Case report

Moxibustion-septic shock and necrotizing fasciitis

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A B S T R A C T
Moxibustion is a traditional Chinese treatment that has been utilized for centuries. It also plays an
important role in traditional Korean, Vietnamese, Japanese and Mongolian medicine. It is considered safe
by practitioners of Alternative Medicine, similar to acupuncture treatment, and consists of burning plant
materials called "moxa" on or very near the surface of the skin near meridian points. Traditional
practitioners believe that it can be effective against chronic conditions and improve blood in one’s body.
However, Moxibustion is not without risk to the patient. This case report describes a case of a patient whose
moxibustion treatment led to septic shock secondary to necrotizing fasciitis.

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Background

The field of Alternative and Complementary Medicine has gained more and more popularity in the United States in recent years. Many of the treatment methods that fall into this field have been used for hundreds of years, and although they are very important treatment modalities in many cultures, most physicians are not familiar with their uses, benefits, and risks. They may not even be aware that their patients are practicing these alternative techniques, and thus never have the chance to discuss or recognize the potential health risks. We describe a case of a patient who was treated with moxibustion three months prior to his presentation in the emergency room with life-threatening complications. He was treated with a direct scarring technique, which involves placing a small cone of moxa (dried mugwort) on the skin and burning it until skin blisters. Due to his multiple comorbidities (Diabetes, CAD, CHF), the wound did not heal properly, and left the Achilles tendon exposed to a bacterial introduction. This case is unique because there is limited data on the use of moxibustion and its potential negative effects in patients with underlying health conditions such as diabetes, congestive heart failure, and coronary artery disease.

Case presentation

A 44 year-old male with a past medical history significant for uncontrolled type II diabetes, coronary artery disease with two prior stent placements, and congestive heart failure presented to the emergency department due to worsening generalized weakness, sudden onset of bilateral lower extremity paralysis, anesthesia, and inability to urinate. He denied fever, chills, headache, chest pain, dyspnea, facial droop, muscle spasticity, or trauma. The treating ED physician immediately became concerned for sepsis as the patient was becoming hypotensive.

Upon further interview, the patient revealed a wound over his left posterior ankle, which had been present for months. He reported that it was a blister that failed to heal after having had a Moxibustion burning treatment 3 months prior to “help improve the flow of Chi.”

Chi or qi is believed to be the vital force forming part of any living entity; it is central underlying principle in Chinese traditional medicine [6]. On physical exam, vital signs revealed a temperature 100.3F, blood pressure 73/45 (MAP 54), heart rate 60, respiratory rate 18, and SpO2 98% on room air. The patient was in acute distress, diaphoretic, with difficulty breathing and accessory muscle use. Examination of the left lower extremity revealed a large, full-thickness wound over the posterior ankle with purulence, erythema, and an exposed Achilles tendon. Significant crepitus was palpated throughout the lower extremity from ankle to knee.

Extremities were cool to the touch, with peripheral pulses weak bilaterally. Neurologic exam revealed 5/5 muscle strength in the bilateral lower extremities, as well as decreased sensation.
Initial labs were significant for lactic acid 4.8, WBC 25.5 cells/ul, Hgb 5.3, Na 128, BUN/Cr 61/3.74 and glucose of 353. While in the ER, the patient remained hypotensive despite aggressive IV fluid resuscitation, and was thus started on levophed 1 He was also started on broad-spectrum IV antimicrobials (vancomycin, Zosyn, clindamycin) and received a blood transfusion due to the low Hb. General surgery was consulted due to concern for necrotizing fasciitis, and XR of the LLE showed significant gas within the soft tissue. Despite early aggressive interventions and sepsis protocols being carried out the patient continued to decompensate and required intubation. He was admitted to the ICU for septic shock, and was taken to the OR for emergent fasciectomy. The operative report was significant for necrotizing fasciitis involving the entire posterior leg including the gastrocnemius muscle (Image 1); a wound vacuum was placed, thereafter.

Given the patient’s presentation with bilateral lower extremity paralysis, anesthesia and inability to urinate, there was speculation that the patient had seeding from the infection in his lower extremity to the spinal cord resulting in compression; neurosurgery was consulted. They recommended that the patient be first stabilized for the sepsis and necrotizing fasciitis, as he was very unstable to undergo an MRI. For guidance on antimicrobial selection and infection control, Infectious Disease was consulted. For his worsening renal failure, Nephrology was consulted as well.

Once stabilized, extensive imaging was obtained to evaluate his neurologic symptoms. MRIs of the spine were obtained 2–3 days after admission, which revealed no signs of infection, abscess or mass, but canal stenosis, most severe in the cervical region. Neurosurgery recommended anterior cervical discectomy as an outpatient, and his condition slowly improved with physical therapy, IV antimicrobials, insulin, repeat debridement, and wound care.

Case discussion

This is a case study of a 44-year-old patient with complicated past medical history who presented in severe septic shock due to complications after receiving a Moxibustion treatment months prior. When considering the cause of this patient’s infection, one clear indicator was the severe fasciitis over his left ankle, with exposure of the Achilles tendon. Although his complex cardiac history of CHF, CAD and uncontrolled diabetes were all contributing factors to impaired wound healing, the Moxibustion inevitably was the inciting event. It created an open wound on the skin that facilitated the entry of bacteria, eventually leading to necrotizing fasciitis, and ultimately resulting in severe, life-threatening septic shock.

Although it is considered safe, similar to acupuncture treatment, several cases have emerged across the globe demonstrating the adverse effects that Moxibustion can cause. Moxibustion is a traditional Chinese treatment that has been utilized for centuries as a type of heat therapy. Dried plant materials called "moxa" are burned on or very near the surface of the skin, with the intention of invigorating the flow of Qi within the body, and dispel certain pathogenic influences.

Moxa is usually made from the dried leafy material of Chinese mugwort (Artemisia argyi or A. vlugaris), but it can be made of other substances as well [1]. No significant statistical data exists to quantify the number of people using Moxibustion around the world.

Some adverse events (AE) that have been reported include allergies, burns, infections, coughing, nausea, vomiting, fetal distress, premature birth, basal cell carcinoma (BCC), ectropion, hyperpigmentation, and even death. In one review, a total of 24 articles reported 64 cases of AEs associated with Moxibustion (Table 1).

One particular case involved a 53-year-old Korean woman who was admitted to the hospital with a diagnosis of cellulitis. The patient, though untrained in Chinese medicine, had attempted to self-administer direct Moxibustion for intermittent headaches, and developed cellulitis as a complication. She was treated with intravenous antibiotics for 24 h and discharged in good condition [3].

Another case involved a 69-year-old man who presented with pyogenic liver abscess (PLA) following acupuncture and Moxibustion treatment. He had received acupuncture on his arms and Moxibustion on his abdomen three times per week for insomnia. About one month later, he felt nauseous and feverish and lost about nine kilograms of body weight. An abdominal computed tomography (CT) scan with contrast revealed multiseptated cystic lesions in the right and left lobes of the liver. Pyogenic abscess was confirmed by ultrasound-guided percutaneous needle aspiration with Gram stain and culture of the aspirate. In this case, authors assumed that the patient had Streptococcus intermedius bacteremia after being treated with contaminated acupuncture needles and Streptococcus intermedius may have been seeded into the liver [4].

Systematic reviews have shown that the safety of Moxibustion can be improved by various means; the position, duration, distance between moxa and the skin, proficiency of doctors, patient conditions, stimulations from smoke, and even the environment of treatment can affect the safety of Moxibustion [2]. Improving practitioner skills, regulating the operations, and controlling the duration, distance, dose, and protection can also reduce the incidence of adverse reactions [5]. Proper follow up, patient selection and continuous monitoring are also important components.

This case serves to teach us about the specific techniques involved in Moxibustion, and how some are clearly contraindicated in patients with impaired circulation or neuropathy. It also helps to demonstrate the role that culturally competent, well-informed physicians could play in the prevention of such serious complications. Becoming familiar with our patient’s health literacy, cultural practices, and belief systems is essential to achieving an

| Table 1 |
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| **Adverse Events associated with Moxibustion.** |
| **Adverse Events** | **Number of reports** | **Number of cases** |
| Allergies | 6 | 7 |
| Burns | 6 | 43 |
| Infection | 6 | 6 |
| Nausea or vomiting | 1 | 2 |
| Cough | – | 1 |
| Fetal harm | 2 | 2 |
| Basal cell carcinoma | 1 | 1 |
| Ectropion | 1 | 1 |
| Death | 1 | 1 |

Systemic Review of Adverse Events associated with Moxibustion. Ji Xu, Hongyong Deng, Xueyong Shen.
effective doctor-patient relationship. More specifically, inquiring about alternative and complementary medical practices they may be incorporating into their treatment plans is necessary to optimize their health and stop preventable disease. It also teaches us the importance of listening.

It is quite possible that this patient sought alternative treatment for symptoms not fully worked up or addressed by his “regular doctor.” The patient had been experiencing worsening weakness and neurologic deficit for some time due to the progressing cervical canal stenosis, and thus sought the healing, energy-restoring treatment that Moxibustion is purported to provide; this obviously worsened his condition. The patient spoke a special dialect of Cantonese, and there is possibility he wasn’t able to convey his symptoms thoroughly, namely of upper extremity weakness, which is seen in cervical canal stenosis. His symptoms did improve after his sepsis resolved and canal stenosis treated with steroids and intensive physical therapy.

Ethics approval and consent to participate
Not applicable.

Availability of data and materials
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AC and HS (Singh) worked on the case report together HS (APD) oversaw and proofread the work.

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