

In this case series, the cupping-induced burn injuries were not usually serious and could be treated with conservative dressing changes. Only 2 patients (patients 11 and 14) developed scars. Patient 11 was bitten by a dog on his left forearm and, when the wound became red, swollen, and did not heal, one of the patient's relatives (who was also the neighborhood traditional medicine specialist) treated him with wet cupping therapy. Unfortunately, this practitioner used too much alcohol to moisten the inner surface of the cup and the patient was burned. Patient 13 was stung by a mosquito on his right forearm; he scratched the area until the skin was broken. He sought out cupping therapy for more than 30 minutes, and the practitioner performed the therapy for more than 30 minutes, and the patient was burned. In addition to the burn and infection, cicatricial diathesis may also be attributed to the scar formation in this patient.

Despite the potential risks associated with cupping therapy, it still plays a vital role in many people's daily lives. As previously mentioned, although the potential risks are known, the belief that cupping has curative effects on the correction of some disturbance and helps to remodel the normal function of the body remains.

In light of the above reports, the authors came to the conclusion that most injuries associated with cupping therapy can be attributed to improper application. Good management and careful monitoring are needed to bring the therapy under control to the degree that it does not become harmful to the people who use it. Increasing the awareness of the public and making sure practitioners have standardized training may minimize the occurrence of burns. Using a small pump placed on the bottom of the cup instead of open flame can also produce the vacuum effect while avoiding burn injuries.

Conclusion

Despite the lack of systematic evidence that supports the curative effect of this nonsurgical intervention, cupping therapy is still practiced. Faulty technique and operation in producing the vacuum effect in the cups is the leading etiology of burns. With standardized management and careful monitoring, most cupping therapy-related burn injuries are preventable.

References


