Case Report

Fatal Burn Injury Following Traditional Treatment in a Diabetic Patient from a Rural Area: A Case Report

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Abstract

Background. The skin acts as a vital protective barrier, preventing infection, fluid loss, and heat damage. Burn injuries are among the leading causes of morbidity and mortality, especially in low- and middle-income countries where access to specialized care is limited. Traditional burn treatments, still practiced in some rural areas, often lack scientific evidence and may delay wound healing or exacerbate the injury. This report highlights the complications of such non-scientific approaches and underscores the need for public education and early medical intervention. This case report describes a fatal burn injury resulting from a traditional intervention in a diabetic patient.

Case Report. A 74-year-old woman with diabetes mellitus, hypertension, and aortic stenosis from a rural village near Gonbad, Iran, developed swelling and blistering of her right hand after a local healer misdiagnosed an initial lesion as an insect bite and advised washing with hot water and exposure to opium smoke. Her condition progressively worsened, leading to extensive necrosis and infection. She was hospitalized for 13 days at Payambar Azam Hospital in Gonbad and subsequently transferred to 5 Azar Hospital in Gorgan for an additional 5 days of treatment. Despite intravenous antibiotics, wound care, and supportive management, she developed septic shock and died from multiorgan failure shortly after discharge.

Conclusion. This case emphasizes the serious risks of unqualified traditional practices and delayed access to professional care in burn injuries, particularly among

vulnerable patients with chronic diseases. Promoting public awareness, community education, and timely referral to specialized burn centers are essential steps for reducing preventable complications and mortality.

Keyword: Burns, Traditional Medicine, Sepsis, Diabetes, Wound Healing

Introduction

Burn injuries remain a major global public health challenge, ranking as the fourth most common type of trauma after traffic accidents, falls, and interpersonal violence.[1,2] Approximately 300,000 deaths occur annually due to burns, with most fatalities concentrated in low- and middle-income countries (LMICs).[3] Socioeconomic status, gender, age, and limited access to medical care increase burn risk and worsen outcomes.[4]

Traditional medicine—based on ancestral beliefs and practices—has been used for centuries to manage burns and wounds.[5] Remedies such as oils, plant extracts, clay, or honey were historically applied to injured skin.[6] Despite its deep cultural roots and lower reported rates of side effects than synthetic drugs,[7] the unregulated use of traditional therapies may delay medical treatment and worsen outcomes. In many rural regions, patients still prefer local healers due to financial or geographical barriers.[8]

This report presents a fatal case of a diabetic elderly woman who developed a third-degree burn and sepsis after inappropriate traditional treatment. The case highlights the life-threatening consequences of delayed referral and emphasizes the need for public education on evidence-based burn care. This case aims to demonstrate how traditional burn treatment can lead to fatal complications in vulnerable patients.

Case Presentation

A 74-year-old woman with a history of hypertension, diabetes mellitus, and aortic stenosis, living in a rural area near Gonbad, Iran, presented with acute swelling and stiffness of her right hand that developed overnight, according to her daughter. Due to limited access to medical facilities, the family initially sought care from a local "healer," who diagnosed an insect bite. The healer instructed his apprentice to wash the patient's hand with lukewarm water and salt and then left. However, the apprentice washed the hand vigorously with hot water, resulting in blister formation. Additionally, opium smoke was applied to the wound in an attempt to prevent infection.The following morning, the patient's condition worsened, and the family took her to a general practitioner, who recommended hospital admission. The patient and her family declined and returned home. Later that afternoon, her condition deteriorated significantly, with purulent discharge soaking her clothes and surrounding environment. She became severely debilitated, losing the ability to walk or speak. Emergency services were contacted, and the patient was admitted to Payambar Azam Hospital in Gonbad for 13 days, during which partial clinical improvement was observed. After discharge, she received several sessions of modern wound care by a wound care specialist, including hydrogel, foam, and silver-containing antimicrobial dressings. Due to the severity of the wound, referral to advanced centers in Mashhad or Tehran was recommended. The family subsequently admitted her to 5 Azar Hospital in Gorgan. At 5 Azar Hospital, a diagnosis of third-degree burn was confirmed, and the patient underwent skin grafting (flap procedure). Her prescribed medications included furosemide and bisoprolol (BID), aspirin, spironolactone, atorvastatin, empagliflozin (daily), half-normal saline, pantoprazole, vitamins A and C, and imipenem.Vital signs at admission were: blood pressure 120/80 mmHg, heart rate 76 bpm, oxygen saturation 98%, and full consciousness. Laboratory findings were as follows: HbA1C 8.1%, creatinine 0.8 mg/dL, LDH 1127 U/L, BUN 30 mg/dL, albumin 2.8 g/dL, WBC 12.7 $\times 10^9$/L, RBC 5.95 $\times 10^6/\mu$L, HCT 48%, MCHC 27.71 g/dL. Wound culture revealed Pseudomonas infection.The patient had no history of prior infections or drug allergies but reported allergy to certain spices.

She was a homemaker living with her family in a low-income household. The family provided both direct care and assisted with medical decision-making.Despite appropriate medical management, her condition deteriorated. She was discharged after five days and did not return for follow-up. Unfortunately, the family later reported that she died a few days after discharge due to widespread infection and sepsis. The chronological sequence of clinical events and interventions is summarized in Table 1.

Table 1. Chronological timeline of clinical events, interventions, and patient outcomes.

Day / Date	Event / Symptoms	Intervention / Treatment	Patient Status
Night 0	Acute swelling and stiffness of right hand	Family consulted a local healer	Blister formation after vigorous washing by apprentice; opium smoke applied to wound
Morning Day 1	Worsening condition	Visited general practitioner (hospital admission advised but declined)	Condition deteriorated
Afternoon Day 1	Severe purulent discharge, unable to walk or speak	Emergency services contacted	Transferred to Payambar Azam Hospital, Gonbad
Days 1–13	Hospitalization at Payambar Azam	General supportive care and wound management	Partial clinical improvement observed
Post-discharge from Payambar Azam	Wound care specialist sessions	Hydrogel, foam, and silver antimicrobial dressings	Infection partially controlled
Referral to 5 Azar Hospital, Gorgan	Advanced burn assessment	Diagnosis of third-degree burn	Treatment initiated
5 Azar Hospital	Burn management	Systemic medications (furosemide, bisoprolol BID, aspirin, spironolactone, atorvastatin, empagliflozin daily, half-normal saline, pantoprazole, vitamins A & C, imipenem); topical therapy with mafenide and Vals	**Skin graft (flap) performed**
Discharge from 5 Azar	Continued wound care	Outpatient follow-up planned	Patient discharged in relatively stabilized condition; did not return for follow-up
Few days post-discharge	Clinical deterioration	Reported by family	Patient died at home due to widespread infection and sepsis

Ethical Considerations

Clinical photographs were used solely for scientific and educational purposes. All identifiable features were removed, and the patient's family provided informed consent for the use and publication of the images after receiving a full explanation of the case report's aims and confidentiality safeguards

Discussion

A 74-year-old woman with diabetes, hypertension, and aortic stenosis from a rural village near Gonbad, Iran, developed right-hand swelling that was mismanaged by a local healer using hot water and opium smoke. The injury progressed to deep necrosis and sepsis despite delayed hospital admission and antibiotic therapy. She ultimately died at home from septic shock and multiorgan failure following third-degree burns caused by inappropriate traditional treatment.

The patient had a burn, diabetes, and hypertension. Burn mortality is significantly higher among patients with comorbidities such as diabetes, cardiovascular, or renal disease.[9,10] Diabetes impairs microcirculation, leukocyte function, and collagen synthesis, resulting in delayed wound healing and increased susceptibility to infection.[11] Elderly individuals

Figure 1A-B-C. Clinical photograph of the patient showing the burn injury on the right hand before debridement. Consent for publication was obtained from the patient's family.

Figure 2A-B. Clinical photograph of the same right hand after debridement, demonstrating the removal of necrotic tissue and the wound bed. Consent for publication was obtained from the patient's family.

are also at increased risk of fluid imbalance and poor immune response after burns.[12] The patient's family stated that their long-standing trust in traditional remedies, deeply rooted in their local culture, led to a delay in seeking hospital care; an experience that proved to be both painful and enlightening. The use of unverified folk remedies in rural areas persists due to limited access to trained healthcare providers, financial constraints, and strong

cultural beliefs.[13] The patient was hospitalized shortly after receiving traditional folk treatment and ultimately died from sepsis. However, these practices can obscure early symptoms, delay hospital admission, and result in septic complications. Studies from Turkey and South Asia have shown that inappropriate first aid, such as applying toothpaste, eggs, or heated materials to burns, significantly increases infection rates and scarring.[14] The patient lacked sufficient knowledge about burn treatment. Early and appropriate management—including cooling the burn with running water for 10–20 minutes, avoiding unsterile substances, and timely referral to specialized care—is essential for optimal outcomes.[15] Public education campaigns and rural community outreach programs are necessary to correct misconceptions about traditional treatments and emphasize evidence-based first aid.

Conclusion

This case highlights the fatal risk of relying on traditional burn treatments and delaying professional care, particularly in patients with chronic conditions such as diabetes and hypertension. Culturally rooted practices, when applied without scientific basis, can lead to irreversible harm. Strengthening community education, improving rural healthcare accessibility, and training local providers on proper burn management are essential to prevent similar tragedies.

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