Correspondence

SUCCESSFUL ORAL DESENSITIZATION FOR SYSTEMIC PEANUT ALLERGY

To the Editor:

The present strategy of avoidance and epinephrine autoinjection for severe IgE-mediated food reactions is not always successful.[1,2] This may be even truer for young children, who cannot read and have to depend on adults to administer the epinephrine. The following case report illustrates such a failure in a young child and describes a treatment that can be performed by an allergy specialist as an alternative to the avoidance-and-epinephrine strategy.

The patient is a 6-year-old girl who had 2 systemic reactions to peanuts as a preschooler. The mother and child practiced avoidance measures. The mother provided an epinephrine autoinjector and instructions to the school nurse. While at school, another student was eating a peanut butter sandwich at the patient's table. The child was touched by the other child. She denied eating any part of the sandwich. She complained to the teacher of shortness of breath, rash, and itching. The teacher tried to contact the school nurse; however, the nurse was not readily available. By the time the nurse came to administer the epinephrine, the child had collapsed. The emergency medical technician arrived and gave the child additional epinephrine. They started an intravenous infusion and transferred the child to the hospital. After an extended observation and treatment period, she was discharged.

The parents were extremely distraught by the events, since they had done all they had been advised to do. There was a real risk of continuing emotional duress for the parents and the child. The child's mother, who was so worried that she was considering quitting her job and keeping the child at home, asked if there were any alternatives. A review of the literature suggested that oral desensitization might offer a way to protect the child against unintentional exposures or ingestion.[3–9]

The process and procedure were explained to the parents. They were told that the goal was to ensure that the child would not have a reaction to unintentional modest exposures, not to make her eat peanuts as a normal food. They agreed and signed an informed consent form. The oral challenge and desensitization were performed with crushed peanuts in grape juice concentrate. The staff and equipment to treat an anaphylactic reaction were in place, including intravenous solutions and airways and pediatric manual resuscitators with oxygen. A staff member with extensive experience in intubation of children was available. Because of these unusual requirements, the procedure was performed in our office. The office is also one block from a fully equipped hospital emergency department. During the procedure, the child's pulse rate, blood pressure, and oxygen saturation were monitored.

Two placebo doses were given first. Doubling of peanut concentrations from 250 μg to 8 g (4 whole kernels) every 15 minutes was planned. However, this goal was not achieved initially. After ingesting one peanut kernel, the child developed a small amount of rash and mild wheezing. Her blood pressure did not change. The wheezing was treated with a bronchodilator. The rash disappeared within 15 minutes, and she did not require epinephrine or antihistamines.

The child's mother was instructed to give a half kernel 3 times daily to the child. The first such dose was given 6 hours later in clinic. During an 8-week period, this amount of peanut was gradually increased in the clinic until the child tolerated 2 whole peanuts (4 whole kernels) 3 times daily. Subsequently, this was changed to ingesting 2 whole peanuts twice daily. She has been receiving this treatment for more than a year. There has been one contact with a schoolmate eating a peanut butter sandwich without a reaction. She has eaten a granola bar that was later shown to contain peanut flour without reaction. This clinical tolerance has been accompanied by immunologic changes. Her peanut specific IgE level was more than 100 IU at baseline, 74 IU at 6 months, and 42 IU at 12 months.

Oral desensitization is a well-established procedure for severe IgE-mediated reactions to drugs, commonly performed by allergy specialists. Most often this is done correctly in an intensive care unit or similar facility. The staff skills and equipment in our office are not required for most allergy practices. We strongly suggest that the oral desensitization procedure only be done where complete ability to treat anaphylaxis exists.

We intend to continue daily peanut therapy in this child and monitor levels of specific IgE and IgG for 24 to 36 months. At that time we plan to evaluate whether this therapy needs to be continued. Our experience concerns severe peanut allergy and may not be generalizable to all IgE-mediated food reactions. Oral desensitization for IgE-mediated food allergy has been previously reported.[3–9]

Currently, oral food desensitization may be useful in patients such as this one, for whom the situation had become dysfunctional. The procedure needs to be performed carefully in an adequate facility and with full understanding by the parents of what the goals and limitations of the treatment are.

Although other approaches are being evaluated for severe food allergic reactions, such as sublingual food immunotherapy and monoclonal anti-IgE, further study of oral desensitization for food allergy in selected situations seems worthwhile given the magnitude of this vexing clinical problem and the need for better treatments.

LYNDON MANSFIELD, MD
Western Sky Medical Research
El Paso, Texas

REFERENCES

1. Kim JS, Sinacore JM, Pongracic JA. Parental use of Epipen for children with food allergies. *J Allergy Clin Immunol*. 2005;116: 164–168.
2. Sicherer SH, Forman JA, Noone SA. Use assessment of self-administered epinephrine among food-allergic children and pediatricians. *Pediatrics*. 2000;105:359–362.
3. Meglio P, Bartone E, Plantamura M, Arabito E, Giampietro PG. A protocol for oral desensitization in children with IgE-mediated cow's milk allergy. *Allergy*. 2004;59:980–987.
4. Patriarca G, Nucera E, Roncallo C, et al. Oral desensitizing treatment in food allergy clinical and immunological results. *Aliment Pharmacol Ther*. 2003;17:459–465.
5. Nucera E, Schiavino D, D'Ambrosio C, et al. Immunological aspects of oral desensitization in food allergy. *Dig Dis Sci*. 2000;45:637–641.
6. Patriarca G, Schiavino D, Nucera E, et al. Food allergy in children: results of a standardized protocol for oral desensitization. *Hepatogastroenterology*. 1998;5(19):52–58.
7. Wuthrich B. Oral desensitization with cow's milk in cow's milk allergy. *Pro! Monogr Allergy*. 1996;32:236–240.
8. Patriarca C, Romano A, Venuti A, et al. Oral specific hyposensitization in the management of patients allergic to food. *Allergol Unopathol (Madr)*.1984;12:275–281.
9. Mastrandrea F. The potential role of allergen-specific sublingual immunotherapy in atopic dermatitis. *Am J Clin Dermatol*. 2004;5:281–294.

SYSTEMIC REACTION TO OMALIZUMAB

To the Editor:

A 76-year-old woman presented with a greater than 60-year history of steroid-dependent asthma and allergic rhinitis. She had received immunotherapy more than 30 years ago, which had been discontinued because of repeated systemic reactions. Her other comorbidities included arthritis, hypertension, and depression. Her current treatment included 500 and 50 μg of salmeterol and fluticasone, respectively, sodium montelukast, a nasal corticosteroid, and 4 mg of methylprednisolone every other day. She received her first dose of omalizumab, 300 mg, in May 2004. She had no evident reaction until 75 minutes after the fourth dose, at which time she had sudden onset of weakness, lightheadedness, and syncope. During her examination, before the injection, her blood pressure was 157/80 mm Hg with no evident symptoms. Immediately after her syncopal episode, her blood pressure was 60/40 mm Hg. She became cyanotic and had a brief generalized seizure. She quickly responded to epinephrine, oxygen, and volume expansion. There was no immediate evidence of rash or bronchospasm. She was transferred to the emergency department within 20 minutes, at which time she was awake and alert. Her arterial oxygen saturation was 94%, and her blood pressure was 110/78 mm Hg. The results of laboratory studies were normal except for a serum potassium level of 3.2 mmol/L, a white blood cell count of 12,400 K/μL, and a tryptase (α and β) level of 13 ng/mL (reference range, 2–12 ng/mL). These studies were performed approximately 180 minutes after the injection. She remained in the hospital for 36 hours with stable vital signs and no oxygen requirements.

Laboratory studies were performed 9 months after the reaction when permission was granted by Novartis to supply a specimen, with the following results: total IgE, 99.2 ng/mL; free IgE, 91.3 ng/mL; and omalizumab, 38.8 ng/mL. The level of IgE antibodies directed to anti-E25 Fc and anti-E25 Fab was 0. No further reactions have been reported.

The mechanism of this reaction is not clear. The patient had no demonstrable IgE antibody to either E25 Fc or E25 Fab. The elevated tryptase level suggests that mast cell degradation was one of the operative mechanisms in the systemic reaction. In the clinical trials, low titer of anti-IgE antibodies were detected in 1 of 1,723 patients (less than 0.1%) using an enzyme-linked immunosorbent assay. This finding did not correlate with risk of systemic reaction. More than 20,000 patients have been treated in the United States since the release of omalizumab in June 2003. The occurrence of adverse reactions is low but not zero (Table 1). This finding reinforces the need for observation after administration of the drug in a health care facility where acute reactions can be treated.

BRADLEY CHIPPS, MD
Capital Allergy and Respiratory Disease Center
Sacramento, California

Table 1. Anaphylaxis Cases in Omalizumab-Treated Patients*

Patient age, y/sex	Event	Treatment and outcome	Significant medical history
19/F	90 minutes after dose 1: hives, itchy ears, mild dyspnea	Epinephrine, IV steroids, antihistamine; full recovery in 8 days; omalizumab therapy discontinued	Allergies: "sneezing for 30 minutes" after immunotherapy injection
15/M	90 minutes after first infusion: moderate anaphylactoid	Epinephrine, oral steroids antihistamine, nebulized albuterol; full recovery in 1 day; omalizumab therapy discontinued	None
28/F	120 minutes after dose 4: injection site edema, periorbital swelling, throat and tongue swelling	Epinephrine, oral steroids, antihistamine; full recovery in 4 days; omalizumab therapy discontinued	Allergies: morphine, anaphylaxis associated with peanuts, chocolate, immunotherapy

Abbreviation: IV, intravenous.
* Data on file (Genetech and Novartis).