

Recurrent cyclic hyperkeratotic eczema after occupational alkali burn: traumatic chronic irritant dermatitis

Contact Dermatitis 2009; 60: 345–346

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Key words: alkali burn; chronic irritant dermatitis; hyperkeratotic eczema; occupational.

Background

Burns caused by strong alkalis result in impaired skin barrier function because of split proteins and lipids and saponification of the released fatty acids. The emulsifying effect of the soap formed facilitates further penetration of the alkali into deeper layer of the skin (1). Normally after an alkali burn, complete regeneration of the skin takes place within a few weeks (2). We report a patient with persistent, recurrent cyclic hyperkeratosis which developed after a single episode of an alkali burn. To our knowledge, this has not previously been described.

Case Report

A 47-year-old plumber, with no previous skin diseases and no predisposition to atopic dermatitis or psoriasis, accidentally submerged his hands into

an aqueous solution of sodium hydroxide with pH 12.5 during repair of an industrial dishwasher on June 2006. The volar side of the hands and fingers and the dorsal side of the fingers distal to the proximal interphalangeal joints felt 'gum like' and swelled immediately after the exposure. The patient rinsed his hands in tap water, followed by a rinse in 5% vinegar for a few minutes and applied cod liver oil ointment together with fabric gloves. Later, the same day erythema, erosions, ulcerations, and bleeding appeared. The following morning, he had bleeding, superficial ulcerations, palmar scaling, and onycholysis. The patient was seen at the casualty department on the local hospital where prophylactic treatment with Fusidin® (LEO Pharma Nordic, Malmö, Sweden) was initiated and his hands were bandaged.

The patient returned to work 2 days after the accident. Despite frequent use of gloves (cotton, rubber, vinyl, nitrile, and latex), the skin was occasionally exposed to possible chemical and physical irritants as well as wet work. The affected skin slowly healed. However, some months after scaling, hyperkeratotic dermatitis appeared on the palms and the volar and the dorsal sides of fingers distal to the proximal interphalangeal joints. Since then, for the past 2 years, there have been repeated cycles of scaling, painful bleeding fissures, and onycholysis, followed by 5–6 weeks of slow healing (Fig. 1). The eczema is worsening by wet work and long-time use of rubber gloves but does not heal during longer holidays.

Comprehensive patch testing with European baseline series, oil and cooling fluid series (Chemotechnique, Vellinge, Sweden), and seven different gloves from his workplace were negative as well as latex prick test. Skin biopsy showed marked hyperorthokeratosis, hypergranulosis, and hyperplasia with dilation of papillary vessels without inflammation.

Treatment with fatty emollient and topical corticosteroid therapy (Diprosalic® and Dermovat®) was started with only minor effect on the hyperkeratotic dermatitis. After 2 months, systemic treatment with acitretin 10 mg daily was started, and later, dosage was increased to 25 mg daily with no significant effect on eczema.

Discussion

This case report describes a recurrent hyperkeratotic eczema in a patient



Fig. 1. Two years after the accident, the hyperkeratotic eczema persists in cycles with worsening every second month.

with no previous skin disease after a single exposure to strong alkali. The hyperkeratotic lesions were sharply restricted to the skin areas affected by the chemical burn, and the short lag time from exposure to initial symptoms strongly suggests a causal association. The eczema has now been present for 2 years and is refractory to systemic treatment with acitretin combined with local corticosteroids and emollients. Previously, a traumatic irritant contact dermatitis with a minimum duration of 6 weeks has been described (1). This case suggests that a single exposure to a strong alkali can induce a permanent alteration in the epidermal maturation process and cause a hyperkeratotic condition of the skin (3). The patient is considering changing his job to that of a security guard, as wet work seems to worsen his eczema.

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