

A case of selective IgE-mediated hypersensitivity to ceftibuten

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Key words: adverse reaction; ceftibuten; children; hypersensitivity; immediate allergic reaction.

Besides penicillins, cephalosporins represent the most commonly prescribed betalactam antibiotics, and is able to induce severe and sometimes life-threatening IgE-mediated reactions. Ceftibuten is a third-generation cephalosporin used for treating serious infections. Side-effects from ceftibuten consumption are not common and they can occur as a mild or severe skin rash, itching, hive, difficulty in breathing or swallowing (swelling of the lips, tongue or face) and wheezing. Until now, there are no documented reports of IgE-mediated hypersensitivity reactions to ceftibuten.

We report a 3-year-old girl who had an anaphylactic reaction within 20 min after oral administration of the second dose of Cedax® (ceftibuten) (135 mg) given for ear infection, which she had tolerated 6 months before.

Symptoms included facial flush with intensive itching in the throat and eyes, swelling of the lip, and urticarial rash on her trunk, which progressed to generalized urticaria, dyspnea, shortness of breath and wheezing. After treatment with anti-shock therapy, her symptoms were considerably reduced within 1 h and completely resolved after 6 h. The patient had no other medical history, in particular no other drug allergy, and no family history of allergic disease.

Ten months later the child was referred to our department in order to study the drug reactions and to determine safe alternative drugs for the future.

The child underwent prick and intradermal skin tests with standard concentration of penicilloyl polylysine, minor determinant mixture, penicillin G, penicillin V, ampicillin, amoxicillin, cepha-

lexin, cefaclor, cefotaxime, ceftriaxone and ceftibuten diluted in 0.9% sodium chloride and administered at increasing concentrations every 15–20 min, as previously described (1–3).

Commercially available assays for specific IgE (UniCAP System; Pharmacia, Uppsala, Sweden) were performed for penicilloyl G and penicilloyl V, amoxicilloyl, ampicilloyl, and cefaclor. Levels of specific IgE > 0.35 kU/l were considered positive.

When *in vivo* tests were negative, independently of the results of *in vitro* tests, single-blind, placebo-controlled challenges with progressively increasing amounts (0.01, 0.1 and 1.0) of the respective therapeutic doses of drugs were performed at 1 h intervals (each on a different day), as previously described (1–3).

The patient responded positively to prick testing with ceftibuten (wheel 15 × 25 mm) at a concentration of 2 mg/ml, 10 min after application. Urticarial rash appeared on her arm, face and neck, which required antihistamine administration immediately.

Prick and intradermal histamine test produced wheals with maximum diameters 5 and 10 mm respectively. Intradermal test with the above cephalosporins and semisynthetic penicillins were negative in 10 healthy control subjects, who had previously tolerated those drugs.

All assays for specific IgE and challenges were negative. Therefore, it should be emphasized that assays for specific IgE for third-generation cephalosporins are not yet commercially available.

Clinical findings and positive skin tests with ceftibuten imply that the child developed type-I hypersensitivity. The lack of cross-reactivity with other betalactams, emphasizes the role of the IgE epitope present on R1 side chain of ceftibuten molecule in inducing immediate hypersensitivity.

To the best of our knowledge, this is the first documented case of selective immediate hypersensitivity to ceftibuten with good tolerance to other betalactams.

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Reduction of transepidermal water loss by oral intake of glucosylceramides in patients with atopic eczema

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Key words: *Amorphophallus konjac*; atopic eczema; glucosylceramide; transepidermal water loss.

Intercellular lipids bilayers in the stratum corneum play important roles in water retaining properties and barrier function. Ceramides are the main components of intercellular lipids of stratum corneum (1). It

has been reported that the levels of ceramides are reduced in the skin of patients with atopic eczema with respect to healthy subjects (2). Moreover, topical application of ointment containing ceramides or their analogues was effective in the treatment of atopic dry skin in atopic eczema (3). The aim of this study is to investigate the effects of oral intake of glucosylceramides derived from

Oral intake of glucosylceramide from *Amorphophallus konjac* reduced transepidermal water loss in patients with atopic eczema.

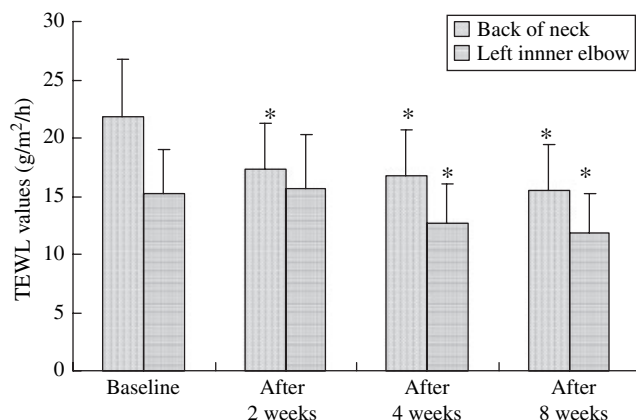


Figure 1. Effect of oral intake of glucosylceramides on transepidermal water loss (TEWL) on the back of neck and left inner elbow. TEWL (g/m²/h) values were significantly (* $P < 0.05$) decreased after intake of glucosylceramides derived from *Amorphophallus konjac* in comparison to baseline. The data are expressed as means + SEM.

Amorphophallus konjac on atopic dry skin in patients with atopic eczema. Konjac from *A. konjac* is very popular in Japan as a cooking supplement. Recently, glucosylceramides from *A. konjac* were purified, and it is now available as nourishment from Unitika Ltd. (Kyoto, Japan).

Fourteen patients with mild to moderate atopic eczema (mean SCORAD index + SEM : 15.8 + 1.4) (nine female and five male, mean age 32 years, range 20–54 years) were studied after obtaining informed consent (4). Glucosylceramides from *A. konjac* were obtained from Unitika Ltd. and quantified using the modified method of HPLC with evaporative light scattering detection (5). Glucosylceramides 0.6 mg/capsule were incorporated into soft capsules. Patients with atopic eczema took three soft capsules orally, i.e. 1.8 mg/day for 8 weeks. Our preliminary study revealed that oral intake of 1.2 mg of glucosylceramides from *A. konjac* per day significantly improved transepidermal water loss (TEWL) in healthy subjects (data not shown). Since TEWL of the patients with atopic eczema was greater than that of healthy subjects, 1.8 mg glucosylceramides per day was administered to patients with atopic eczema.

Transepidermal water loss values on back of neck and left inner elbow were measured by Tewameter (C + K Co. Ltd., Koeln, Germany) at baseline, and after 2, 4, and 8 weeks. These measurements were performed in a room controlled to

the specified conditions (temperature: 21–23°C, humidity: 45–55%) after acclimation for 45 min. Statistical analysis was performed with Student's *t*-test.

As shown in Fig. 1, TEWL values on the back of neck were significantly ($P < 0.05$) decreased after 2, 4, and 8 weeks of intake of glucosylceramides in comparison to baseline (Fig. 1). Moreover, TEWL values on left inner elbow were also significantly ($P < 0.05$) decreased after 4 and 8 weeks of the intake of glucosylceramides. After 8 weeks, SCORAD index was significantly ($P < 0.01$) decreased (mean + SEM : 13.2 + 1.2). There were no side effects in any of the subjects.

The decrease in TEWL values seems to be due to the fact that the order of the packing of stratum corneum becomes tighter during intake period. It is reported that stratum corneum's packing is disordered even in nonlesional site in patients with atopic eczema with respect to stratum corneum in healthy subjects (2). Collectively, oral intake of glucosylceramide may be effective as a complementary and alternative treatment for improvement of barrier function in atopic eczema.

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Occupational IgE-mediated allergy to a common house spider (*Tegenaria domestica*)

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Key words: IgE-mediated allergy; house spider; protein contact dermatitis.

Occupational allergy to insects such as beetles, cockroaches, locusts, moths and flies can occur in laboratory and agricultural workers (1). Farmers and greenhouse workers may suffer from respiratory allergy to storage and spider mites (2).

Airborne allergy to house spider.