Treatment of tar burns: two case reports

Sevdegul Karadas, Hayriye Gönüllü, Mehmet Resit Öncü, Hatice Kara, Hüseyin Baltacioglu

Abstract

Hot tar burns are still a challenging clinical form because the removal of tar is very difficult for the emergency physician and there is no specified appropriate agent for the removal of tar. In this study, two patients with hot tar burns who were treated with diesel, sunflower oil and mayonnaise are presented.

Keywords: Tar, Sunflower oil, Mayonnaise.

Introduction

Tar is a commonly used material especially in areas such as surfacing roads, tiling roofs and waterproofing cars.[1] Tar can be obtained using dry distillation from coal, stones, and various kinds of wood.[2] The boiling point of paving tar is 140°C, thus skin burns from tar may be severe and deep.[1,3]

From various studies it is reported that occupational burns account for 10-45% of all burn events.[4,5] Tar burns constitute 60.3% of all chemical burns[6] whereas, of all burn cases only a small proportion are from hot tar.[1]

Tar burns usually are occupational in nature and are observed mostly in male patients.[6] In the treatment of hot tar burns it is important to restrict tissue damage and prevent the further spread of the tar.[7] However, in the emergency department (ED) it may be difficult to remove tar without additional tissue loss due to the dense structure and high temperature of the tar. In the literature many substances like sunflower oil and butter have been mentioned being used to remove tar from the affected area.[1] Here two cases of a hot tar burn treated with diesel, sunflower oil and mayonnaise are presented.

Case Report

Case 1: In August 2013, a 23-year-old man, paving worker was injured by hot tar which fell from a truck splashing his arms and anterior chest wall. He was admitted to the ED 30 minutes after the event. Before he arrived at ED he had applied cold water to the area affected by the tar. On admission to ED, his vital signs were normal. His physical examination showed that his upper extremity and anterior chest wall were covered with tar (Figure-1A). In ED, initially diesel was used for reducing thick tar layer. Then sunflower oil was utilized to remove the remaining tar. First-second degree burns were shown in his upper extremity (Figure-1B). He was then treated for second-degree burns for 2 weeks.

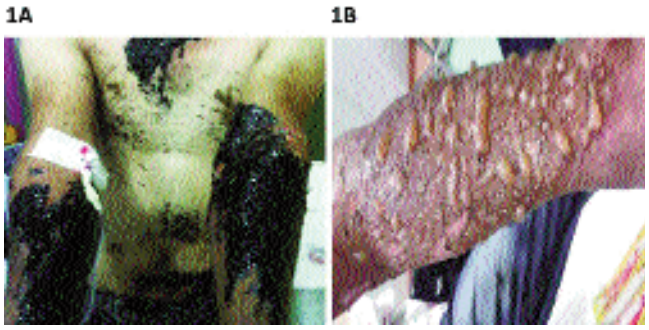

Figure-1: A) Image covered with tar. B) Image without tar.

Figure-2: A) Image covered with tar. B) Image of 1-2° burns areas cleaned from tar.

Case 2: In October 2013, a 45-year-old man, worker had hot tar splashed on his face from a truck. He was admitted to our ED 20 minutes after the event. On admission, his

Yuzuncu Yil University, School of Medicine, Department of Emergency Medicine, Van, Turkey.
Correspondence: Hayriye Gonullu. Email: drhayriyegonullu@gmail.com

vital signs were normal. A small area of his face was covered with tar (Figure-2A). In ED, his face was successfully cleaned with mayonnaise (Figure-2B).

Discussion

Hot tar burns are still a challenging clinical form of thermal injury since the removal of tar is very difficult for the emergency physician and it is still not clear which are the appropriate agents for the removal of tar.[1]

In a 2008 study related to chemical burns conducted in Iran Maghsoudi et al, stated that chemical burns, accounting for 2.4% of the total admissions and of these tar burns ratio was 60.3%. Tar burns were found to be common among paving workers in this study.[6] In the same study, the male to female ratio was 10 to 1 and the mean age was 35.3.[6] In both the presented cases victims were male paving workers at 23 & 45 years of age.

In another study, it was reported that hot tar injuries constituted 1.4% of all admissions to Grady Memorial Hospital Burns Unit in Atlanta and 41% of the cases needed surgical management.[8] Stratta et al,[3] stated that early excision and grafting may be required in some cases. Hot tar burns are generally localized on the hands and upper limbs.[8] In this study, the two cases involved the hand, upper limb and face and the hot tar was removed by using non-surgical procedures.

The mechanisms of injury caused by tar include cauldron explosion, falling from a height, trucks rolling over, spillage from buckets and industrial accidents.[3] In the presented cases exposure to tar was falling from a truck.

The debridement of tar from the affected tissue without support substances is painful and relatively ineffective.[1] In the literature, butter, sunflower oil and baby oil have been recommended for the removal of hot tar.[6,7] In addition, other agents such as alcohol, acetone, kerosene, ether, gasoline and aldehydes have been used but these may produce systemic toxicity through absorption.[1,7] A study conducted in Turkey by Türegun et al,[1] reported four cases of tar burns where the tar was removed by using sunflower oil soaked gauzes on the affected parts. Tar is sterile because of the high temperature but the skin is not[1] hence, colonization of the wound from the surrounding injured skin may occur. First, diesel was used because sunflower oil did not clear all the tar in case 1. Later usage of sunflower oil soaked gauzes on the affected parts was started where the tar was removed painlessly in 20 minutes. In the second case, tar was removed easily by using mayonnaise. No surgical intervention was needed for our patients.

Conclusion

Thus the use of sunflower oil and mayonnaise for removing tar is recommended more over. If sunflower oil and mayonnaise are insufficient for removing a thick layer of tar, then the use of diesel is suggested.

References

1. Türegün M, Oztürk S, Selmanpakoglu N. Sunfloweroil in thetreatment of hot tar burns. Burns 1997; 23: 442-5.
2. Paghdal KV, Schwartz RA. Topical tar: backtothefuture. J Am Acad Dermatol 2009; 61: 294-302.
3. Stratta R J, Saffle JR, Kravitz M, Warden GD. Management of tar andasphaltinjuries. Am J Surg 1983; 146: 766-9.
4. Rossignol AM, Locke JA, Boyle CM, Burke JF. Epidemiology of work-related burn injuries in Massachusetts requiring hospitalization. J Trauma 1986; 26: 1097-101
5. Smith GS, Wellman HM, Sorock GS, Warner M, Courtney TK, Pransky GS, et al. Injuries at work in the US adultpopulation: Contributions to the total injury burden. Am J Public Health 2005; 95: 1213-9.
6. Maghsoudi H, Gabraely N. Epidemiology and outcome of 121 cases of chemicalburn in East Azarbaijanprovince, Iran. Injury 2008; 39: 1042-6.
7. Juma A. Bitumenburnsandtheuse of babyoil. Burns 1994; 20: 363-4.
8. Renz BM, Sherman R. Hot tar burns: 27 hospitalizedcases. J Burn Care Rehabil 1994; 15: 341-5.