

A trio of unusual burns

P Umar Farooq Baba^{1*}, Adil H. Wani²

¹Associate Professor, ²Professor, Dept. of Plastic Surgery and Burns, Sher - i - Kashmir Institute of Medical Sciences, Srinagar, Jammu & Kashmir, India

***Corresponding Author: P Umar Farooq Baba**

Email: drumar397@gmail.com

Abstract

Burn injuries are common in Kashmir Valley due to its climatic conditions. The climate in the valley is somewhat more or less cool throughout the year with extremely cold winter months. Because of the extreme cold conditions prevailing for about eight months, the majority of people use 'Kangri' to keep themselves warm during winter months. All around the year, people also need warm water for washing, bathing, etc. Most of the population here is not so sound economically to afford newer heating gadgets as well as geysers for hot water. So people here are forced to use cheaper alternatives to keep themselves warm as well as to get hot water. That is why the incidence of burns increases during the winter months. With this background, we present three cases of unusual burns presented to our burn unit. We conclude that the cheaper but potentially dangerous means of heating gadgets should be discouraged and replaced by safer ones.

Keywords: Burn, Kangri, Scald, Electrofishing, Epileptic, Winter.

Introduction

The high incidence of burn injuries in India makes it an endemic health problem¹. Situated in the north of India is the Valley of Kashmir (the Crown of India). Here the climate is cold and dips to below zero degrees in winter months. In addition, summer is very short here and other months are also cool, requiring one or the other warming agent as well as warm clothes to keep one warm. Because of the extreme cold conditions prevailing for about 8 months and poor economic conditions of the local population, the majority of people, especially in the rural areas, use "Kangri" (traditional fire pot) to keep themselves warm during winter months. All around the year, people need warm water for washing, bathing, etc. Burn injuries are common in Kashmir due to its climatic conditions. In addition, the incidence of burns increases during the winter months. A review of studies has revealed that burns occur mostly in winter months, mainly due to poor electricity supply and, more importantly, due to the use of heating gadgets.² So the prevention should aim at improving upon the basic amenities of winter months, like proper and safe heating gadgets and relatively efficient electricity supply. Most of the population here is not so sound economically to afford newer heating gadgets as well as geysers for hot water. So people here are forced to use cheaper alternatives to keep themselves warm (Kangri) as well as to get hot water (ordinary cheaper water tanks). People nowadays use plastic tanks instead of iron ones because of low cost and easy availability. They put electric boilers into these tanks

to heat the water for washing and bathing. With this scenario, we present two cases of unusual burns plus one unusual case of electric burns presented to our burn unit.

Case 1

A young male, age 24 years, known case of seizure disorder, presented to our institution as a case of Kangri (firepot) burn the right hand (Fig. 1). While being alone in his room, he had an episode of seizure, and his right hand (holding the firepot) got into the pot while he lost his consciousness. When the other family members got into the room (casually; they did not know exactly when he had suffered the attack and for how much time the hand was in the fire pot), he was taken to the district hospital where antiseptic dressing (ASD) of the hand was done. He was put on analgesics and antibiotics; antiepileptic drugs were restarted (according to the patient, he had stopped the medication for 7-10 days, thinking that his disease got cured as he was seizure-free for last one year). He was discharged with the advice of daily change of dressings and hand elevation. After 10 days, he was referred to our institution for further management.

Case 2

An elderly male (70 years old), was brought to the Emergency Department of our Institute as a case of scald burn ~ 60% (almost whole of the right half of the body and both legs and feet). According to the attendants, they used to put the water boiler into the plastic water tank for heating the water. Due to

overheating of the water, (unknowingly) the plastic tank started melting and collapsed (Fig. 2), and the hot water spilled on the victim while he was preparing for the bath. On examination: the patient was conscious, oriented, in pain. He had burns on the right torso, right thigh and buttocks, both legs and feet, and right upper limb. The left side of the abdomen and back were having a few small patches of burns. Resuscitation was started, the patient was catheterized, and all the wounds were dressed. The patient was managed by dressings. Areas on the back, the right side of the abdomen and most areas of buttocks healed without the need for any grafting. Other remaining areas were skin grafted.



Fig. 1: Kangri Burn in an Epileptic Patient

Case 3

A boy of 11 years of age presented to us as a case of electrical burns. The boy while returning back from the school went to a stream for a bath. As soon as he dived into the water, to his utter astonishment, he suffered from electrical shock. Accompanying schoolmates called for help and he was immediately rushed to the nearby medical facility from where he was referred to our institution for further management. It was reported by his parents that a person in their locality (a village in border district of Kupwara) used to put a livewire(hooked to overlying high tension electric line) into the water so that the fish would die due to electric current and come to the surface (float) so that he could easily catch the fish.



Fig. 2: Overheated Molten Deformed Plastic Water Tank

At reception, the patient was conscious, oriented, crying in pain, hemodynamically stable having patchy burns on right wrist and forearm, left forearm and arm, left side of back, left side of face and temporal area of scalp including left ear and forehead, chest, left thigh and leg, left ankle and foot, both knees and right leg. The right hand was grossly oedematous and tense. (Fig. 3) Resuscitation was started. All the wounds were dressed. Emergency fasciotomy of the right hand was performed. Multiple debridements were performed, as is known in electric burns, followed by daily dressings till the wounds were fit for graft/flap³. Areas on right thigh leg and knee left side of the face and ear healed without any need for grafting. The other areas were skin grafted, and exposed temporal bone was covered by local transposition flap.



Fig. 3: Electric Injury (A victim of Electrofishing)

Discussion

Burn injuries are one of the most serious injuries with high morbidity that affect human population⁴. Burns ranks among the four top aetiologies of trauma all over the world.⁵ In poor developing countries like ours, in order to keep warm in winter, people still make use of older means of heating gadgets like firepots (Kangri in Kashmir valley) as it is very economical as compared to other means like centrally heated rooms, air conditioners, etc. In addition, our case (case1) unfortunately was a seizure disorder patient having Kangri in hand and being alone in the room when the accident happened. Epileptic patients run a high risk of injury during an epileptic attack and are more prone to accidental injuries than those without seizures^{6, 7}. His right hand was in fire for a long time (exact duration not known) till other family members reached the scene (unaware of the accident). This explains the deep full-thickness burn of the hand. The burns in epileptic patients tend to be deeper because of the longer duration of exposure to the burning agent due to loss of/impaired conscious level^{6, 8}. As such, every attempt should be made to refer such patients to the proper burn unit for specialized management. One report has stated a delay of referral to the specialized centre as high as above 40%.⁶ One reason for this delay in referral maybe the late presentation of the patient; secondly, there may be a delay in referral by the health care facility per se. The major cause of such events in epileptic patients is self stoppage of medication. The patients have a false notion that they are disease-free if they don't experience an attack for a few months. So they stop the medication, thinking that they are cured of the disease. Thus, the antiepileptic medication should be checked, and the dose adjusted in consultation with a neurologist⁹. Education and counseling, both the patients and their other family members, are, therefore, the only solution to the problem¹⁰. This will improve compliance with the taking of medication and guarantee that epileptics abstain from the activities that may endanger them or others while alone.

Scald injuries are common in older people¹¹. In fact, scalds are the most common type of burn. A study has noted that 8.5% of burn admissions in the USA composed of patients over 65 years of age. Furthermore, elderly burn patients (75 years and more) are more than five times likely to die from burn injury than the young burn patients who have sustained the same size of the burn. The risk of scald injuries increases with increasing age after around 70 years. It rises from 24 % (at approximately 70 years) to 40% (at 85 years and more).¹¹

The bathroom is reported as the most common scene of the scalds in the elderly population¹². Our patient (Case2) was typically an elderly male having a scald burn in the bathroom. However, the mode of injury was unique due to the sudden, inadvertent flow of overheated water from the melting of low quality-plastic water tank kept in the bathroom as a source of hot water.

The certain characteristics of the elderly population lead to a greater prevalence of burn injuries in them. The thinning of the skin with slower regeneration, failing sight/ hearing, impaired/ reduced mobility, and delayed reaction time all add to make this subgroup of the population more prone to burns.¹¹ So the burn prevention programs should aim at this population and their caregivers (young adults) to reduce the prevalence of such burns.

Leisure time and water go well together, especially for children while having fun like swimming.¹³ However, the combination of electricity and water is potentially hazardous.¹⁴ Electricity has become an inevitable, invisible companion of modern man. Commercial use of electricity has been one of the most dangerous commodities in our society.¹⁵ Our patient (Case 3) fell a victim of the electricity, that is, the crudest form of electrofishing. The person in their locality was using electricity from an overhead electric line illegally (by "hooking") for this purpose. Electro-fishing is the method of passing electricity through water to catch the fish. The "electrocuted" fish float to the surface of the water from where they are collected by fishing net easily. The basic principle is the passage of electrical current into the water via electrodes and through the fish to produce the desired effect. This facilitates the easy capture of fish by netting.¹⁶⁻¹⁸ In a conventional electro fishing boat, the boat serves as a cathode, and the electric wires from the front of the boat act as the anode. When the fish come into this electric field, their movement is inhibited, followed by stunning. Our case sustained burns as a result of a crudest possible version of electro-fishing. Balachandran et al reported eight similar cases of crude forms of electrofishing in Kerala. That is why some countries like Scotland prohibit electro-fishing except for scientific research¹⁶. In our country, illegal practice of drawing electricity from an electric line (by hooking, etc.) is punishable with imprisonment and/ or fine (Electricity Act 2003).¹⁸ Enforcement of such laws strictly as well as other social agencies and nongovernmental organizations (NGOs) should play their role to prevent such accidents. All such cases should be immediately

reported to the police for strict action against the culprits.

Conclusions and Recommendations

We conclude that the cheaper but potentially dangerous means of heating gadgets should be discouraged and replaced by safer ones. Even the government may subsidize such commodities/gadgets for the common people, keeping in view the epidemiology of the burns occurring in this part of the world. In addition, legislation should be called for to prohibit electrofishing as a criminal offense. Plus, the care for the elderly is the need of the hour (this subset of the population is increasing due to longer life expectancy). We should be well aware of the temperature of the water that is being used by them as many among them have some sort of neuropathy (what is called weak feeling sensation), and reflexes are not so quick.

Acknowledgments

We have no further acknowledgments

Consent to participate: All the relevant information was taken from patients after informed consent.

Consent for publication: All data used in publication was taken after due consent.

Competing interests: There are no competing interests. Articles used from electronic medical records are supplementary for educational purposes only.

Author contribution: All authors have duly read, edited, and contributed to this manuscript.

Source of funding

None.

Conflict of interest

None.

References

1. Atiyeh BS, Costagliola M, Hayek SN. Burn prevention mechanisms and outcomes: Pitfalls, failures, and successes. *Burns* 2009;35:181-93.
2. Pande KC, Ishak HL. Epidemiology of burns in a major referral hospital in Brunei, Darussalam. *Singapore Med J* 2012;53(2):124
3. Kasana RA, Baba PUF, Wani AH. The pattern of high voltage electrical injuries in the Kashmir valley: a 10-year single centre experience. *Ann Burns Fire Dis* 2016;29(4):259-26
4. Mazumder A, Patowary A. A Study of Pattern of Burn Injury Cases. *J Indian Acad Forensic Med* 2013;35(1):44-6
5. Aghakhani N, Nia HS, Soleimani MA, Bahrami N, Rahbar N, Fattahi Y et al, Prevalence of burn injuries and risk factors in persons older the 15 years in Urmia burn centre in Iran. *Caspian J Intern Med* 2011;2(2):240-4.
6. Josty IC, Narayanan V, Dickson WA. Burns in patients with epilepsy: changes in epidemiology and implications for burn treatment and prevention. *Epilepsia* 2000; 41(4):453-6.
7. Wirrell EC. Epilepsy-related injuries. *Epilepsia* 2006;47(1):79-86.
8. Baba PUF, Sharma SK, Wani AH. Epileptic burn injuries in Kashmir valley: Is "Kangri" a boon or bane?. *Indian J Burns* 2019; 27:95-101.
9. Akhtar MS, Ahmad I, Khan AH, Khurram MF, Haq A. Burn injury in epileptic patients: An experience in a tertiary institute. *Ann Burns Fire Disasters* 2014;17(3):126-9.
10. Jiburum BC, Olaitan PB, Otene CI. Burns in epileptics: Experience from Enugu, Nigeria. *Ann Burns Fire Disasters* 2005; 18(3):148-50.
11. Brusselsaers N, Monstrey S, Vogelaers D, Hoste E, Blot S. Severe burn injury in Europe: a systematic review of the incidence, aetiology, morbidity, and mortality. *Critical Care* 2010;14:R188.
12. Outwater AH, Ismail H, Mgalilwa L, Temu MJ, Naboth A. Burns in Tanzania: morbidity and mortality, causes and risk factors: a review. *Int J Burn Trauma* 2013;3(1):18-29.
13. Electrical Safety and Water: State of Queensland (Department of Justice and Attorney-General) 2014. www.electricalsafety.qld.gov.au.
14. Inland waters fish monitoring operations manual: Electro-fishing health and safety/ HCMR rapid fishing protocol. Hellenic Centre for Marine Research - HCMR Special Publication, Draft Version 1.79pp. Institute of Marine Biological Resources and Inland Waters (IMBRIW2013).
15. Baba PUF, Hafiz A. Electricity: The Enemy Invisible. *J Med Sci* 2019; 22(1):7-15.
16. Balachandran A, Krishnan B, John L. Accidental deaths due to electrocution during amateur electro-fishing. *J Evol Med Dent Sci* 2013; 48(2):9377-9.
17. Mahoney BD, Iverson TK, Mathews S.B. Synopsis and annotated bibliography on electro-fishing with special reference to Columbia River squawfish control April 1993; Fisheries research institute, School of fisheries: University of Washington.
18. The Electricity Act, 2003 (Act No 36 of 2003). Part XIV Section 135.

How to cite: Baba PUF, Wani AH. A trio of unusual burns. *J Surg Allied Sci* 2020;2(1):1-4.