

Interesting Case Series

Topical Foot Injury

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Figure 1. Dorsum of left foot.



Figure 2. Close-up view of affected foot.

CLINICAL HISTORY

A 34-year-old African American man presented to the hospital after accidental spillage of floor stripper onto his left foot. He allowed his foot to remain exposed for 3 hours. When he arrived home and removed his boot and sock, he noticed the skin of his forefoot sloughing. Physical examination revealed a painful well-demarcated lesion on the dorsal aspect of the foot as demonstrated in the Figures 1 and 2. Medical history was notable for type 1 diabetes, renal insufficiency, and hypertension.

NEXT

QUESTIONS

- 1. What is the most likely diagnosis?**
- 2. What is the underlying pathophysiology of this condition?**
- 3. Which special circumstances regarding this lesion should be taken into consideration?**
- 4. How should an injury of this nature be treated?**
- 5. What are the consequences if this lesion is ignored or treated inappropriately?**

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DISCUSSION

On the basis of the history, this is a chemical burn. Although these injuries are rare (3% of all burns), approximately 30% of burn deaths are due to chemical injuries. This injury is significant because of its location and its potential morbidity if not treated properly.

All burns, whether chemical or thermal, injure through denaturation of proteins. Treatment depends upon identification of specific agent exposure and this can be found in the Materials Safety Data Sheet readily available on the Internet. Most household cleaners, specifically floor strippers, are alkaline in nature. Alkalis cause liquefactive necrosis, allowing the alkali to penetrate deeper into the injured tissue. This is in contrast to acids, which cause coagulative necrosis and are thus more readily contained in the superficial layers of the skin.

The thinness of the skin over the dorsal surface of the foot combined with the tendency for deep penetration of the agent results in a third-degree burn.

Treatment of the burned foot presents a challenge. Initial management consists of irrigation with copious amounts of water and protection with a moist dressing. The wound will require excision and skin grafting, preferably with split-thickness autograft. If a good vascular bed is unavailable or bare tendons are exposed, other means of reconstruction can be considered, including microsurgical flap repair or dermal analogs such as Integra.

The wound is unlikely to heal with conservative treatment and may be further complicated by cellulitis and invasive burn sepsis. This could prove critical given the history of renal failure and diabetes. Delay in surgery and poor healing may lead to scarring and contractures of the toes. This typically produces an extension deformity at the metatarsophalangeal level and abnormalities of gait.

REFERENCES

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