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Stuck in a Bind: A Case Report of Occupational Tar/Asphalt Burn

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Abstract:

- ***Aim & Background:***
  Tar is a combination of condensable hydrocarbons, typically consisting of oxygen & complex polyaromatic hydrocarbons [PAHs].

- ***Case Description:***
  A 28/male brought to ER at approximately 3.00 PM with A/H/O Accidental tar injury to the left leg above the ankle, the injury occurred at 2.30 PM near Madagadipet when the patient accidently dipped into a container carrying hot tar.

- ***Conclusion:***
  DENATURATED ALCOHOL [EtoH] & MINERAL SPIRITS are the effective solvents for removing adherent tar.

- ***Clinical Significance:***
  Immersion of left leg into cold water saline for 15 mins followed by wash with cold saline followed excision of free edges of tar slowly without any injury to skin.

Keywords: *Tar/Asphalt; DENATURATED Alcohol; Cold Slaine.*

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I. INTRODUCTION

Tar is a combination of condensable hydrocarbons, typically consisting of oxygen & complex polyaromatic hydrocarbons [PAHs]. [Or] In a technical context, the organic contaminant with more than 78 of molecular weight. Eg: [Benzene with molecular weight of 78].

II. CASE DESCRIPTION

A 28/male brought to ER at approximately 2.45 PM with A/H/O Accidental tar injury to the left leg above the ankle, the injury occurred at 2.30 PM near Madagadipet when the patient accidently dipped into a container carrying hot tar, on arriving patient was conscious, oriented, arriving vitals are PR: 124/min, BP: 120/70 mmhg, spo2: 99 % in RA, CBG: 118 mg/dl, temp: 97.6 F, N/K/C/O DM, SHTN, B.ASTHMA, SEIZURE DISORDER.

III. DISCUSSION

This case is classified as an occupational tar/asphalt burn. A unique and dangerous aspect of tar is its high heat capacity, known as the *'thermal sink effect'* unlike hot water, which cools quickly upon contact, tar retains heat for a prolonged period. As it solidifies on the skin, its remains in constant contact leading to Deep tissue damage, due to prolonged thermal exposure, Hydrocarbon toxicity resulting from systemic absorption of chemical. *Removal techniques and challenges;* solvent efficacy is a critical concern, due to the specialized nature of these injuries, many emergency and dermatological departments do not routinely stock the necessary lipophilic solvents. Manual removal without proper agents can cause further mechanical trauma to the underlying tissue. *Preventative measures & recommendations;* the necessity of protective gear in environments where hot containers are handled, the importance of having cool – down station, immediate access to cold water at job sites, first aid kits in road construction that specifically include lipophilic solvents or mineral oil, readily available at job sites near Madagadipet or similar industrial areas.

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IV. CONCLUSION

DENATURATED ALCOHOL [EtoH] & MINERAL SPIRITS [e.g. kerosene, super diesel, acetone, or any form of alcohol] are the effective solvents for removing adherent tar, but these can cause irritation and systemic toxicity through injured skin. Household items like mayonnaise, baby oi, butter, medicated cream like Neosporin, petroleum jelly that act as non-toxic lipophilic agents can also be used as solvent to dissolve tar. In hospital setting, the primary management includes applying sudden cooling to tar/ asphalt to harden it. It helps stop the inciting [Burning] process and dissipate heat from the skin. In case of severe injury, excision and grafting of the affected area is recommended to ensure proper healing. Do not remove solidify tar/asphalt forcefully to avoid further tissue damage.

- *Clinical Significance:*

Patient was immediately started on IV pain medications, INJ. MORPHINE 10MG IV STAT, Immersion of left leg into cold water saline for 15 mins followed by wash with cold saline followed excision of free edges of tar slowly without any injury to skin.

Fig 1 On Presenting to ER.

Fig 2 Immersed in Cold Saline.

Fig 3 Excision of Tar/Asphalt Free Edges

Fig 4 Removing Free Edges.

Fig 5 After Removal of 80 - 90 % of Tar.

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Fig 6 Almost 90% of Tar Removed

After removing almost 90% of tar/asphalt patient was obtained with a dermatology opinion for 1st degree burns followed patient shifted to burns ward for further management. Patient got discharged after two days of observation with conservative treatment.

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