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Case report

Could food allergy testing be beneficial in adult patients with atopic dermatitis? Three case-reports

Faut-il pratiquer des tests d'allergie alimentaire chez des adultes ayant une dermatite atopique (DA). À propos de trois cas

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Abstract

Three patients, who suffered from moderate to severe form of atopic eczema in last years, were detailed examined in the diagnostic work-up of food allergy. The examination involved measurement of specific IgE, skin prick tests, atopy patch tests with common food allergens, and challenge tests with cow milk and wheat flour (open exposure test, double-blind, placebo-controlled food challenge test). The diagnostic hypoallergenic diet was recommended to the patients. In the course of such a diet the skin finding improved. The open exposure test with cow milk or wheat flour was positive in them, the diagnosis of food allergy to cow milk and wheat flour was confirmed with double-blind, placebo-controlled food challenge test. During the first year of diet without cow milk and wheat flour the patients were checked every 3 months, SCORAD decreased and the level of SCORAD was recorded every 3 months during last 3 years also. Two patients are usually without eczematous lesions or sometimes only with solitary lesions and suffer from dry skin. One patient suffers from mild form of atopic eczema. The role of food allergy remains controversial in older children and adult patients suffering from atopic eczema. According to our result we suggest that food allergy may play a role in pathogenesis of atopic eczema in adults.

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Keywords: Atopic eczema in adults; Food allergy; Atopy patch tests; Importance of challenge tests

Résumé

Trois adultes ayant une dermatite atopique (DA) depuis trois ans, modérée ou sévère, ont fait l'objet d'un examen complet d'une allergie alimentaire comportant : dosage des IgE spécifiques, *prick-tests* et des *patch-tests* atopiques à quelques aliments et une réintroduction du lait de vache et de la farine de blé (test ouvert, double insu contrôlé). Ces tests positifs confirmèrent une allergie à ces deux aliments. Un régime les excluant durant un an avec un suivi trimestriel du SCORAD avec une amélioration dès la première année et les années suivantes. Deux des patients eurent une disparition des lésions de la DA ou une simple lésion associée à une xérodermie. Le troisième patient n'eut qu'une discrète DA. Le rôle d'une allergie alimentaire dans la DA demeure controversé chez les adolescents et les adultes. Notre résultat laisse envisager qu'une allergie alimentaire pourrait intervenir dans la DA de l'adulte.

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Mots clés : Dermatite atopique chez l'adulte ; Aliments ; *Patch-test* atopique ; Importance des tests de réintroduction

1. Abbreviations

APT	atopy patch test
SPT	skin prick test
OET	open exposure test

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DBPCFC double-blind, placebo-controlled food challenge test
AE/DS atopic eczema/dermatitis syndrome
FEIA fluorescenc enzymatic immunoanalysis

2. Introduction

Food is closely associated with the pathogenesis of AE/DS.

The importance of food allergy in children with AE/DS was confirmed by extensive studies [1]. Food, such as cow milk or hen's egg, can directly cause flares of AE/DS, particularly in sensitised infants to 3 years of age with atopic dermatitis [1]. But 80% of them outgrow their food allergy. Inhaled allergens and pollen related foods are of greater importance in older children and adults.

The role of food allergy remains controversial in older children and adult patients suffering from AE/DS, few studies concerning the food allergy in this group of patients are available. Diagnosis of food allergy is based on personal history, measurement of specific IgE (serum specific IgE level, SPT), APTs, challenge tests (OET, DBPCFC).

DBPCFC always remains the golden standard in diagnosis of food allergy [2].

3. The patient no. 1

3.1. The description of the case

The patient, a 48-year-old man, was admitted to the Department of Dermatology and Venereology, Faculty Hospital and Medical Faculty of Charles University, Hradec Králové, Czech Republic in February 2006. The severe form of atopic eczema with impetiginization and with the transition to erythrodermia was the reason for hospitalization.

3.2. History

The history is as follows:

- family history: grand-father suffered from astma bronchiale, no other allergic or skin disease occurred in the family;
- personal history: arterial hypertension for 10 years, hypercholesterolemia, arthrosis of the knees;
- social: carpenter, a smoker from 18 to 28 years of age – 20 cigarettes per day;
- medications: betaxolol (Lokren, tablet 20 mg), fenofibratum (Lipirex tablet 200 mg);
- allergology: the patient was examined for the first time in 1999 because of skin disease-atopic eczema. The allergy only to *Dermatophagoides* in skin prick test was recorded at this time;
- dermatology: the patient suffered from dry skin from childhood. The onset of skin lesions was recorded in 1997 and the diagnosis of atopic eczema was made with the Hanifin-Rajka criteria in the outpatient department. He suffered almost permanently from eczematous lesions (redness, papules,

sometimes madidation) at the predilection sites – face, flexor localisation, back. The patient was hospitalized two times for the exacerbation of atopic eczema with impetiginisation in the year 2002 and 2004 at the Department of Dermatology, Faculty Hospital in Hradec Králové.

The therapy from the onset of atopic eczema during last 7 years consisted in systemic treatment – antihistamines, local treatment – corticosteroid therapy, local antibiotic therapy, indiferent therapy with emollients. Because of severe worsening of atopic eczema the patient was treated in the outpatient department with systemic corticosteroid therapy – methylprednisolone (Medrol, 16 mg per day) from November 2005 to February 2006. But the skin finding was not improved.

The patient in erythrodermia with impetiginisation was admitted to the third hospitalisation to the Department of Dermatology, Faculty Hospital, Hradec Králové.

3.3. The course of hospitalisation

During admission, the whole skin of the patient was affected with eczematous lesions, in flexural part with the sings of impetiginisation. Madidation on the dorsum of hand, multiple eczematous lesions on the scalp and on the face, redness with papules and oedema of eyelids were recorded. The severity of atopic eczema was evaluated with SCORAD index, SCORAD was 68 points.

Internal and neurological examinations were without pathological findings.

The basic hematological and biochemical examinations were all right.

In the systemic therapy the dose of corticosteroids was reduced and the systemic treatment with antihistaminic medication (loratadinum, Claritin 20 mg per day) continued. The local corticosteroid therapy with local antibiotics and with emollients was used. The skin finding improved during hospitalisation, but itching and redness in flexural part outlasted.

With regard to the fact that no triggering factors of exacerbations of atopic eczema were found, even if the patients recorded some worsening of atopic eczema after drinking beer, it was admitted to the research of food allergy as the possible cause of so torpid course of the disease. This examination was performed in intervals with mild symptoms of atopic eczema.

After discontinuation of antihistamines and topical steroids for at least 5 days and systemic steroids 2 months, the skin prick tests, the atopy patch tests, and the challenge tests were performed.

3.3.1. Results of examinations

3.3.1.1. The examination of total and specific IgE antibodies. The serum level of the specific IgE to the tested foods has been measured with the method of FEIA (Pharmacia CAP system, Uppsala, Sweden). The level of specific IgE higher than 0.35 U/ml was assessed as positive.

Results: total IgE 4 829 IU/ml, specific IgE was positive to these foods: egg's white 0.74, egg's yellow 0.59, cow milk 0.67, sea fish 0.67, wheat flour 0.48, rice 0.93, peanuts 0.76, hazel nuts 0.66, carp 0.60, sesame seed 5.41, mustard 0.64.

3.3.1.2. Atopy patch tests. A technique similar to conventional patch tests has been used by performing atopy patch testing – CURATEST strip (Lohmann & Rauscher International GmbH & Co.KG, Rengsdorf, Germany) with 12 mm cup size.

Results: atopy patch tests with examined fresh foods were negative (egg's white, yolk, soy, wheat flour, milk, peanuts).

3.3.1.3. Skin prick tests. Commercial food extracts Alyostal (Stallergens, France) were used for skin prick tests.

Results: no reaction to tested foods was found, the reaction to the positive control (histamin) was low.

The skin prick tests of common aeroallergens were recorded as positive to the pollen of warmwood, to the pollen of trees, to moulds, to Dermatophagoides.

3.3.1.4. The spirometry examination. FVC 54% of normal values, FEV₁ 41% of normal values, PEF 20% of normal values, MEF_{25–75} 24%. The moderate to severe disorder of ventilation only partially reversible in the test of bronchodilatation was diagnosed. The allergologist recommended antiasthmatic therapy beclometason (Ecobec 250 mg 2 × 3 breath) and salbutamol (Ventolin 1–2 breath).

3.3.1.5. The diagnostic hypoallergenic diet. The severity of atopic eczema was evaluated by SCORAD system at the beginning of the diet and then at the end of the specific hypoallergenic diet before the open exposure test and during the open exposure test until 48 h after the challenge.

The diagnostic hypoallergenic diet was recommended to the patient. In the period of 4 weeks we recommended to the patient these foods: gluten free foods, potatoes, beef, pork, and chicken meat, vegetable and fruits only after thermal modification, but parsley, celery, and seasoning were not allowed. The patient was allowed to drink only drinking water, mineral water, or black tea. SCORAD at the beginning of the diet was 52 points.

The patient recorded the symptoms of atopic eczema (the extent of involved skin, itching, sleep disorder) and potential other health problems in special tables. The skin finding improved in the course of such a diet. After 3 weeks pruritus fell back, the patient was without acute skin eczematic lesions, only mild redness in flexural sites outlasted. The patient felt better. The patient was allowed to treat himself with a low potency topical corticosteroid. No other anti-inflammatory substances, anti-histamines nor UV-therapy were applied.

Consecutively, after the elimination diet OET were performed. This test was performed during a consistent period with regard to atopic eczema.

Generally, OET takes 2 days; the first day the patient consumes the food at 8:00 a.m., the reaction is observed and in case of no response the second dose of food is consumed at 6:00 p.m. If no response results, the last dose challenge is

administered the next day at 8:00 a.m. The patient records the reaction also during the 48 h after the last dose.

The test was carried out under a medical supervision and emergency equipment was available at all times. The skin was scored by SCORAD system before the elimination diet, during elimination diet and before OET and then 24 and 48 h after OET.

The open exposure test with cow milk was positive. After administration of the first dose of 300 ml of cow milk the patient described itching, burning of eyes, and the exanthema of papules during 1 h from the administration. The worsening of atopic eczema as a new eczematic lesions at predilection sites occurred in 8–10 h after the administration of the food. The patient then eliminated the cow milk from diet. The same problems appeared after the administration of the first dose of wheat flour – in the form of pastes – after the first dose of pastes the patient recorded burning of eyes and eyelids, itching of the whole skin surface, and again the eruption of papulose exanthema at flexural parts in 8 h after the administration. The patient then eliminated the wheat flour from diet.

Because the physician and the patient recorded worsening of the atopic eczema as late reactions and itching, burning as early reactions during the test with cow milk and wheat, the diagnosis of the food allergy to wheat and cow milk was defined with more precision by a DBPCFC. DBPCFC with the use of the lyophilised food and placebo (glucose) in gelatine capsules was performed. Lyophilized cow milk and wheat flour were blinded in opaque capsules. One capsule contained 250 mg of dried food. Generally, three doses of capsules (31 capsules are in one dose) are administered at the same time as in the open challenge test, there is 23.25 g of food administered in one test. One placebo test per one food test is administered. The first dose of DBPCFC is administered under supervision of a medical doctor on an empty stomach gradually one, two, four, eight, 16 capsules with 15 min intervals. The second and the third dose are served in home setting. An early (2 h after the first dose), and later reactions are observed. The diagnosis of food allergy is confirmed if challenge with food is positive and negative with the placebo. The patient continues in elimination diet if DBPCFC is positive. If the test is negative, the tolerance to the food in diet is proved.

The diagnosis of the food allergy to wheat and cow milk was defined with more precision by a DBPCFC in this patient in this way. This test was performed at first with wheat flour. The first problems appeared during this test during the administration of the first dose in the allergological in-patient department. After the administration of seven capsules with 250 mg of wheat flour, the patient felt itching of eyes and of skin. The patient consumed the other two doses at home, but always the same reaction appeared. The test with placebo was negative. The test with cow milk was performed in the same manner. The early reaction – itching of eyes and skin – appeared within 1 h after administration of 31 capsules with 250 mg of cow milk. The patient consumed the other two doses despite of itching and the skin problems were with the papules exanthema and itching of the skin graduated. The test with placebo was negative. The diagnosis of food allergy to cow milk and wheat was confirmed

in this way. The elimination diet without wheat flour and cow milk was recommended to continue. The patient was informed about the substitution of calcium in the diet. The patient was also informed about pollen related foods and about the cross-allergy. With regard to the elevated levels of specific IgE to other foods, the patient carefully consumed these foods. New foods were introduced after an interval of 4 to 7 days. But no reaction to these foods was recorded.

The skin finding is better in this patient for a long time and improving. He suffered only from some redness in flexural localization, with dry skin. During the first year of diet the patient was checked every 3 months, the severity of atopic eczema was evaluated with SCORAD. SCORAD decreased to 20 points after the elimination diet (68 points in admission to hospitalization, 52 points before elimination diet) and this level of SCORAD is recorded every 3 months during last 2 years also.

The patient is on a diet and feels better. The FEV₁ rose to 84% of normal level during the control of spirometry.

4. The patient no. 2

4.1. The description of the case

The patient, a 45-year-old man, was admitted to the Department of Dermatology and Venereology, Faculty Hospital and Medical Faculty of Charles University, Hradec Králové, Czech Republic in December 2005. The severe form of atopic eczema with erythrodermia was the reason for hospitalization.

4.2. History

The history is as follows:

- family history: sister-atopic eczema, mother-atopic eczema, father-diabetes mellitus;
- personal history: in childhood bronchitis, asthma bronchiale not confirmed, hemorrhoids in rectum, appendectomy;
- social: electrician, non smoker;
- medications: clemastini hydrogenfumaras (Tavegyl one tablet per day);
- allergology: the patient was examined for the first time in 1979 because of atopic eczema. The allergy to Dermatophagoides, pollen, dust in skin prick test was recorded at this time;
- dermatology: the patient suffered from atopic eczema from early childhood till adolescents age. From 15 till 30 years of age he suffered only from occasional solitary lesions. The marked eczematous lesions appeared after appendectomy in 1994. The diagnosis of atopic eczema was made with the Hanifin-Rajka criteria in the outpatient department. He suffered from this time almost permanently from eczematous lesions (marked redness and papules) at the face, flexor localisation, back. The therapy of atopic eczema during last 11 years consisted in systemic treatment – antihistamines, local treatment – corticosteroid therapy, local antibiotic therapy, indifferent therapy with emollients, phototherapy

UVA. Because of severe worsening of atopic eczema in December 2005 the patient was admitted to the hospitalisation to the Department of Dermatology, Faculty Hospital, Hradec Králové.

4.3. The course of hospitalisation

The patient was admitted to hospitalisation in erythrodermia, in flexural part with the signs of impetiginisation. The severity of atopic eczema was evaluated with SCORAD index, SCORAD was 55 points.

Internal and neurological examinations were without pathological findings.

The basic hematological and biochemical examinations were all right.

In the therapy, the treatment with antihistaminic medication clemastini hydrogenfumaras (Tavegyl one tablet per day) continued. The local corticosteroid therapy with local antibiotics and with emollients was used. The skin finding improved during hospitalisation, but redness in flexural part, face and back outlasted.

Because the patient recorded some worsening of atopic eczema after food with wheat flour and celery, it was admitted to the research of food allergy as the possible cause of torpid course of the disease. This examination was performed in intervals with mild symptoms of atopic eczema.

After discontinuation of antihistamines and topical steroids for at least 5 days, the skin prick tests, the atopy patch tests, and the challenge tests were performed.

4.3.1. Results of examinations

4.3.1.1. The examination of total and specific IgE antibodies. The serum level of the specific IgE to the tested foods has been measured with the method of FEIA (Pharmacia CAP system, Uppsala, Sweden). The level of specific IgE higher than 0.35 kU/l was assessed as positive.

Results: total IgE 1 991 IU/ml, specific IgE was positive to these foods: rice 0,40, celery 1,02.

4.3.1.2. Atopy patch tests. Negative.

4.3.1.3. Skin prick tests. Commercial food extracts Alyostal (Stallergens, France) were used for skin prick tests.

Results: no reaction to tested foods was found, the reaction to the positive control (histamin) was low.

The skin prick tests of common aeroallergens were recorded as positive to the pollen of warmwood, to the pollen of grass, to the fur of cat, to Dermatophagoides and to celery.

4.3.1.4. The spirometry examination. Without pathological finding.

The same diagnostic hypoallergenic diet as it is described in the previous case with the performing of open exposure test with cow milk and wheat flour was recommended to this patient.

The open exposure test with cow milk was questionable, but DBPCFC did not confirm the food allergy to cow milk.

The open exposure test with wheat flour was positive. After administration of the first dose of wheat flour the patient described as early reaction burning of the skin and late reactions as eruption of papule exanthema at flexural parts in 8 h after the administration. The same symptoms with marked pruritus repeated after the second dose of paste. The patient then eliminated the wheat flour from diet. The diagnosis of the food allergy to wheat was defined with more precision by a DBPCFC. The first problems appeared early after the first dose, the patient felt itching of the skin and pruritus as early reactions and redness of the skin, eczematous lesions, swelling of the lip. The patient consumed the other two doses at home, but always the same reaction appeared and in addition he suffered from constipation. The test with placebo was negative. The food allergy to wheat flour was confirmed in this manner. The patient continued in the diet without wheat flour. The skin finding is better in this patient for a long time and improving. He suffered only from dry skin without eczematous lesions. The patient was also informed about pollen related foods and about the cross-allergy. With regard to the elevated levels of specific IgE to rice, the patient carefully consumed this food, but without any reaction. During the first year of diet the patient was checked every 3 months, the severity of atopic eczema was evaluated with SCORAD. SCORAD decreased to 12 points after the elimination diet (55 points in admission to hospitalization, 35 points before elimination diet) and this level of SCORAD is recorded every 3 months during last 3 years also.

5. The patient no. 3

5.1. The description of the case

The patient, a 36-year-old woman, was examined at the Department of Dermatology and Venereology, Faculty Hospital and Medical Faculty of Charles University, Hradec Králové, Czech Republic in March 2005. The severe form of atopic eczema was the reason for examination.

5.2. History

The history is as follows:

- family history: son-atopic eczema, mother-heart arrhythmia, father-tumor of kidney;
- personal history: disease of thyroid gland (struma with normal function), no other disease;
- social: book-keeping clerk;
- medications: levocetirizine (Xyzal, one tablet per day);
- allergology: the patient was examined for the first time in 1996 because of atopic eczema. The allergy to pollen, dust, soy, peanuts, celery, wheat flour, egg in skin prick test was recorded at this time;
- dermatology: the patient suffered from atopic eczema from 10 years of age at predilection localisation with mild erythema and papules exanthema. The diagnosis of atopic eczema was made with the Hanifin-Rajka criteria in the

outpatient department. The worsening of atopic eczema occurred at 22 years during the second pregnancy. She was treated at the allergology department with the hyposensitisation therapy. The patient suffered from 27 years of age from eczematous lesions at the face, flexor localisation, legs and back permanently. She was hospitalized three times for acute exacerbation of atopic eczema with erythrodermia and impetiginisation. The diet without suspicious food was recommended to the patient several times, but she interrupted mostly the diet regimen. Especially the patient noticed the worsening of atopic eczema after the ingestion of an egg. The therapy of atopic eczema during last 9 years consisted in systemic treatment – antihistamines, local treatment – corticosteroid therapy, local antibiotic therapy, indifferent therapy with emollients, phototherapy UVA. Because of severe worsening of atopic eczema in December 2005 the patient was examined at the Department of Dermatology, Faculty Hospital, Hradec Králové and the detailed examination in diagnostic work – up of food allergy was recommended. The severity of atopic eczema was evaluated with SCORAD index, SCORAD was 45 points during the first examination.

5.3. Results of examinations

5.3.1. The examination of total and specific IgE antibodies

The serum level of the specific IgE to the tested foods has been measured with the method of FEIA (Pharmacia CAP system, Uppsala, Sweden). The level of specific IgE higher than 0.35 kU/l was assessed as positive.

Results: total IgE 751 IU/ml, specific IgE was positive to these foods: egg's white 1,3 U/ml, yolk 1,05 U/ml, cow milk 1,14 U/ml, gluten 1,67 U/ml.

5.3.2. Atopy patch tests

Negative.

5.3.3. Skin prick tests

Commercial food extracts Alyostal (Stallergens, France) were used for skin prick tests.

Results: strong reaction to egg's white, yolk, soy; moderate reaction to celery, peanuts; no reaction to wheat flour and cow milk.

The skin prick tests of common aeroallergens were recorded as positive to the pollen of grass and birch, to *Dermatophagoides*.

5.3.4. The spirometry examination

Without pathological finding.

The same diagnostic hypoallergenic diet as it is described in the previous case with the performing of open exposure test with cow milk and wheat flour was recommended to this patient.

The open exposure test with cow milk was negative, but with wheat flour positive. After administration of the first dose of wheat flour the patient described as early reaction pruritus of the skin of arms and late reactions as eczematous lesions at the trunk. The same symptoms with marked pruritus repeated after

the second and third dose of paste. The patient then eliminated the wheat flour from diet. The diagnosis of the food allergy to wheat was defined with more precision by a DBPCFC. The first problems appeared early after the first dose, the patient felt pruritus of the skin and eczematous lesions as late reactions. The patient consumed the other two doses at home, but always the same reaction appeared. The test with placebo was negative. The food allergy to wheat flour was confirmed in this manner. The patient continued in the diet without wheat flour. The skin finding is better in this patient for a long time and improving. He suffered only from solitary eczematous lesions after the breaking the diet regimen and during the pollen season. The patient was also informed about pollen related foods and about the cross-allergy. With regard to the elevated levels of specific IgE to other foods, the patient carefully consumed these foods. New foods were introduced after an interval of 4 to 7 days. But only the known reaction to an egg was confirmed, no other food caused some reactions. During the first year of diet without wheat flour and egg the patient was checked every 3 months, the severity of atopic eczema was evaluated with SCORAD. SCORAD decreased to 15 points after the elimination diet (36 points before elimination diet) and this level of SCORAD is recorded every 3 months during last 3 years also.

6. Discussion

Food allergy is now recognized as a worldwide problem in westernized nations and, like other atopic disorders, it appears to be on the increase [3]. Food allergy is adverse immunologic reaction, a number of IgE-, cellular-, and mixed IgE- and cell-mediated food hypersensitivity disorders have been described.

In atopic eczema dermatitis syndrome, allergen-specific IgE antibody – bound Langerhans's cells play a unique role as nontraditional receptors [4]. Ingestion of specific foods in patients with food allergy has been shown to provoke a markedly pruritic, erythematous, morbiliform rash. A murine model of food-induced atopic dermatitis has been reported [5].

Children with atopic disorders tend to have a higher prevalence of food allergy; about 35% of children with moderate to severe atopic dermatitis have IgE mediated food allergy and about 6–8 % of asthmatic children have food-induced wheezing [6]. But 80% of them outgrow their food allergy. Inhaled allergens and pollen related foods are of greater importance in adolescents and adults. The role of food allergy remains controversial in this group of patients suffering from AE/DS, few studies concerning the food allergy in this group of patients exist. Adolescents and adults with AE/DS also react to foods, but reaction to classical food allergens such as hen eggs and cow milk are not as common as in childhood and pollen-related foods are of greater importance in adolescents and adults [7]. In one study about 45% of adult patients with atopic eczema dermatitis syndrome and birch pollen allergy were found to have worsening of their eczema within 48 h of ingesting Bet v 1 containing foods, even in the absence of noticeable immediate oral symptoms [8]. In studies with limited numbers of selected patients, it was shown that severe eczema may be worsened by foods in adulthood as well [8]. Up

to now, only one study investigated unselected adolescent or adult patients and reported about a low-frequency of food allergy in atopic eczema in this age group [9].

The reported patient n° 1 suffered 7 years with moderate to severe form of atopic eczema. He did not observe any triggering factors for exacerbations. The first allergological examination proved the allergy only to Dermatophagoides and it was considered as a reason for these exacerbations. The suspicion for food allergy was only to beer due to the patient's history. The serum levels of specific IgE to food allergens were raised mildly. No reactions to food allergens were found in skin prick tests, but the reaction to positive control (histamin) was low. Atopy patch tests with common food allergens were negative. Nevertheless, we decided to recommend the diagnostic hypoallergenic diet to the patient. Because there was an improvement of the symptoms during this diet, open exposure test was performed with cow milk and wheat flour. Early reactions as burning of eyes and eyelids, itching of the whole skin surface and the eruption of papules exanthema appeared during 1 h from the administration of wheat flour and cow milk. Worsening of atopic eczema occurred in 6–8 h after the administration of food. DBPCFC was used as a gold standard to confirm food allergy, the same reactions as in open exposure test occurred. Test with placebo was negative.

The severity of atopic eczema was evaluated with SCORAD index and the decrease from 52 points before elimination diet to 20 points during diet before open exposure test was recorded. SCORAD index during one year in elimination diet of wheat flour and cow milk was recorded 19–21 points.

Commonly, the evaluation of food allergy begins with a thorough history and physical examination. The history should determine the possible causal food, quantity ingested, time course of reaction and other factors (exercise, aspirin, and alcohol) [10]. But retrospective analyses by Niggeman and Breuer have shown that the patient's history of food related eczema does not have a high diagnostic importance [11,12].

For IgE-mediated disorders, skin prick tests provide a rapid means to detect sensitization. However, a positive test response does not necessarily prove that the food is causal. Negative SPT responses essentially confirm the absence of IgE-mediated allergic reactivity (negative predictive accuracy >95%). A positive SPT response might be considered confirmatory when combined with a recent and clear history of a food – induced allergic reaction to the tested food [13,14]. Serum tests to determine food-specific IgE antibodies (CAP System) provide another modality to evaluate IgE-mediated food allergy. Undetectable serum food-specific IgE levels might be associated with clinical reactions for 10 to 25% [13].

The double-blind, placebo-controlled oral food challenge is the golden standard for the diagnosis of food allergies [15]. The clinical history results, skin prick test results, and the results of specific IgE antibodies in serum indicate which food should be evaluated by a challenge test.

A number of investigators have examined the use of the atopy patch test in addition to skin prick tests for the diagnosis of non-IgE-mediated food allergy, primarily in patients with atopic eczema dermatitis syndrome and allergic eosinophilic esophagitis.

Isolaure and Turjanmaa found a very good association between positive patch tests results and late reaction to food allergen in children with atopic eczema/dermatitis syndrome [16].

Werfel and Breuer [7] concluded that personal history, food-specific IgE, and APT are not sufficiently reliable for identification of clinically relevant foods in adult patients with atopic eczema.

7. Conclusion

According to our result we suggest that food allergy may play a role in atopic eczema pathogenesis in adult patients.

Our case-report shows that diagnostic methods cannot be used as separated tests for the determination of food allergy in patients with AE/DS. Oral food challenge test (DBPCFC) may confirm the food allergy and may prevent unnecessary restrictive diets, which are not based on a proper diagnosis and may lead to malnutrition and additional psychological stress on patients suffering from AE/DS. With regard to the favourable effect of specific hypoallergenic elimination diet on the severity of atopic eczema, we recommend this diet as a temporary medical arrangement in the case of the exacerbation of AE/DS (in patients with food allergy playing a role).

References

- [1] Sampson HA, Scanlon SM. Natural history of food hypersensitivity in children with atopic dermatitis. *J Pediatr* 1989;115:23–7.
- [2] Niggemann B, Reibel S, Roehr CH, Wahn U. Predictors of positive food challenge outcome in non-IgE –mediated reactions to food in children with atopic dermatitis. *J Allergy Clin Immunol* 2001;108:1053–8.
- [3] Sampson HA. Update on food allergy. *J Allergy Clin Immunol* 2004;113(5):805–19.
- [4] Bindslev-Jensen C, Ballmer-Weber BK, Bengtsson U, et al. Standardization of food challenges in patients with immediate reactions to foods – position paper from the European Academy of Allergology and Clinical Immunology. *Allergy* 2004;59:690–7.
- [5] Li XM, Kleiner GA, Huang CK, Lee SY, Schofield BH, Soter NA, et al. Murine model of atopic dermatitis associated with food hypersensitivity. *J Allergy Clin Immunol* 2001;107:693–702.
- [6] Novembre E, De Martino M, Vierucci A. Foods and respiratory allergy. *J Allergy Clin Immunol* 1988;81:1059–65.
- [7] Werfel T, Breuer K. Role of food allergy in atopic dermatitis. *Curr Opin Allergy Clin Immunol* 2004;4:379–85.
- [8] Reekers R, Busche M, Wittmann M, Kapp A, Werfel T. Birch pollen related food trigger atopic dermatitis with specific cutaneous T-cell responses to birch pollen antigens. *J Allergy Clin Immunol* 1999;104:466–72.
- [9] Worm M, Forschner K, Lee H, Roehr C, Edenharter G, Niggemann B, et al. Frequency of Atopic dermatitis and relevance of Food allergy in adults in Germany. *Acta Derm Venereol* 2006;86:119–22.
- [10] Niggemann B, Rolinck-Wemlinghaus C, Mehl A, Binder C, Ziegert M, Beyer K. Controlled oral food challenges in children –when indicated, when superfluous? *Allergy* 2005;60(7):s. 865.
- [11] Breuer K, Heratizadeh A, Wulf A. Late eczematous reactions to food in children with atopic dermatitis. *Clin Exp Allergy* 2004;34:817–24.
- [12] Niggemann B, Sielaff B, Beyer K, Binder C, Wahn U. Outcome of double-blind, placebo-controlled food challenge tests in 107 children with atopic dermatitis. *Clin Exp Allergy* 1999;29:91–6.
- [13] Sampson HA. Food allergy. *J Allergy Clin Immunol* 2003;111(Suppl.):S540–7.
- [14] Sicherer SH. Food allergy. *Lancet* 2002;360:701–10.
- [15] Bieber T, Kraft S, Jungen M, Strobel I, Haberstock J, Tomov H, et al. New insights in the structure and biology of the high affinity receptor for IgE (Fc epsilon RI) on human epidermal Langerhans cells. *J Dermatol Sci* 1996;13:71–5.
- [16] Turjanmaa K. The role of atopy patch tests in the diagnosis of allergy in atopic dermatitis. *Curr Opin Allergy Clin Immunol* 2005;5:s. 425–428.