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Diet by proxy

FOOD hypersensitivity reactions by inhalation have been described in the literature, though infrequently (1, 2). In particular, there have been very few descriptions of patients with hypersensitivity reactions from inhalation of milk proteins. This possibility has been well described in the occupational setting (3), and the case was recently reported in Sardinia of a farmer who developed anaphylaxis while milking his sheep. The same report mentions a news report of a 20-year-old woman allergic to milk who died just a few minutes after entering a dairy from severe systemic anaphylaxis caused by ingestion and/or contact with milk (4).

We report the case of a 6-year-old boy referred for repeated episodes of acute bronchospasm and nasal symptoms related to inhalation of milk proteins. The reactions were so strong that his younger brother, who was nonallergic, also had to follow a diet of soy milk.

■ The patient had his first anaphylaxis after exposure to cow's milk in the first bottle of infant formula given him at the age of 3 months. From then on, he had followed a diet strictly avoiding cow's milk. At around 3 years of age, he began to suffer from chronic

rhinitis and recurrent episodes of asthma-like bronchitis, and was referred to our hospital. Epicutaneous testing showed marked reactions to *Dermatophagoides pteronyssinus* and *D. farinae*, cat dander, and lactalbumin and cow casein. These

allergies were confirmed by positive RAST of classes 4-5, for lactalbumin and casein.

Although cow's milk protein was carefully excluded from the child's diet for the next 2 years, he continued to exhibit extreme clinical sensitivity. On one occasion, he ate a piece of biscuit and within a few minutes developed a reaction which included vomiting, urticaria with angioedema, and asthma. The most interesting symptoms, however, were the manifestations of hypersensitivity to inhalation of cow's milk protein. He had an attack of asthma after inhaling milk when the pan accidentally boiled over in the kitchen. On another occasion, he developed wheezing, bloodshot eyes, sneezing, and a runny nose shortly after entering a dairy shop. At the supermarket, too, he had to avoid standing too close to the dairy products, because he exhibited immediate respiratory symptoms.

But the most unusual manifestations appeared after his brother was born, when our patient was 6 years of age. The baby was breast-fed for the first 2 months and was then given conventional infant formula. From then on, whenever he came into the baby's room (which his mother describes as having the typical "milky smell"), he developed immediate respiratory symptoms. Another time, some of the baby's regurgitation dripped onto his arm, causing immediate localized urticaria.

On her own initiative, the patient's mother decided to use the same soy milk formula for the baby that she had used with his elder brother (Alberto). That very day, after the room had been well-aired, Alberto was able to enter his baby brother's room and remain symptom-free.

■ The child's history began with typical anaphylaxis after the first ingestion of cow's milk (5). Usually, such patients become negative to challenge tests with milk by the end of the first year of life. Our patient continued to exhibit both cutaneous and respiratory hypersensitivity reactions upon contact with milk or even after just inhaling it. Similar occurrences have been described in the literature (3, 4), but, as far as we know, this the only reported case of cow's milk hypersensitivity which made it necessary for another member of the family to follow the same diet: a diet by proxy.

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Topical cromolyn can modify human allergic skin reactions

CROMOLYN sodium has been used orally and topically in the treatment of asthma, allergic rhinitis, and keratoconjunctivitis with varying success (1). Theoretically, topical application of cromolyn could modify the allergic IgE-mediated response seen after skin prick testing. The present study tested the effect of a new 4% cromolyn cream formulation (Ascent Pharmaceuticals) upon the cutaneous allergic response after skin prick testing. The study was performed in two parts; (I) to determine whether immediate pretreatment of the skin with cromolyn could modify the allergic response; (II) to determine the effect of pretreatment of the skin with 4% cromolyn cream or solution on this response.

■ **Part I.** Twenty volunteers known to be allergic to at least two standard antigens (including ragweed, grass, tree pollen, dog or cat fur, and house-dust mite) were enrolled. A placebo cream (vehicle alone) or active cream (vehicle containing 4% cromolyn sodium) was applied to

the left and right forearms in a randomized, blinded manner. Prick testing was done by the puncture method with Dome-Hollister lancets, 15 min, 30 min, and 1 h after cream application. Different forearm sites, as well as a control area of untreated skin on the upper inner arm, were used. Wheal and flare size was measured after 15 min by tracing onto transparent sheets, and calculating the surface area.

■ **Part II.** Ten volunteers who were known to be allergic to at least two standard antigens used in prick testing were enrolled. The antigens were diluted to give a mild to moderate wheal response of 3–5-mm diameter. Subjects were then randomly allocated to cromolyn 4% cream to be applied four times a day for 3 days to one forearm and cromolyn 4% solution (Nasacrom®) to be applied four times a day for 3 days to the other forearm. On day 4, subjects were rechallenged on treated and untreated areas. The level of itching at each prick test site was graded on a scale of 0–10 (0 = none, 10 = maximum). The differences in areas of wheal and flare, as well as level of itch in skin treated with cream, solution, and untreated sites, were calculated.

Data were entered into a verified dBASE IV database and analyzed with SAS statistical package software. In both sets of analyses, the outcome measures were the size of the wheal and the flare. All subjects received both treatments and control so that the specific outcome measure was the difference between the areas. In both phases, the outcome measure was modeled in terms of the factors treatment, antigen, and concentration by the analysis of variance (PROC GLM in the SAS statistical package). Hypotheses were tested at the 5% level without correction for multiple comparisons.

■ **Part I.** There were no significant effects on the wheal and flare response distinguishing treatment from control when cromolyn application immediately preceded skin prick testing.

■ **Part II.** For wheal and flare, either the cream or the solution provided a significant reduction in area compared to control regardless of the antigen used (Table 1). Pretreatment with cromolyn resulted in significantly smaller areas of flare than control ($P < 0.01$). Wheals in areas pretreated with cream were significantly smaller than control areas ($P < 0.05$). The itch score was significantly lower after pretreatment of the skin with cromolyn solution compared to control. In every analysis,

Table 1. Flare, wheal and itch, by treatment for 18 subjects* (mean $\pm$ standard deviation)

	Treatment		
	Solution	Cream	Control
Flare area (cm ²)	3.60 $\pm$ 3.50	4.80 $\pm$ 4.10	7.10 $\pm$ 5.10
Wheal area (cm ²)	0.18 $\pm$ 0.14	0.13 $\pm$ 0.07	0.18 $\pm$ 0.01
Itch score	3.10 $\pm$ 2.90	4.20 $\pm$ 2.70	4.60 $\pm$ 2.60

* Two subjects, scores for antigen concentration ratio 1:1 were excluded.

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