

Coal Tar Burns: Our Experience

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Abstract

Burns due to contact with hot coal tar are challenging as it is very difficult to remove and there is no specified appropriate agent for the removal of tar. Hot tar burns usually occur as occupational hazard. This is a case series of our experience in treating 6 patients who sustained hot tar burns. Patients were treated with diesel, butter and Vaseline.

Keywords: Tar; Diesel; Butter; Vaseline.

Introduction

Tar which is obtained using dry distillation from coal, stones, and various kinds of wood is commonly used in areas such as paving roads.^{1,2} The boiling point of paving tar is 140°C, thus when it comes in contact with skin leads to severe and deep burns.³ Thus in the treatment of hot tar burns it is important to restrict tissue damage and prevent the further contact with tar.⁴ In the literature many substances like diesel, sunflower oil and butter have been mentioned being used to remove tar from the affected area.¹ This study highlights the details of six cases of a hot coal tar burns treated with diesel, butter and Vaseline.

Materials and Methods

The study was conducted in a tertiary care burn

center in India. All the cases of coal tar burns who reported on the same day are included in the study. The study highlights the role of various methods of removal of coal tar, treatment and outcome. The details of cases include history of sustaining coal tar burns when the bus they were traveling hit a crusher with molten tar and patients accidentally came in contact with the molten tar. Following are the details of cases:

Case 1: A 65-year-old man came with coal tar on his both feet. On presentation, his vital signs were normal. Physical examination showed that his both feet with distal third of legs were covered with tar. After starting IV resuscitative fluids Vaseline was applied on the coal tar covered areas.

Case 2: A 25-year-lady came with coal tar on her both feet, both hands and left thigh. On admission, her vital signs were normal and after starting IV resuscitative fluids butter was applied on the coal tar covered areas including her left thigh.

Case 3: A 32-year-old man sustained coal tar burns on his both feet and both hands. After starting IV resuscitative fluids diesel was applied on the coal tar covered areas.

Case 4: A 30-old-man year man came with coal tar on his both feet over which butter was applied.

Case 5: A 35-year man, who was injured by hot tar in this incident, came with coal tar on his both feet. He also gave history of jumping from 18 feet height after burns. On admission, his vital signs were normal. His physical examination showed that his both feet were covered with tar with pelvic

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compression test positive. He was also found to have pubic rami fracture and L1 vertebra fracture. After starting IV resuscitative fluids diesel was applied on the coal tar covered areas.

Case 6: A 60-year-old man, sustained coal tar burns on his both feet and both hands over which Vaseline were applied. He was a known case of pulmonary tuberculosis and incidentally found to be HBsAg positive.

Results

Patient details are summarized in Table 1.

Burns on which Vaseline and butter was applied took more time for removal of layer of tar, about 15 minutes more, compared to diesel. Patients, in whom diesel was used, complained of more burning sensation in comparison to patients treated with butter or Vaseline. Overall healing time was same irrespective of substance used for removal of tar.

Table 1: Summary of patient details

S. No.	Name	Age (years)/ Sex	% of Burns	Depth of burns	Time lag	Operative procedure	Duration of hospital stay	Outcome
1	Magaboop Basha	85/M	10% Vaseline applied	II degree deep	5 hr	Nil	1 day	Lost to follow-up
2	Ranjini (Fig. 1-3)	25/ F	20% Butter applied	II degree deep	5 hr 30 min	Nil	20 days	Discharged with remaining raw area of 3%
3	Thennarasan	32/M	15% Diesel applied	II & III degree deep	4 hr	Yes Debridement + SSG of foot	30 days	Discharged with remaining raw area of 2% on dorsum of feet
4	Murugan (Fig. 4-6)	30/M	4% Butter applied	II degree deep	6 hrs	Nil	20 days	Discharged with completely healed burns
5	Karmegam	35/ M	7% Diesel applied	II degree deep	6 hr	Nil	1 day	Not known
6	Annamalai	60/ M	13% Vaseline applied	II & III degree deep	7 hr	Nil	25 days	Discharged with remaining raw area of 5%



Fig. 1: Case 2: Butter applied on coal tar burns.



Fig. 2: Case 2: Immediately after removal of tar.



Fig. 3: Case 2: After 20 days.



Fig. 4: Case 4: After cleaning with diesel.



Fig. 5: Case 4: After skin grafting.



Fig. 6: Case 4: Hand burns healed completely with conservative management.

Discussion

Tar is composed of paraffinic and aromatic hydrocarbons and heterocyclic compounds containing sulfur, nitrogen and oxygen, and becomes a liquid when heated to 93°C. However, for occupational use it is heated to more than 232°C.⁵ The tar adheres to the skin and continues to transfer heat to cause a progressive thermal burn which may lead to II and III degree deep burns. Tar solidifies and forms an occlusive barrier over the skin, favoring bacterial proliferation underneath leading to infection. Primary management of a tar burn involves early removal of the tar but manual debridement of solidified tar causes removal of underlying viable skin.^{6,7} In literature many methods are mentioned for removal of tar, including the use of household butter, sunflower oil, olive oil, baby oil, and mayonnaise. Liquid solvents such as kerosene, gasoline, acetone and alcohol have been mentioned but can damage the tissues and produce systemic toxic effects if they get absorbed.⁶

At present polysorbate appears to be the method of choice as it is less painful and less destructive to the viable tissue, more water soluble and easily washable and can emulsify the tar in a shorter time. But it is not readily available in emergencies. In this case series polysorbate was not available in emergency, so readily available Vaseline, butter and diesel were used.

Conclusion

Vaseline, butter and diesel can be used for removing tar. With diesel it is possible to remove tar faster, compared to Vaseline and butter. If Vaseline and butter are insufficient for removing a thick layer of tar, then the use of diesel is suggested.

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