Contact Dermatitis 2005: 52: 142–144
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CONTACT DERMATITIS

Pustular psoriasis and the Köbner phenomenon caused by allergic contact dermatitis from zinc pyrithione-containing shampoo

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Zinc pyrithione is a shampoo ingredient that has been shown to be safe and effective for dandruff and scalp psoriasis. It is thought to decrease the cell turnover rate in hyperproliferative dermatoses such as psoriasis, and also has fungistatic and antimicrobial activity, although its exact mode of action is unknown. In psoriasis, external factors, such as trauma, infection and drugs, may provoke aggravated manifestations of psoriatic skin lesions. Rarely, irritant or allergic mechanisms are likely causes of psoriatic flare and Köbnerization. A patient had had stable psoriasis for 25 years and no any other skin disease. Within 20 days, she developed an aggravated scaly erythematous patch on the scalp, where a shampoo had been applied, and simultaneously developed pustular psoriasis on both forearms. Patch testing showed a relevant sensitization to zinc pyrithione, and we observed symptomatic aggravation by provocation testing with zinc pyrithione shampoo. We report a rare case of psoriasis aggravated by the induction of allergic contact dermatitis from zinc pyrithione after using antidandruff shampoo.

Key words: cosmetics; Köbner phenomenon; psoriasis; shampoo; zinc pyrithione. © Blackwell Munksgaard, 2005.

Accepted for publication 22 December 2004

Case Report

A 43-year-old woman presented with widespread papuloplaques with pustules first noticed 1 month previously. She had had stable psoriasis with limited numbers of psoriatic papuloplaques on the scalp and extremities for 25 years. When she visited our clinic for the first time, she had been prescribed an oral retinoid (acitretin), clobetasol propionate solution and 2% zinc pyrithione shampoo. 5 days later, she developed scaly patches and plaques with itching sensation on the scalp, trunk and extremities. After discontinuance of prescriptions for several days, she took the same medication and used the same shampoo again. However, she developed more widespread and worsening psoriatic lesions of the scalp, trunk and extremities with itching (Fig. 1a). About that time, multiple pustules were found in the lesions on the upper trunk and both forearms (Fig. 1b).

She had not experienced any allergic contact dermatitis or reactions and gave no history of contact allergy to metal or topical agents, although she had used a variety of commercial antidandruff shampoos and topical corticosteroids. Laboratory tests were all within the normal range or negative. Potassium hydroxide examination of scaling on the scalp and bacterial culture of a pustule on the forearm were both negative. 2 incisional biopsies were performed from a scaly erythematous plaque on the left elbow and a pustule on the right forearm. The former showed typical psoriasiform epidermal hyperplasia and lymphohistiocytic infiltrates in the papillary dermis, and the latter pustular psoriasis findings showed acanthosis and formation of subcorneal pustules in the epidermis, perivascular infiltrate of lymphohistiocytes and eosinophils in the dermis.

On the basis of the clinical and pathological findings, we diagnosed this as pustular psoriasis and suspected Köbnerization after allergic contact dermatitis from some component of the treatment regimen. She was placed on narrow-band ultraviolet-B-light treatment twice per week and stopped

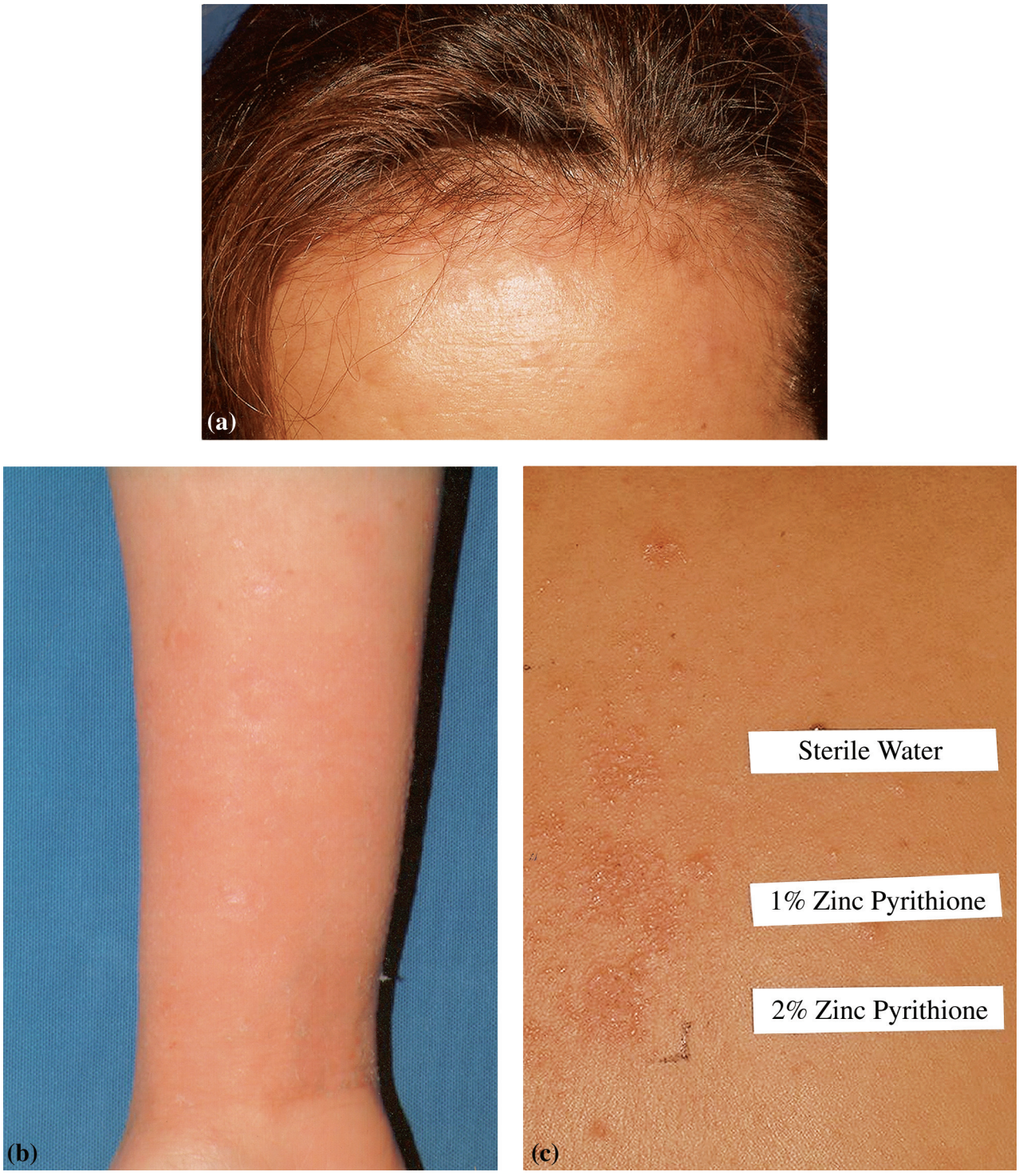

Fig. 1. 5 days after application of zinc pyrithine shampoo, the psoriatic lesions were aggravated to erythematous scaly patches on the scalp (a), multiple pustules on the right forearm (b) and positive allergic contact reaction to 1% and 2% zinc pyrithione was subsequently demonstrated by patch testing (c).

the use of all prescribed medications, including 2% zinc pyrithione shampoo. 1 month after the start of this treatment, remarkable improvement was observed both objectively and subjectively.

2 months after the overall disease activity had decreased, patch testing was done with the Korean standard series, 2% diluted zinc pyrithione shampoo, clobetasol propionate solution, 1% zinc pyrithione in petrolatum (pet.) and 2% zinc pyrithione in pet. on the back. Positive reactions (day 2/day 4) were found to 2% diluted zinc pyrithione shampoo (++/++),

1% zinc pyrithione in pet. (+/++) and 2% zinc pyrithione in pet. (+/++) (Fig. 1c). Provocation test was carried out by using same shampoo once again. 1 day later, she developed new pustules with severe itching on previously stable psoriatic lesions.

Comment

The persistence of hidden triggering factors has been suggested as resulting in the chronicity of some psoriatic lesions (1). Rarely, by provoking an allergic, irritant or photosensitive reaction in a patient, medications may be considered a potential non-specific precipitator of the Köbner phenomenon in psoriasis (2).

The Köbner phenomenon is defined as a non-specific traumatic skin stimulus eliciting a disease-specific skin reaction, especially in psoriasis. Originally, the Köbner phenomenon was psoriatic development after mechanical or traumatic injury of normally appearing skin. While some authors consider that some dermatoses like contact dermatitis cause the Köbner phenomenon, other authors have tried to implicate either infections or parasitic causes in the pathogenesis of the Köbner phenomenon (3). Potential mechanisms include alteration of polymorphonuclear leucocyte chemotaxis, diminished or enhanced synthesis of arachidonic acid metabolites, changes in the cyclic nucleotide system and modified lymphokine production.

Mild-to-moderate psoriasis is a disease that can usually be treated with topical medications. Although topical agents for psoriasis are usually well-tolerated and without severe side-effects, the diversity of topical therapies and their disparate side-effects complicate treatment planning. Moreover, some attention has been focused in psoriasis on topical drugs such as tar and dithranol with respect to their allergenicity (4, 5). Some have reported a positive correlation between patch-test results and the drug used for topical treatment of the disease (6). The evidence is conflicting on the association of allergic contact dermatitis and psoriasis. Contact dermatitis has been said to be rare in psoriasis patients because of accelerated epidermal turnover and lymphocyte functional alterations (7), although Huele et al. (8) have reported a patch-test positivity of 68% in patients with psoriasis, and some environmental allergens such as tar, nickel and thimerosal can induce allergic contact dermatitis in psoriatic patients (6).

Zinc pyrithione-containing shampoo is frequently prescribed in hyperproliferative papulosquamous diseases, especially in psoriasis and seborrheic dermatitis (9). Although the frequency of contact sensitivity to zinc pyrithione is reported to be about 0.2% in dermatologic outpatients, clinical reports of contact sensitivity in psoriasis are sparse (10). An interesting finding is that the Köbner phenomenon caused by zinc pyrithione-induced allergic contact dermatitis provoked pustular psoriasis in the present case and in a previous report (11).

This case indicates that flare of pustular psoriasis was because of the Köbner phenomenon caused by allergic contact dermatitis from zinc pyrithione and that a widespread psoriasis can be provoked by a substance present in a variety of psoriatic treatment regimens. So, an understanding of the extent to which exogenously triggered hypersensitivity to contact allergens plays a role in the natural history of psoriasis may therefore be important. We think that the incidence of the Köbner phenomenon from contact allergens in various topical products in psoriatic patients may be higher than that has previously been reported. If there is therapeutic resistance or a clinical picture such as pustules and vesicles or itching in a psoriatic patient, a thorough investigation of contact allergy must be undertaken, including patch testing with potentially relevant contact allergens.

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