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Allergy to soy in an adolescent suffering from atopic dermatitis

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Sir,

I would like to inform you about our experience with soy allergy confirmed in open exposure test in one patient suffering from atopic dermatitis. The early and late skin reaction was observed during open exposure test with soy. The severity of atopic dermatitis improved after the elimination of soy and soy products from diet.

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Generally, the diagnosis of food allergy is based on personal history, measurement of specific IgE (serum specific IgE level, skin prick tests), atopy patch tests, challenge tests (open exposure test, double - blind, placebo - controlled food challenge test - DBPCFC).

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DBPCFC always remains the golden standart in diagnosis of food allergy. ^[1]

17 year old girl was examined for severe form of atopic dermatitis at the Department of Dermatology and Venereology at Faculty Hospital in Hradec Králové, Czech republic. The diagnosis of atopic dermatitis was made with the Hanifin - Rajka criteria. ^[2] She has been suffering from atopic dermatitis and from asthma bronchiale from 3 years of age. She observed oral allergy syndrome after ingestion of tomatos, apples and kiwi from childhood. The severity of atopic dermatitis was mild till 16 years of age, the worsening occurred in last year before our examination without any triggering factors. The systemic therapy with antihistamins and the local corticosteroid therapy with local antibiotics and with emollients was used, but the effect of therapy was mild. During the examinations, sensitization was recorded according to the results of specific IgE to cow milk and peanuts, according to the results of skin prick test to celery, nuts, mustard, to pollen of birch, dermatophagoides and dust. In atopy patch tests the positive result to soy was recorded. Atopy patch tests were performed on non-lesional, non-abraded, untreated skin of the back during a remission. The technique similar to conventional patch tests has been used with 12 mm cup size with soy flour. Soy powder was dissolved in distilled water (1 g/10 ml). Grading of positive atopy patch tests reactions was similar to the criteria used in conventional contact allergy patch testing with the modifications of the European task Force on Atopic Dermatitis (EFTAD) Consensus meetings. ^[3] Only reactions from erythema, infiltration onwards were designated positive.

This patient eliminated in her diet food which caused early allergic reaction - as tomatos, apples, kiwi, nuts, mustard. We have recommended to eliminate from diet all suspected foods, which can cause the allergic reaction. According to the positive result in specific IgE to cow milk, we have performed the open exposure test with cow milk - in this test neither the early nor the late reaction was observed. The patients was informed about sensitisation to cow milk without any clinical reaction. We have decided to performe the open exposure test with soy as well, because of the positive result to soy in atopy patch tests.

Open exposure test with soy was recommended to perform in two days with three doses of examined food in the interval of 12 hours under medical supervision. One dose (=100 g soy flakes) was divided into incremental dosages given during 60 minutes at 15-minute intervals. During the first dose, early skin reaction appeared during one hour after soy ingestion. This patients felt pruritus and maculopapulous rash appeared on arms and trunk. Six hours after the ingestion of the first dose the worsening of atopic dermatitis was recorded. Because of intensive pruritus and worsening of atopic dermatitis we did not continue in this test and we concluded it as a positive reaction. We recommended to eliminate from diet soy and soy products.

Food challenges can cause three different pattern of clinical reactions to foods in patients with atopic dermatitis:

^[4] (1) Noneczematous reactions - immediate - type reactions. The clinical symptoms include cutaneous symptoms such as pruritus, urticaria and rashes and/or noncutaneous gastrointestinal or respiratory symptoms or even anaphylaxis. (2) Isolated eczematous reactions - late reactions, e.g., flare - up after hours to days. (3) A combination of noneczematous and eczematous reactions. At our study, the early noneczematous reactions was observed in this patient in exposure test under medical supervision - maculopapulous rash with pruritus appeared one hour after soy flakes ingestion and late eczematous reaction was recorded as worsening of atopic dermatitis in six hours after the first dose.

This patient did not realise the posible allergic reaction to soy, but she did not eat soy commonly. But as it is a good and cheap protein source, it may be part of a wide variety of processed foods such as meat products, sausages, bakery goods, chocolate or breakfast cereals. After the examination of food allergy this patient eliminates celery, mustard, soy, nuts and the severity of atopic dermatitis was evaluated as mild during last year.

Recently, two publications have demonstrated that in Central Europe soy allergy is another clinically relevant birch pollen-related allergenic food. ^{[5],[6]} Birch pollen-related food allergies are mainly mediated by cross reactions between the protein Bet v 1 or the profilin Bet v 2 and homologous proteins in plant food. ^[4] While the majority of symptoms of pollen-food allergy are indeed mild, such as the oral allergy syndrome, caution is necessary because systemic and severe reactions may be observed by some pollen-related food allergens (as Gly m 4 in soy). Three patients with alder/birch pollinosis who developed oral allergy syndrome (1 case) or anaphylaxis (2 cases) after the intake of soymilk have been reported and an involvement of Gly m 4 is suspected ^[7] in Japan, too.

According to the Dhar, *et al.* study, ^[8] severity of atopic dermatitis can be reduced by dietary eliminations in a subset of patients. Their study group comprised of 100 children with atopic dermatitis. They were advised to eliminate from diet milk and milk products, all kinds of nuts and nut-containing foods, egg and egg-containing foods, seafish and prawns, brinjal and soyabean for a period of 3 weeks and instead of these avoided items, they have included dal and dal products, rohu fish, chicken, and fruits. There was a statistically significant reduction in severity scores after dietary elimination alone.

Our report shows that diagnostic methods cannot be used as separated tests for the determination of food allergy

in patients with atopic dermatitis. Oral food challenge test may confirm the food allergy in patients with atopic dermatitis.

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