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Case Report

Camphor burns of the palm and non-suicidal self-injury: An uncommonly reported, but socially relevant issue

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ABSTRACT

Camphor is a waxy white sublimating chemical derived from natural as well as synthetic sources and widely used in various communities worldwide for a number of medicinal, culinary, and religious reasons. Camphor is burnt as an offering to God in many religious communities. We report three incidences of self inflicted injury from burning camphor on the palm resulting in full thickness burns. Non-suicidal self-injury is socially unacceptable destruction or alteration of body tissue when there is no suicidal intent or pervasive developmental disorder and we have explored an association between this and burn injury. This report also highlights the unique social and cultural pattern of this burn injury and the importance of psycho-therapeautic help for these victims.

KEY WORDS

Camphor burns; full thickness burns; hand burns; non-suicidal self-injury; self-inflicted violence

INTRODUCTION

Non-suicidal self-injury (NSSI) is defined in the available psychological literature as the "self-inflicted, direct, socially unacceptable destruction, or alteration of body tissue that occur[s] in the absence of conscious suicidal intent or pervasive developmental disorder."[1] NSSI has been recently included as a distinct condition in Diagnostic and Statistical Manual of Mental Disorders 2013 (DSM V).[2] Camphor also known as 1,7,7-Trimethylbicyclo[2.2.1] heptan-2-one is a waxy appearing white terpenoid with the chemical formula $C_{10}H_{16}O$ [Figure 1a and b]. It is found in its natural form from the wood of the camphor laurel (*Cinnamomum camphora*), a large evergreen tree found in Asia.[3] Synthetic camphor is obtained by distillation of turpentine. Camphor is widely used in Indian religious ceremonies and is burnt as a religious offering. We would like to report three incidences of full-thickness palm wounds in patients resulting from the act of burning camphor on the hand.

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The purpose of this article is three fold. First, the rarity of reporting[4,5] of such an socially relevant entity, second to highlight the effects of social and cultural rituals on pattern of burn injury and the potential complication of functional impairment of the patient's hand and finally to generate an awareness on the possibility of NSSI by this method so as the guide the treating physician to include psychotherapeutic interventions in the overall treatment plan.

CASE REPORT

Case 1

A 20-year-old male with congenital absence of left hand and hypoplasia of the left forearm presented to our institution with history of sustaining burns to his hand [Figure 2a]. He was brought by his family members. The history revealed that the patient had burned a cube of camphor of approximate size 2 cm × 2 cm × 2 cm on his right hand at a temple near his house as a part of religious offering. The patient had waited until the entire block of camphor was burned on his hand, even though this was associated with pain.

Inspection of the wound revealed an eschar of size 4 cm × 5 cm over his right palm with surrounding induration [Figure 2a]. There were no distal neurovascular deficits although movements of his fingers were restricted by pain. His Bates-Jenson Wound Assessment Tool Score[6] at presentation was 42. Radiographic studies of the affected hand revealed no abnormality.

Figure 1a: Camphor used in religious ceremonies

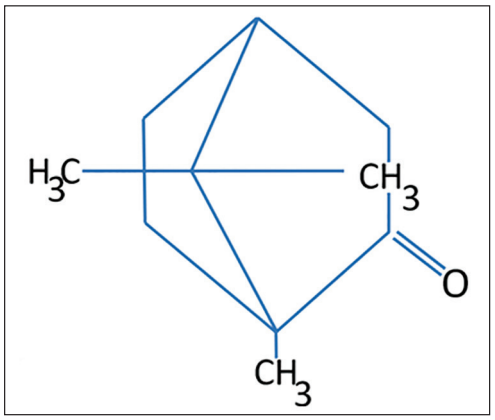

Figure 1b: Chemical structure of camphor

Figure 2a: Full-thickness burn of the hand with eschar

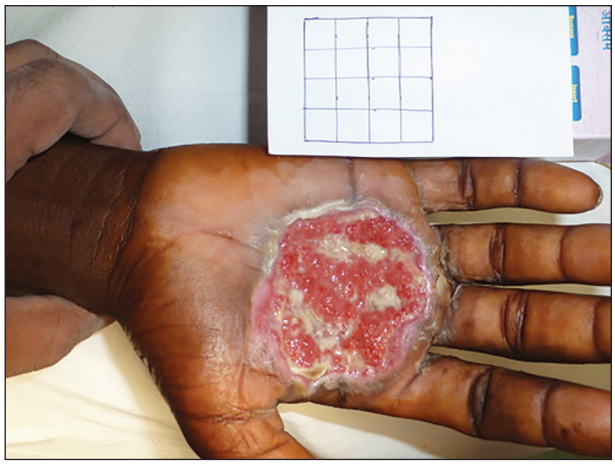

Figure 2b: Well-granulating wound ready for skin grafting

He was advised admission, but he refused the same. He underwent an escharotomy and the underlying muscles appeared viable. The patient was discharged with antibiotics, analgesics and advice to keep the limb elevated. Splinting of the hand was not provided as he had congenital absence of his left hand and as this would severely affect his daily activities. Review after 1 week revealed a well-granulating wound [Figure 2b]. His Bates-Jenson Wound Assessment Tool Score improved from 42 to 27. The patient was admitted with the aim of providing a skin graft. He however absconded from the ward after 2 days of stay before a psychiatric assessment and skin grafting could be done.

Case 2

A 32-year-old unmarried female presented to the out-patient department of plastic surgery with a scar over the right palm [Figure 3a]. History revealed that the patient had sustained palmar injuries following burning of camphor in her palm 6 months back at a local temple. The patient had not sought medical attention for the palmar burn wound and had allowed the wound to heal on its

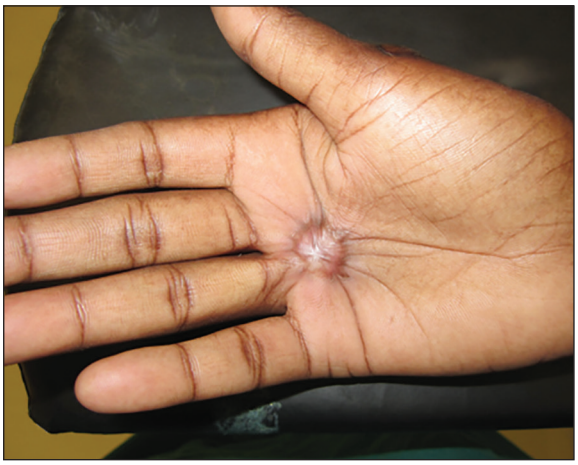

Figure 3a: Post-burn scar over the palm

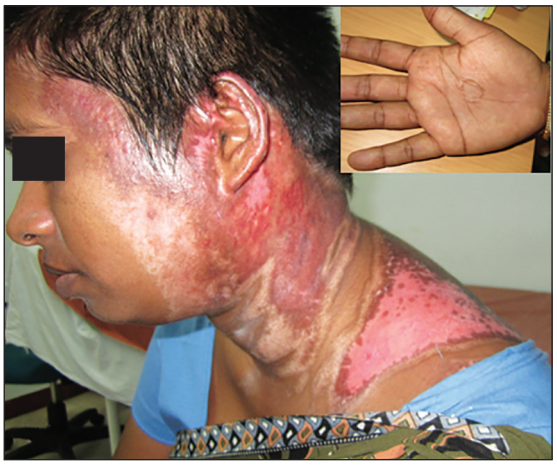

Figure 3b: Post-burn scars over face and neck involving 10% total body surface area (b, inset) scar following camphor burn over right palm in the same patient

own. Examination of the hand revealed a contracture band over the right palm with an inability to extend the palm completely.

The patient was admitted and scar release was done and defect covered by full-thickness graft from the hypothenar eminence of contralateral hand. Review after 1 week revealed a well-taken graft. The patient was discharged with advice to follow-up after 1 week. However, the patient did not report and was lost for follow-up.

Case 3

A 27-year-old female patient presented and admitted to our burn centre with an alleged history of suicidal burns on her face and neck, involving 10% total body surface area [Figure 3b], which she sustained after dousing herself with kerosene and lighting it. A general examination also revealed a 2 cm coin shaped scar on her right palm [Figure 3b, inset], which she had sustained 6 months back due to burning of camphor in her palm. No psychiatric consultation had been done previously and the patient had also not sought medical attention for her palmar burn wounds. After stabilising her general condition, she was subjected to a psychiatric consultation which revealed an underlying psychosis with complaints of hearing of voices and general melancholy by the patient. The patient was kept on intensive psychodynamic therapy and pharmacotherapy in the period of this hospitalisation. She was subsequently discharged when her burn wounds had started healing with advice to continue the psychodynamic therapeutic sessions. A 12-week follow-up revealed a patient with healed burn wounds and generalised improvement in behaviour as noted by her family members.

DISCUSSION

Non-suicidal self-injury is a recently described distinct entity included in DSM V.[2] Several criteria for NSSI has been proposed in the DSM V and further studies have been recommended. NSSI has also been termed as "self-harm, self-mutilation, or self-inflicted violence." According to Wilcox[7] "self-injury can take various forms such as cutting, burning, or branding the skin, hair pulling, picking at skin or scabs, head banging, breaking bones, and hitting oneself." A review of psychological literature reveals a number of functions for self-injury, including "the suppression of overwhelming negative emotions or, the creation of feeling out of a state of numbness or dissociation; avoidance of unwanted social situations; and interpersonal rewards such as admiration or coolness and attention to previously ignored underlying problems."[7,8] Self-injury has been suggested to serve as a method by the individual for expressing emotions, which may otherwise be inexpressible. Various authors have pointed out that self-injury "is extremely pervasive in rites of mourning across the world."[7] NSSI has been classified as non-pathological or pathological.[8] Non-pathological NSSI may consist of body modification practices such as tattoos or body piercing or body modification rituals, such as head injuring by Sufi healers. Such injuries are culturally sanctioned. It may be seen in Hindus as body piercing to attain spiritual goals. These rituals are considered to be meaningful activities that reflect the tradition, symbolism, and beliefs of a society. Armando writes "these rituals are considered to serve an elemental purpose by correcting or preventing destabilising conditions that threaten people and communities." Psychological studies have shown these rituals to be effective because participants believe they promote "healing, spirituality, and social

order."[8] Knowledge about such culturally sanctioned non-pathological self-harm behaviours would ultimately help in understanding of pathological NSSI as a form of self-help behaviour. This knowledge will help clinicians to have a more empathic interaction with patients who injure themselves.

Non-suicidal self-injury has also been divided into four descriptive categories: Major, stereotypic, compulsive, or impulsive.[8] The injuries seen above may be an impulsive NSSI. Several authors have suggested a link between NSSI and suicidal behaviours.[9] This aspect of NSSI is revealed in the third case of our series where the patient had attempted suicidal burns and had subjected herself to harm by camphor burn 6 months prior to the present event. Hence, the identification and treatment of such conditions are warranted. For such patients, psychotherapy, especially dialectical behaviour therapy, is found to be effective. Psychotherapy is essential, especially in form of dialectical behaviour therapy. Cognitive-behavioural, psychodynamic therapy, and interpersonal therapies also are effective.[10]

Camphor burns of the palm have been rarely reported in the English literature.[4,5] The reason could be that patients tend not to seek medical attention on their own as seen in the above case reports. All the patients described above had placed the burning camphor on their skin directly and had burnt the entire block of camphor as a part of religious offering. In spite of the heat generated by the burning camphor, they had allowed the complete combustion of the chemical and had sustained deep burns. Neither of the patients had sought medical attention for their palmar burns and had been brought to the hospital by their relatives. Although a psychological analysis could not been done for the first two of the patients, it was apparent that the patient had some underlying anxieties. The first patient had a congenital absence of the left hand and a hypoplastic left forearm. The second patient was unmarried and all of these patients came from a low socioeconomic background.

Management of such cases should encompass wound cover, aggressive physiotherapy to limit post burn contracture as well as psychotherapy to prevent recurrence of similar or even more fatal events. Medium-thickness split-skin graft taken from the instep area of the foot has been recommended. Split grafts harvested from the sole are less likely to contract, provide good colour and texture match to the palm and their donor sites heal with minimal morbidity.[5]

CONCLUSION

Non-suicidal self-injury is a relatively new entity and awareness among physicians of such a condition in patients with self-inflicted hand injuries would enable the family physician, general practitioner, burns specialist or the plastic and hand surgeon to institute a comprehensive treatment regimen including psychotherapeutics in their management protocol. Social awareness of such conditions and injuries would enable the affected individuals to seek professional counselling and prevention of long-term morbidity and mortality.

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