Available online at www.sciencedirect.com
ScienceDirect
journal homepage: www.elsevier.com/locate/burns

Epidemiology of burns caused by moxibustion in Korea

Cheonjae Yoon [a], Young Soon Cho [b], Seungchoon Park [c], Sung Phil Chung [a], Young Hwan Choi [d,*]

[a] Department of Emergency Medicine, Yonsei University of College of Medicine, Republic of Korea
[b] Department of Emergency Medicine, College of Medicine, Soonchunhyang University, Republic of Korea
[c] Department of General Surgery, Bestian Hospital, Republic of Korea
[d] Department of Emergency Medicine, Bestian Hospital, Republic of Korea

ARTICLE INFO

Article history:
Accepted 22 April 2016

Keywords:
Moxibustion
Burns
Traditional medicine
Korea
Epidemiology

ABSTRACT

Introduction: Moxibustion, a traditional Chinese treatment that uses dried *Artemisia argyi*, is a common cause of burns treated in Korean hospitals. We aimed to examine the characteristics of moxibustion-induced burns.

Methods: This retrospective study examined the records of 59 patients who were treated for moxibustion-induced burns (April 2014–October 2015). All patients completed a questionnaire regarding their general characteristics and moxibustion use.

Results: The patients included 16 men and 43 women (average age: 49.1 years, 68 burn sites). Superficial second-degree burns were present at 21 sites, deep second- or third-degree burns at 44 sites, and unknown burns at 3 sites. The most common sites were the lower extremities, abdomen, and upper extremities. The most common practitioners were the patients (27/59, 45.7%) and Oriental medicine practitioners (23/59, 38.9%). The most common locations were the patient's home, Oriental medicine clinic, and moxibustion clinic. The most common reason for moxibustion was pain. Only the burn site was significantly associated with burn depth, and non-abdominal sites were 9.37-fold more likely to involve deep burns (vs. abdominal sites).

Conclusion: Korean patients routinely undergo moxibustion, and care must be taken when using moxibustion at non-abdominal sites, due to the risk of deep burns.

1. Introduction

Moxibustion is a traditional Chinese treatment that uses dried mugwort (*Artemisia argyi*) and plays an important role in traditional medical treatments in Korea, Japan, Mongolia, Vietnam, and China. A bibliometric analysis of articles that were published between 1954 and 2007 revealed that moxibustion has been reported for treating 364 different conditions [1], most commonly fetal breech, diarrhea, colitis, urinary incontinence, dysmenorrhea, knee osteoarthritis, temporomandibular joint disturbance syndrome, soft tissue injury,

* *Corresponding author at*: Department of Emergency Medicine, Bestian Hospital, Kangnam-gu Dogok-ro 429, Seoul, Republic of Korea. Tel.: +82 07076099247; fax: +82 07070054230.
E-mail address: yhchoi113020@gmail.com (Y.H. Choi).
http://dx.doi.org/10.1016/j.burns.2016.04.015
0305-4179/

heel pain, asthma, urinary retention, and herpes zoster [1]. Moxibustion can also be used to treat weakness, fatigue, and aging-related conditions.

Traditional moxibustion typically involves one of three techniques [2]. The first is direct scarring moxibustion, which involves placing a small cone of moxa on the skin and burning it until the skin blisters, which leaves a scar after the burn has healed. The second technique is direct non-scarring moxibustion, which involves removing the burning moxa before the burn will result in a scar. The third technique is indirect moxibustion, which uses a cigar made of moxa near the skin or alongside acupuncture; the material does not directly contact the skin.

Koreans often rely heavily on Oriental medicine, which is a popular and comprehensive term in Korea that includes both traditional Korean and Chinese medicine, and many Koreans visit Oriental medicine clinics for their health concerns. For example, a Korean Ministry of Health and Welfare survey in 2015 revealed that 17% of Koreans initially visit an Oriental medicine clinic for their health concerns [3]. Cho et al. reported that burns occurring in Oriental medicine clinics account for 11% of all burn patients who are treated in medical institutions, and moxibustion is the cause of 38% of burns that occur in Oriental medicine clinics [4]. However, there are only a few reports regarding the epidemiology of moxibustion-induced burns. Therefore, this study aimed to describe the epidemiological characteristics of patients with moxibustion-induced burns and to elucidate the factors that affect burn depth.

2. Methods

2.1. Study design and population

The design of this retrospective study was reviewed and approved by the institutional review board of the Seoul Bestian Hospital. Using medical records, we retrospectively identified all patients who were treated for burns at our institution between April 2014 and October 2015. These patients had all received a questionnaire when they visited our institution, which evaluated the patients' general clinical characteristics (name, age, gender, and underlying disease) and the moxibustion procedure (e.g., ''Who performed the moxibustion?'', ''Where did you undergo moxibustion?'', ''Why did you undergo moxibustion?'', and ''Did you feel pain during moxibustion?'').

All burn wounds were evaluated and treated by an experienced burn surgeon. The burn was considered a superficial second-degree burn if it took <3 weeks to heal or a deep second-degree burn if it took >3 weeks to heal. Multiple burn wounds that were localized in a single site were considered a single wound, and the burn depth was evaluated for each site.

2.2. Burn treatment

Burn wounds were treated using the application of an appropriate dressing material (gauze and Renofoam [T&L Co. Ltd., Korea] or Reno B [T&L Co. Ltd.]) and ointment (silver sulfadiazine, mupirocin, or mafenide acetate). At our institution, we recommend surgical interventions for patients with third-degree burns. For patients with indeterminate second-degree burns, we recommended surgical intervention if the wound was expected to take ≥4 weeks to heal.

2.3. Statistical analysis

All analyses were performed using SPSS software (version 18.0; SPSS Inc., Chicago, IL, USA). Categorical variables are presented as frequencies and percentages (%), and normally distributed continuous variables (as assessed using the Shapiro–Wilk test) are presented as means and standard deviations. The chi-square test was used to analyze categorical variables, and the Fisher's exact test was used if the expected frequencies were <5. Univariate and multivariate logistic analyses were performed to identify variables that affected the depth of moxibustion-induced burns, and p-values <0.05 were considered statistically significant.

3. Results

Fifty-nine patients were included, and the patients' characteristics are shown in Table 1. The 59 patients included 16 men and 43 women, with an average age of 49.1 years. The patients were mainly adults, with the exception of a 7-year-old boy, and no patients had sensory disabilities. Based on their medical records, we identified 68 burn sites, which included 21 superficial second-degree burns, 44 deep second- and third-degree burns, and 3 burns with an unknown depth (due to loss to follow-up). The most common burn site was the lower extremities, which was followed by the abdomen and upper extremities. Nineteen patients underwent surgical interventions for 20 burn sites, and 15 patients underwent only escharectomy for 17 burn sites. The wound diameters were <2 cm at 35 sites, 2–5 cm at 15 sites, and >5 cm at 13 sites. Fifty-two patients had a single burn site, 5 patients had two burn sites, and 2 patients had three burn sites. Thirty-four patients had a single burn wound, and 6 patients had >10 burn wounds.

Table 2 shows the results of the moxibustion survey. Moxibustion was most frequently performed by the patient (27/59, 45.7%), although Oriental medicine practitioners also commonly performed moxibustion (23/59, 38.9%). Patients generally underwent moxibustion in their home, in Oriental medicine clinics, or in moxibustion clinics. Among the 4 patients who underwent moxibustion that was performed by a moxibustion specialist, 2 patients were treated at home, and 2 patients were treated at a moxibustion clinic. The most common reason for moxibustion was pain, followed by health promotion and gastrointestinal issues. Twenty-eight patients reported feeling no pain during moxibustion.

Table 3 shows the results of the univariate and multivariate logistic regression analyses of variables that affected the depth of moxibustion-induced burns. Gender, practitioner specialty, and presence of pain during the procedure were not risk factors for burn depth. Only the burn site was a risk factor for burn depth ($p = 0.001$). The odds of deep burns were higher with burns at non-abdominal sites than with burns at abdominal sites (odds ratio: 9.37, 95% confidence interval:

Please cite this article in press as: Yoon C, et al. Epidemiology of burns caused by moxibustion in Korea. Burns (2016), http://dx.doi.org/10.1016/j.burns.2016.04.015