Muhammad Saaiq*
Bushra Ashraf
Department of Plastic Surgery and Burn, Pakistan Institute of Medical Sciences (PIMS), Shaheed Zulfiqar Ali Bhutto Medical University (SZABMU), Islamabad 44000, Pakistan

*Corresponding author. Tel.: +92 3415105173
E-mail address: muhammadsaaiq5@gmail.com (M. Saaiq)

http://dx.doi.org/10.1016/j.burns.2015.04.021

Letter to the Editor

Post-traumatic stress disorder in patients with burn injuries due to sulfur mustard exposure

Dear Editor,

We read the Hobbs' article which has been recently published in May 2015 in Burns and enjoyed a lot [1]. However, we would like to add a few points about our experience to his invaluable paper.

Burning by chemical weapons as one of the most severe traumatic agents can produce post-traumatic stress disorder (PTSD). In Iraq–Iran war (1980–1988), civilian and non-civilian people were exposed to these agents repeatedly and sulfur mustard was the main chemical agent which Iraqi army used through the war [2]. Subsequently, about 34,000 Iranian victims needed follow up care due to respiratory, ocular, dermatologic and so on complications at the end of the war [3–5].

The frequency of PTSD among Iranian veterans was reported from 8% through 58% [6]. As the Iranian victims get disability compensation, it can be supposed as a secondary gain in precipitating and perpetuating risk factor in malingered and sick-rolled subjects particularly because of lacking a precise tool to approve the diagnosis [7]. Iranian researchers showed that the experience of PTSD could affect other victim's family members. This type of PTSD was called secondary PTSD [8]. Dworkin and colleagues in their study in Halabja (a city in Iraq which was chemically attacked by Iraqi army) showed that the female gender and the elderly people were more likely affected by PTSD than the others [9]. Considering Hashemian and colleagues' study, there were a high level of comorbidities between PTSD, anxiety and depression. They also stated that the intensity of exposure to SM was associated with sustainability of PTSD [10].

Authors' contributions

1. Dr. Seyed Mansour Razavi designed the idea, drafted the paper and approved the version to be published.
2. Dr. Payman Salamati designed the idea, revised the paper critically and approved the version to be published.
3. Dr. Reza Rostami designed the idea, revised the paper and approved the version to be published.

Conflict of interest

None.

Role of the funding source

None.

Ethics committee approval

The paper has been prepared in accordance with the rules of the ethical review board of Tehran University of Medical Sciences.

REFERENCES

[1] Hobbs K. Which factors influence the development of post-traumatic stress disorder in patients with burn injuries? A systematic review of the literature. Burns 2015;41(May (3)):421–30. http://dx.doi.org/10.1016/j.burns.2014.10.018 [Epub 2014 Nov 28].
[2] Razavi SM, Salamati p, Karbaksh M. Preventive measures against the mustard gas: a review. Med J Islam Repub Iran 2013;27:83–90.
[3] Razavi SM, Salamati p, Amini Harandi A, Ghanei M. Prevention and treatment of respiratory consequences induced by sulfur mustard in Iranian casualties: a review. Int J Prev Med 2013;4:383–9.
[4] Razavi SM, Salamati p, Feizi S, Javadi MA. Mustard gas-induced ocular injuries: a review of manifestations and managements. Iran J Ophthalmol 2012;24:11–8.
[5] Razavi SM, Ghanei M, Salamati P, Safiabady M. Long-term effects of mustard gas on respiratory system of Iranian veterans after Iraq–Iran war: a review. Chin J Traumatol 2013;16:163–8.
[6] Razavi SM, Negahban Z, Pirhosseinloo M, Razavi MS, Hadjati G, Salamati P. Sulfur mustard effects on mental health and quality of life: a review. Iran J Psychiatry Behav Sci 2014;8:11–21.
[7] McNally RJ, Frueh BC. Why are Iraq and Afghanistan War veterans seeking PTSD disability compensation at unprecedented rates? J Anxiety Disord 2013;27:520–6.
[8] Ahmadi Kh, Reshadatjoo M, Karami GR, Anisi J. Evaluation of secondary post traumatic stress disorder in chemical warfare victims' children. J Mil Med 2010;12:153–9.
[9] Dworkin J, Prescott M, Jamal R, Hardawan SA, Abdullah A, Galea S. The long term psychosocial impact of a surprise chemical weapons attack on civilians in halabja, Iraqi Kurdistan. J Nerv Ment Dis 2008;196:772–5.
[10] Hashemian F, Khoshnood K, Desai MM, Falahati F, Kasl S, Southwick S. Anxiety, depression, and posttraumatic stress in Iranian survivors of chemical warfare. JAMA 2006;296:560–6.

Seyed Mansour Razavi
Department of Community Medicine, Faculty of Medicine, Tehran University of Medical Sciences, Tehran, Iran

Payman Salamati*
Sina Trauma and Surgery Research Center, Tehran University of Medical Sciences, Tehran, Iran

Reza Rostami
Psychology and Educational Department, Psychology Faculty, University of Tehran, Tehran, Iran

*Corresponding author at: Sina Trauma and Surgery Research Center, Sina Hospital, Hassan Abad Square, Imam Khomeini Avenue, Tehran, Iran. Tel.: +98 21 66757001; fax: +98 21 66757009
E-mail address: psalamati@tums.ac.ir (P. Salamati)
razavy@tums.ac.ir (S. Razavi)
rezaros@gmail.com (R. Rostami)

http://dx.doi.org/10.1016/j.burns.2015.05.026

Letter to the Editor

Cryogen spray equipped alexandrite laser: Comfort for patients – Chemical hazard for professionals

Dear Editor,

We read with great interest the manuscript entitled "Cryogenic burns from intentional use of aerosol spray in children: An emerging phenomenon". Cryogenic burns are extremely uncommon except for occupational exposure to pressurized ammonia or liquid nitrogen in industrial settings as reported by Stefanutti et al. [1]. More accessible chlorofluorocarbon cryogenic agents such as Freon had been widely used in refrigerators and air conditioners before its use was restricted. Still Freon induced skin injuries are also not common [2]. Cryogenic agents are used for medical purposes as well, particularly for their cooling effect or as a propellant. We would like to point out the overlooked chemical hazard potential of cryogenic agents in medical settings through an unusual frostbite injury arising from cooling system of an alexandrite laser.

Long pulsed 755-nm alexandrite laser is one of the most commonly used tools in the treatment of hypertrichosis. Alexandrite lasers are equipped with a dynamic cryogen spray cooling device to minimize skin damage during hair removal. Cryogen spurt also ease the pain of laser hair removal and ensure the patient comfort.

The cryogen of choice for most of the alexandrite lasers equipped with spray cooling device is norflurane [3–5]. Norflurane is also named as $C_2H_2F_4$, R-134a or 1,1,1,2-tetrafluoroethane. Norflurane is a haloalkane inert gas used as a refrigerant for commercial refrigeration with a boiling point of −26.3 °C at atmospheric pressure. It is also used as a propellant for inhaler drug delivery. Norflurane is commercially available as a liquid in pressurized cylinders. Liquid norfluorane absorbs a high amount of thermal energy from the environment during its evaporation at atmospheric pressure. As a consequence the temperature at the contact surfaces significantly decrease as the norflurane evaporates [6]. Cryogen spray to human skin can reduce the skin surface temperature to −30 °C. The cryogen spurt duration, intervals between spurts and laser pulse are controlled electronically

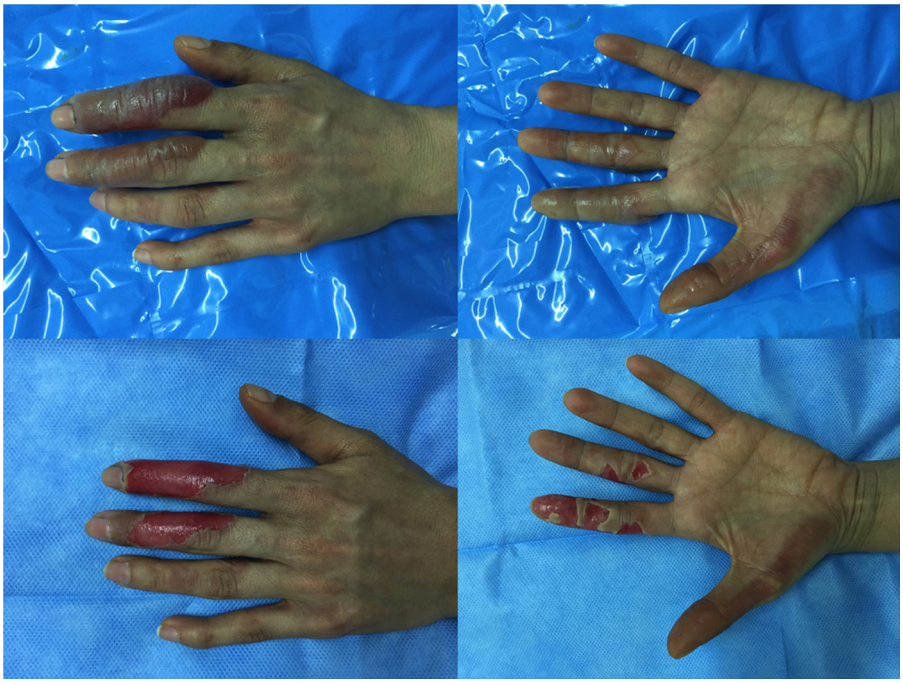

Fig. 1 – Frostbite injury of the left hand following norflurane exposure. Upper row: initial presentation. Lower row: after the removal of bullae.