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Phytophotodermatitis Mimicking Jellyfish Envenomation

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Burnett JW, Horn TD, Mercado F, Niebyl PH. Phytophotodermatitis mimicking jellyfish envenomation. Acta Derm Venereol (Stockh) 1988; 68: 168-171.

Two cases of citrus juice phytophotodermatoses with long hyperpigmented macular lesions are reported. These lesions simulated those resulting from jellyfish envenomation. The diagnosis can be established by the lack of local pain or signs of envenomation, and the absence of a serological response to jellyfish venom. (Received September 29, 1987.)

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Phytophotodermatoses are infrequent summertime eruptions. The cutaneous lesions of those disorders appear as macular hyperpigmentation on photo-exposed areas having been in contact with both radiation and photoactive compounds. The eruption may be severe and hemorrhagic if the dose of the inciting chemical agent is significant. Photodermatoses have occurred after the application of perfumes containing oil of Bergamot which is contained in various cosmetics and perfumes. The active ingredients in this oil, which is prepared from an Italian citrus fruit, are furocoumarins whose action spectrum falls in the UVA range (1). The Bergamot plant is botanically related to lemons and limes which also contain juices capable of producing similar lesions (2).

Citrus fruit phytophotodermatitis usually affects the hands and exposed upper extremities of bartenders, artists or waitresses. A recent outbreak of 106 cases of phototoxic dermatitis from limes used in the preparation of pomanders at an art class in a day camp in Maryland was reported (3). We described below 2 additional cases of citrus phytophoto-

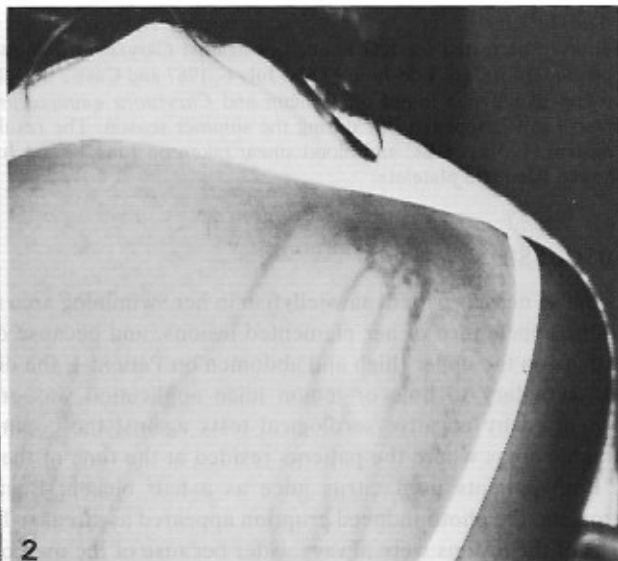


Fig. 1. Case 1. Nine-day-old linear hyperpigmentation on an extremity.

Fig. 2. Case 2. Linear hyperpigmented macules on the shoulder.

dermatitis in which the eruption consisted of crisscrossing linear macules to such an extent that it resembled the lesions resulting from coelenterate envenomation.

CASE REPORTS

Case 1

A healthy 23-year-old female was vacationing at Cancun, Mexico in mid-June 1987. On several occasions she used the juice from local small green limes as a topical hair bleaching agent in combination with solar exposure. After squeezing the cut limes on her hair the patient allowed the juice to flow down her body. She had applied liquid mineral oil often to her body below the neck in order to increase tanning. The patient repeatedly went into the ocean to bathe and to rinse off the lime juice. A day or two later, long, well demarcated interconnecting brown linear lesions appeared on her legs and lower abdomen (Fig. 1). There were several punctate petechial macular lesions on her lower abdomen and upper thighs.

Case 2

A 14-year-old healthy female, who had been swimming in the Choptank River on the Eastern Shore of Maryland in early June 1987, noted the appearance of linear hyperpigmented streaks on her shoulders and upper arms (Fig. 2). She had often used commercial lemon juice to bleach her hair in the sun.

Neither patient saw jellyfish, nor felt local pain, and both had cutaneous brown linear macular lesions of uniform diameter except for the first few centimeters (superiorly) which were distinctly wider. Neither patient used sunscreens nor protective clothing during the bleaching period. Both ladies experienced a gradual spontaneous resolution of their eruption within a few weeks.

Laboratory tests

Serum to be tested for IgG antibodies against *Chrysaora quinquecirrha* and *Physalia physalis* was obtained from Case 1 on June 23 and July 6, 1987 and Case 2 on July 20, 1987. *Physalia physalis* is the prominent jellyfish found off Cancun and *Chrysaora quinquecirrha* is the most abundant jellyfish present in Chesapeake Bay during the summer season. The results of all these antibody tests were negative (4, 5). A CBC and blood smear taken on June 17 and June 24 on Case 1 were normal and showed adequate platelets.

DISCUSSION

Because neither patient saw jellyfish in her swimming area or noticed cutaneous pain prior to the appearance of her pigmented lesions, and because of the presence of hemorrhagic lesions on the upper thigh and abdomen on Patient 1, the diagnosis of phytophotodermatitis secondary to lime or lemon juice application was entertained. This diagnosis was supported by negative serological tests against the common jellyfish found in the geographic areas where the patients resided at the time of their eruption.

Both patients used citrus juice as a hair bleach. Because the juice was applied as droplets, the photo-induced eruption appeared as streaks. The first 2-3 cm on the cephalad part of the lesions were always wider because of the method by which the drops appeared on the body. This phenomenon could mimic the appearance of lesions produced by jellyfish tentacles which can recoil as they collide with skin. The lack of urticating lesions and local or systemic signs of envenomation reinforced the fact that coelenterate envenomations were less likely.

Case 1 was particularly interesting, since she had no facial lesions in spite of the fact that the lime juice burned her eyes and could be tasted. We speculated that this fact could be best explained by the observation that she repeatedly used mineral oil, an agent which increases the cutaneous solar effect, over all her body except for the face, and she frequently went into the ocean to rinse the lime juice from her skin. Therefore, she had lime juice on her skin only for frequent short periods of time and thus the eruption was limited to areas of her skin where the lubricant augmented the effect of solar exposure.

The punctate petechial lesions present on this patient's thighs and legs (her lap) were the most acute eruption. These lesions were located in an area of limited 'run off' when the patient sprinkled her hair with juice while in a sitting position.

Serological testing by ELISA for jellyfish envenomation has been developed as a reliable tool to aid in the identification of the offending animal in cases where the patient did not see the stinging jellyfish (4-6). Positive serum titers appear within a few days and can persist for months to years. Considerable cross-reactivity between the venoms of related species can occur, and a few false-positive reactors are known. The incidence of false-negatives, while not exactly documented, is thought to be low. Both patients reported above lacked jellyfish-specific IgG on repeated testing, an observation which was consistent with their clinical presentation.

Physicians examining patients from seaside resorts should bear in mind the fact that phytophotodermatitis can produce linear inflammatory lesions which clinically mimic the cutaneous appearance of local jellyfish envenomations.

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Perforating Lichen striatus

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A case of lichen striatus with transepidermal elimination of clusters of necrotic keratinocytes is reported. On the basis of the morphologic findings, we suggest that transepidermal elimination may be a mechanism of healing in some cutaneous lichenoid eruptions. (Received July 3, 1987.)

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Lichen striatus (LS) is a fairly common dermatosis of childhood, manifested by an asymptomatic unilateral eruption of erythematous, scaly papules 1 to 3 mm in diameter, in a linear arrangement, usually covering one-third or more of an extremity. Histopathologically LS shows a chronic perivascular inflammatory infiltrate, papillary edema of varying intensity and a patchy subepidermal lymphocytic infiltrate (1, 2). Epidermal changes (exocytosis, spongiosis and parakeratosis) are considered to be a secondary event (3). Dyskeratotic keratinocytes, that represent individual epidermal cell necrosis, have been reported in over 50% of cases (4).

We report a case of LS of the upper extremity in which the proximally-located papules resolved spontaneously. Histologically, the resolving lesions showed transepidermal elimination of clusters of necrotic keratinocytes. The above findings suggest that transepidermal elimination may occasionally represent a healing mechanism of lichenoid reactions.

CASE REPORT

An otherwise healthy 9-year-old girl was seen for evaluation of an asymptomatic linear dermatosis on the left upper extremity. The cutaneous lesions had appeared on the left anterior aspect of the chest 9 months earlier. The dermatosis slowly progressed to involve the upper third of the left arm, while the initial thoracic lesions regressed, leaving hypopigmented macules.

Physical examination revealed a linear, erythematous eruption consisting of numerous white-yellowish scaly papules, 1 to 2 mm in diameter, that extended in a linear fashion over the inner aspect of the left arm. A 4 mm punch-biopsy was performed. Histopathological examination revealed a superficial and mid-dermal lymphocytic infiltrate that was rather diffuse in the papillary dermis. These changes were interpreted as consistent with LS. By serial sectioning, an adjacent papule showed a large cluster of apoptotic keratinocytes and lymphocytes, migrating in the epidermis, being eliminated superficially by epidermal perforation (Fig. 1, 2).