Corona, Lime, Sun, Rash: A Case Report of Severe Phytophotodermatitis in an Active Duty Soldier

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ABSTRACT Dermatological complaints constitute a large portion of patient visits to both emergency departments and military clinics. Proper assessment to separate the benign diagnoses from life-threatening may prove challenging based on seemingly non-specific history and physical examination. Similarly, reflexive specialty consultation may delay treatment and overload the health care system. Phytophotodermatitis is caused by contact with sensitizing agents, including lime juice, which triggers localized skin reactions when exposed to ultraviolet A light. The resulting progression of erythema, edema, pain, and non-pruritic skin lesions presents a unique pattern limited to the area of initial psoralen contact. This uniquely limited pattern coupled with specific historical context provides evidence for diagnosis. We highlight the case of a 24-year-old otherwise healthy female returning from a leisure trip to Mexico with progressive worsening of erythematous bullae limited to her hands and wrists bilaterally, ultimately attributed to phytophotodermatitis from lime wedge exposure in her alcoholic beverages, commonly referred to as ‘Mexican Beer Hand.’ Despite the severity of her initial appearance, her symptoms resolved without complication from limited supportive care.

INTRODUCTION
Dermatological complaints are a primary reason for evaluation by both civilian and military medical providers, accounting for up to 12% of all emergency department (ED) visits and 20% of military treatment facility visits.1–4 Lack of known exposures and non-specific symptom patterns challenge clinicians to distinguish benign from serious causes sometimes confounded by limited history and variable physical exam findings. Dermatological consult can slow patient throughput or prompt unnecessary transfer and strain resources to evaluate these conditions. While case reports and limited narrative reviews describe phytophotodermatitis, this condition is rarely described in military medicine, and difficult histories and inconsistent presentations continue to perplex clinicians with delayed diagnoses given the severe appearance and wide differential concerns ranging from non-accidental trauma to Stephens–Johnson Syndrome.5–10

CASE
A 24-year-old otherwise healthy active duty female presented to the ED for atraumatic onset of bilateral hand and wrist pain and redness for 1 day with acute swelling and blistering over the previous 8 hours. She denied a history of similar symptoms and reported returning the day prior to her ED presentation from a recreational 4-day trip to Mexico. While on vacation, she spent most of her time at the beach and pool, including socially drinking alcohol, but otherwise denied any significant activity using her hands or other known or suspected toxic or seawater exposures. On the day of her departure from Mexico, the patient noted mild redness in the area, but denied any wounds, ulcerations, or other lesions. She attributed the redness to uncomplicated sunburn, although she noted her arms and legs were likewise exposed to sunlight without any symptoms. She denied itching, bleeding, drainage, fevers, chills, night sweats or numbness, tingling, or weakness in the affected extremities. She denied the use of any topical or oral agents to treat her symptoms prior to departure from Mexico, the patient noted mild redness in the area, but denied any wounds, ulcerations, or other lesions. She attributed the redness to uncomplicated sunburn, although she noted her arms and legs were likewise exposed to sunlight without any symptoms. She denied itching, bleeding, drainage, fevers, chills, night sweats or numbness, tingling, or weakness in the affected extremities. She denied the use of any topical or oral agents to treat her symptoms prior to presentation. On initial evaluation, the patient had an elevated heart rate of 104 beats per minute but otherwise normal vital signs and was not in acute distress. Physical exam revealed significant erythema and edema almost exclusively to the dorsal aspect of bilateral fingers, hands, and wrists, with tenderness to palpation of these areas and scattered serosanguineous bullae primarily on the proximal fingers (Figs. 1-2), with an otherwise unremarkable examination. No capillary refill or other neurovascular deficits were noted. She reported significant relief from 30 mg of intramuscular ketorolac with a subsequent normal heart rate of 75 beats per minute, reassuring ED staff that her initially tachycardia was likely secondary to pain. Multiple infectious causes were considered, including Vibrio species given recent saltwater exposure. However, without reported skin injuries or hemorrhagic bullae in an afebrile, non-toxic patient, this became less likely. Dermatological consultation in the ED pursued further questioning of circumstances surrounding symptom onset, discovering the patient had drunk alcoholic beverages exclusively with lime wedges...
Phyphotodermatitis in a Soldier

FIGURES 1-2. Views of the patient’s hands and fingers with various degrees of erythema and scattered bullae along the dorsal aspects during initial evaluation in the emergency department.

During her vacation, and repeatedly spilled these drinks on her hands, without spillage elsewhere. This prompted dermatology to recommend a clinical diagnosis of phytophotodermatitis, informally referred to as “Mexican beer hand.” Dermatology prescribed 0.1% triamcinolone cream twice daily for 2 weeks and oral ibuprofen upon discharge, and the patient followed up as an outpatient with an uncomplicated recovery.

DISCUSSION
Phyphotodermatitis describes a non-immunologic cutaneous reaction initiated from topical exposure to furocoumarin-containing substances, including citrus fruits like limes (Table I). Contact with psoralen, the active substance within furocoumarins, sensitizes the skin via DNA damage, which is then exacerbated by ultraviolet A light exposure to trigger intense localized cutaneous reactions over the next 12-48 hours. Patients may describe pain or painless lesions, which can vary in surface area, location, and duration of exposure, including hyperpigmentation, erythema, vesicles, or even large bullae. Patterns may be non-specific, however most cases report a uniquely demarcated and streaky linear non-dermatomal arrangement, which may create a “dripping” pattern. Lesions are generally non-pruritic, which helps distinguish them from allergic reactions. Given presentation variability, diagnosis hinges on suspected history of sensitization from furocoumarin-containing substances proximal to symptom onset with corresponding lesions found in distinct areas of likely contact. In documented cases provoked by lime juice, usually placed in alcoholic beverages, this usually involves the distal upper extremities but can also include lesions to the lower extremities and face depending on patterns of splashing with spilled drinks and hand contact. Hence, phyphotodermatitis is colloquially referred to often as “lime dermatitis,” “margarita dermatitis,” or even “Mexican beer hand.”

For the vast majority of patients with limited skin involvement, treatment of phyphotodermatitis is almost exclusively symptomatic control, often with topical treatments for analgesia and superinfection prevention along with reassurance. Topical and oral corticosteroids may be utilized for a limited duration to minimize inflammation and irritation.

### TABLE I. Plants Associated with Phyphotodermatitis

<table>
<thead>
<tr>
<th>Plants Associated with Phyphotodermatitis</th>
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<tbody>
<tr>
<td>Capsaicin (peppers)</td>
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<tr>
<td>Celery</td>
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<tr>
<td>Carrots</td>
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<tr>
<td>Citrus—grapefruit, lemon, lime, orange</td>
</tr>
<tr>
<td>Dill</td>
</tr>
<tr>
<td>Fennel</td>
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<tr>
<td>Fig (including fig tree sap)</td>
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<tr>
<td>Mustard</td>
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<tr>
<td>Parsley</td>
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<tr>
<td>Parsnip</td>
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2 MILITARY MEDICINE, Vol. 00, Month/Month 2022
Patients discharged from the ED should be counseled on supportive skin care and to avoid repeat exposures from known sensitizing agents. Absorption of psoralen can take anywhere from 30 to 120 minutes, and therefore, phytophotodermatitis may be avoided if the area is immediately and thoroughly washed off prior to ultraviolet A light exposure. Areas with prior phytophotodermatitis reactions should be aware of likely long-term hyperpigmentation and increased photosensitivity for cosmesis and skin care. This includes avoidance of extended sunlight exposure and regular use of sunscreen.

**CONCLUSION**

Given the frequency of dermatological complaints to both military treatment facilities and EDs, all clinicians should be familiar with conditions and techniques that can help distinguish the benign rash from life-threatening, mitigating unnecessary specialty consultation. Key diagnostic findings are non-pruritic lesions and distinct spill or “dripping” patterns that appear in limited areas where historical questioning suggests contact exposure with sensitizing agents may have occurred. While large areas may indicate the need for hospital admission based on burn center criteria, the vast majority of patients require reassurance, supportive care, and future skin care recommendations for a successful resolution.

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**REFERENCES**