

A father's IgE-mediated contact urticaria from mother's milk

To the Editor:

This is the first report of a case of IgE-mediated allergy to endogenous human milk proteins. Contact urticaria to human milk has not been reported in adults. In infants adverse reactions from breast milk have been explained by proteins derived from the mother's diet.¹⁻³ In this study we aimed to determine whether the father's contact urticaria was due to an IgE-mediated allergy to human milk.

The patient was a 25-year-old biology student and the father of a 9-month-old baby. He was atopic but had no other major health problems. The patient still had atopic dermatitis, which had started in infancy, without concomitant food allergy. He had rhinoconjunctivitis when in contact with animals but no seasonal respiratory symptoms. His childhood asthma had disappeared at the age of 10 years. As an adult, he experienced upper gastrointestinal pain and diarrhea from milk products but tolerated lactose-free bovine milk normally. He had no other dietary restrictions or symptoms of food allergy.

The patient now complained of an itchy urticarial flare on the chest after embracing his lactating wife and when in contact with the vomit of the breast-fed baby. These symptoms started when the baby was 3 months old. The patient's wife was healthy. She had a normal diet and no systemic medication.

Results of skin prick tests (SPTs) with commercial pasteurized cow's milk (Valio) and cow's milk skin test extract (Soluprick, ALK) were repeatedly negative, as were results with other tested foods (egg, fish, hazelnut, and wheat). In accordance with the patient's symptoms, SPT results were positive (wheal of ≥ 3 mm) to animal dander (cat, dog, and horse) but negative to pollens, mites, molds, and latex. SPTs were repeated with 2 human milk samples on several occasions. The results were positive with fresh and frozen human milk from the patient's wife (wheals of 7 and 10 mm, respectively) and with milk (wheal of 6 mm) from the patient's sister, who was also nursing. Results with histamine control solution (10 mg/mL) were positive (3 mm), and results with the glycerosaline control were negative. His total serum IgE level was 430 kU/L (reference value, <110 kU/L; Pharmacia). No specific IgE antibodies to cow's milk were found in the patient's serum through the use of CAP System FEIA (Pharmacia) or the in-house immunospot test.⁴ In immunospot testing, however, IgE was demonstrated to the 2 human milk samples and α -lactalbumin from human milk (Sigma L-7269) but not to other human proteins tested (human serum albumin [Sigma A-1653] and IgG [Finnish Red Cross]) or cow's milk or cow's milk proteins (α -lactalbumin [Sigma L-6010], β -lactoglobulin [Sigma L-0130], casein [Sigma C-8654], or BSA [Sigma A-8022]). The serum IgE level to bovine α -lactalbumin CAP (f76) was borderline positive (0.394 kU/L, class 1;

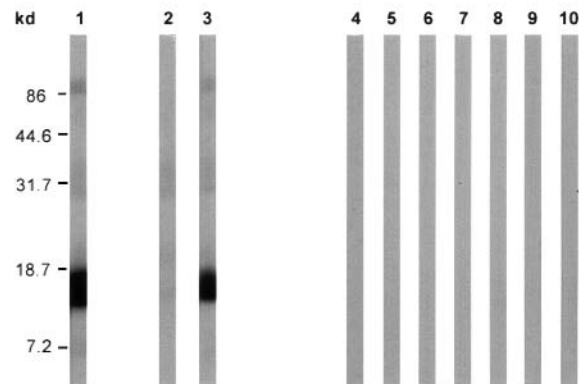


FIG 1. Reduced human milk proteins were separated by means of SDS-PAGE, blotted to nitrocellulose, and tested for IgE reactivity through use of serum from the patient (lanes 1-3), sera from patients with milk allergy (lanes 4-9), and a control serum (lane 10). The specificity of the IgE binding was evaluated by means of preincubation of the serum with buffer control (lane 1), α -lactalbumin from human milk (lane 2), and α -lactalbumin from cow's milk (lane 3). Bound IgE was detected by using iodine 125-labeled antihuman IgE antibody. Molecular weight markers in kilodaltons appear at left. The autoradiogram is shown.

normal value, <0.35 kU/L), whereas the result of the in-house RAST to human α -lactalbumin was clearly positive (1.9 PRU/mL, class 2).⁴

Immunoblot and immunoblot inhibition studies were used to characterize allergens in human milk and to scrutinize their specificity.⁴ In immunoblotting after SDS-PAGE, IgE from the patient's serum bound to an allergen at a molecular mass of approximately 14 to 16 kD in human milk (Fig 1). The binding was completely inhibited by incubation of the serum (1:2 vol/vol) with human α -lactalbumin (0.5 g/L). No inhibition was observed with cow's milk or bovine α -lactalbumin (0.5 g/L; molecular weight, 14.2 kD). All control sera from 6 patients with milk allergy and milk RAST results from 4.5 to 17.4 kU/L and serum from a nonatopic subject were negative in human milk immunoblotting.

Allergy to human milk seemed to be the cause for the patient's contact urticaria. Our investigations demonstrate that the patient's serum indeed contained IgE specific to human milk protein, which was completely inhibited with human α -lactalbumin but not with bovine milk proteins. The clinical relevance of the observation was confirmed by means of skin testing. In addition, the patient had no similar symptoms from cow's milk.

The patient's allergic reactions to human milk, which appeared 3 months after the birth of the baby, disappeared when nursing was stopped 6 months later. It is possible that the patient was sensitized to human milk when rather often "covered" by the vomit of the breast-fed baby. He was breast-fed as a baby, and after that, he never tasted or ingested human milk. An airborne sensitization seems unlikely even though cow's milk proteins

have been measured in house dust.⁵ In children urticaria from cow's milk has been reported by trivial skin contact.⁶ Recently, milk-induced urticaria has been shown to be associated with the expansion of T cells expressing cutaneous lymphocyte antigen.⁷

From the immunoblot and immunoblot inhibition data, we conclude that the patient had IgE-mediated immediate-type allergy to human milk α -lactalbumin. We are not aware of any similar reports on adult sensitization to human milk proteins. In infants reactions from human milk have been explained by exogenous proteins in breast milk derived from the mother's diet.^{2,3} We also saw another young father who experienced urticaria from mother's milk, but he was not sensitized to endogenous human milk proteins but rather to bovine milk β -lactoglobulin present in his wife's breast milk.

We emphasize that an IgE-mediated allergy to endogenous human milk proteins exists, and contact allergy to food is possible even in adults.

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