

Occupational Contact Urticaria Syndrome Induced by Cefotiam Dihydrochloride in a Nurse

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We herein report a case of occupational contact urticaria syndrome induced by cefotiam dihydrochloride in a nurse. She had generalized pruritic wheals accompanied by palpitations and tachypnea during the preparation of cefotiam solution. A scratch patch test with cefotiam dihydrochloride, a major component of cefotiam ingredient showed multiple erythema and wheals within 5 minutes, accompanied by palpitations and tachypnea. No delayed type reaction was observed. Based on her clinical history and scratch test result, we diagnosed her condition as contact urticaria syndrome caused by cefotiam. (*Ann Dermatol* 15(3) 113~115, 2003).

Key Words : Cefotiam, Contact urticaria syndrome, Hand eczema

Contact urticaria refers to a wheal and flare response occurring on the application of chemicals to intact skin¹. Contact type urticarial reactions from direct contact of an antibiotic with the skin are rare. Contact urticaria syndrome caused by topical penicillin was first reported three decades ago and since then other beta lactams as well as penicillin are no longer used topically². Contact urticaria syndromes are due to cephalosporins, cefotiam dihydrochloride in particular has increased over the last 10 years in Korea and Japan². We herein report a 26-year-old nurse who had contacted cefotiam antibiotics occupationally, and experienced generalized urticaria, palpitations, and rapid shallow respiration when she was preparing cefotiam solution.

CASE REPORT

A 26-year-old nurse with hand eczema (Fig. 1A, 1B), who had been working in the hospital for over 1 year, presented with generalized pruritic wheals on her whole body, which were associated with the preparation of cefotiam solutions since March 2001. She had handled cefotiam since January 2001 as a working nurse in a surgical section, and first experienced pruritic eczema on one of her fingers during that time. A month later, it spread to all of her fingers. One more month later, she experienced finger itching and noticed erythematous wheals, which progressed to generalized wheals accompanied by palpitations and shallow rapid respiration, when a solution of cefotiam was applied to her eczematous fingers. This symptom was relieved in about two hours spontaneously or after antihistamine treatment. Based on her history, we thought that her symptoms were due to cefotiam, and determined a causal relationship between urticarial attacks and cefotiam preparation. To identify the substance, we asked the manufacturer for the ingredients of cefotiam. These included cefotiam dihydrochloride, a major component and sodium carbonate anhydride, a buffer. A 5-minute scratch test with cefoti-

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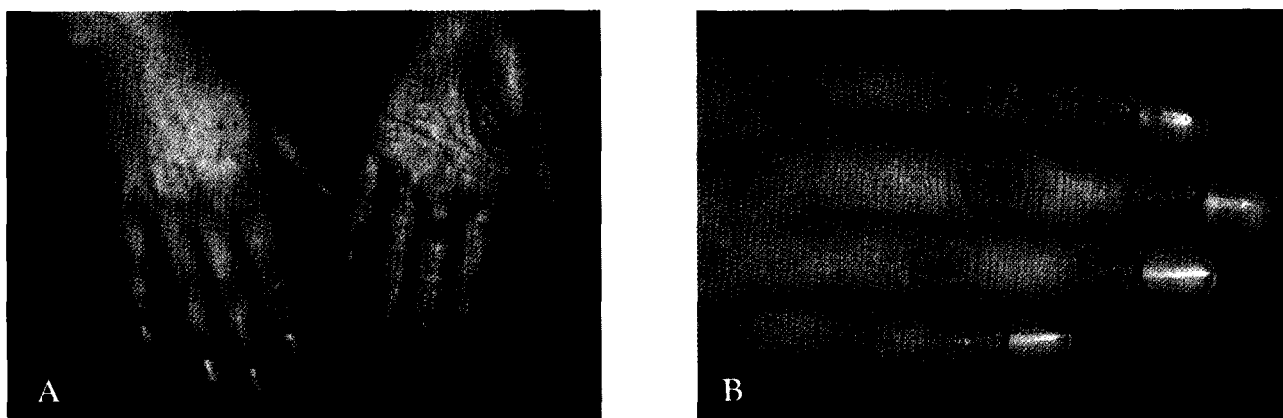


Fig. 1. (A) Pruritic eczema of all her fingers, (B) eczematous, scaly, and crusted patches on the periungual areas.



Fig. 2. A 5-min scratch test with Cefotiam dihydrochloride (1:100,000) on her back produced multiple large erythema and multiple punctate wheals.

am dihydrochloride (1:100,000) on her back produced multiple small erythema and wheals (Fig. 2). Simultaneously, she complained of palpitations and shallow rapid respiration, which were relieved by an antihistamine injection. No delayed type reaction was observed. A scratch test performed with sodium carbonate anhydride (1:100,000) showed a negative response.

Scratch tests were performed with each ingredient on 4 normal control women, and all results were

negative. After resigning her job as a nurse, she has not experienced such urticaria or eczematous lesions.

DISCUSSION

Cefotiam is a second generation cephalosporin and one of the most common parenteral antibiotics used in Korea, Japan, Singapore, and some European countries. Adverse reactions of cefotiam include contact urticaria²⁻⁶, anaphylactic shock⁷, hypoprotrobinemia⁸, and so on. It is noteworthy that among the cephalosporins only cefotiam has been reported to be a causative drug of contact urticaria syndrome^{9,10}. 19 cases of contact urticaria syndrome have been described only in Korea and Japan since 1986^{2-6,11,12}.

Interestingly, all patients had two common features that they were all nurses and had concomitant hand eczema. Although the reason for the high incidence of contact urticaria syndrome due to cefotiam in nurses is unknown, it is possible that the opportunities of direct contact to cefotiam via skin are much higher in the nurses during the preparation of cefotiam solutions. Another explanation is that cefotiam is a more potent sensitizer via the skin than other antibiotics and than via other routes⁴. Therefore, it is easier for nurses to be sensitized to cefotiam than patients, who contact cefotiam only parenterally. The second feature, the relationship between urticarial attack and hand eczema has been discussed in prior reports^{4,13}. Like those, in our patient the hand eczema was thought to be induced by cefotiam, probably via a mechanism of allergic contact dermatitis. It is also possible that

contact urticaria syndrome could occur more frequently and easily through preexisting hand eczema.

Based on previous case reports and ours, it is suggested that cefotiam can easily induce hand eczema through a delayed type hypersensitivity and contact urticaria syndrome through an immediate type hypersensitivity in the nurses who are frequently exposed to this drug.

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