Dietary Baked Milk Accelerates the Resolution of Cow’s Milk Allergy in Children

PURPOSE OF THE STUDY. To evaluate outcomes of children with cow’s milk allergy that incorporate extensively heated (baked) milk products into the diet.

STUDY POPULATION. Eighty-nine subjects aged 0.5 to 21 years were recruited from a large academic pediatric allergy clinic. Subjects were diagnosed with milk allergy based on a positive skin prick test (SPT) or detectable serum milk-specific immunoglobulin (Ig) E and history of allergic reaction to milk. Subjects were also included if milk-specific IgE or SPT responses were >95% of predicted value for clinical reactivity.

METHODS. Subjects underwent an initial baked milk oral challenge with a muffin containing 1.3 g of milk protein baked at 350°F for 30 minutes. Subjects who were reactive to baked milk (n = 23) were instructed to completely avoid all forms of milk and were offered a repeat challenge ≥6 months from the initial challenge. Patients who were tolerant to baked milk (n = 65) were instructed to incorporate baked milk products daily into their diets. After ≥6 months, these patients were offered challenges to baked cheese products (cheese pizza with 4.6 g of milk baked at 425°F for >13 minutes). After 6 months of tolerating baked cheese, subjects were offered challenges to unheated milk. A historical comparison group of subjects who fulfilled the inclusion criteria but were not initially ingesting baked milk was included. Serum samples were collected for measurement of IgE and IgG4 antibodies to milk, casein, and beta-lactoglobulin. All food challenges were performed openly.

RESULTS. Challenges were conducted over a median of 37 months (range: 8–75 months). In the group of 65 subjects initially tolerant to baked milk, 39 (60%) now tolerated unheated milk. Over the same time period, 2 (9%) of the 23 subjects who were originally reactive to baked milk tolerated unheated milk. Subjects who were initially tolerant to baked milk were 28 times more likely to become unheated milk tolerant compared with baked milk–reactive subjects (P < .001). Subjects who introduced dietary baked milk were 16 times more likely than comparison group subjects to become unheated milk tolerant (P < .001). Median casein IgG4 levels in baked milk–tolerant group increased significantly (P < .001), but median milk IgE values did not change significantly.

CONCLUSIONS. Tolerance of baked milk suggests a transient IgE-mediated cow’s milk allergy. The addition of baked milk to the diet in children tolerating such foods appears to accelerate the development of unheated milk tolerance compared with strict avoidance.

Reviewer Comments. This and other supportive studies now suggest a change to the mantra of strict avoidance of known food allergens for a subset of foods. For milk-allergic patients, allergists can now offer baked milk oral food challenges with the hope of accelerating clearance of their food allergy. Additional studies directed at determining which patients would be at increased risk for reacting to a baked milk challenge would be helpful because those reacting sometimes experience anaphylaxis.

Oral Desensitization as a Useful Treatment in 2-Year-old Children With Cow’s Milk Allergy

PURPOSE OF THE STUDY. To assess the safety and efficacy of an oral desensitization protocol in 2-year-old children with allergy to cow’s milk protein (CMP) as a therapeutic alternative to elimination diet.

STUDY POPULATION. Sixty patients aged 24 to 36 months with immunoglobulin (Ig) E-mediated allergy to CMP enrolled in this multicenter study. Inclusion criteria respectively). Adding OVA- and OVM-specific IgG4 to a model with IgE alone resulted in better prediction of baked-egg tolerance. In addition, children with severe reactions during OFC who required epinephrine had higher IgE/IgG4 ratio to OVM and/or OVA. Baked-egg reactive children also had higher mediator release, and those with higher natural log transformed IgE/IgG4 ratio to OVA were more likely to have nonzero mediator release.

CONCLUSIONS. The balance between IgE and IgG4 to OVA and OVM has functional implications in baked-egg reactivity/tolerance. High IgE/IgG4 ratios to OVA and OVM are associated with baked-egg reactivity and anaphylaxis to baked and regular egg during OFC. Low IgE/IgG4 ratios to OVA and OVM are associated with tolerance.

Reviewer Comments. The implications of the role of specific IgG4 in the mechanism of tolerance is important in our understanding of food allergy. Further evaluation of food-specific IgE/IgG4 ratios is important before this can be used as clinical diagnostic tool, although the possibility is intriguing.

URL: www.pediatrics.org/cgi/doi/10.1542/peds.2012–2183Q
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*Pediatrics* 2012;130;S16
DOI: 10.1542/peds.2012-2183X

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