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Apparent sensitization to latex through swim caps

To the Editor:

As with all IgE-mediated hypersensitivity, for persons to become allergic to latex, they must be exposed to latex or to some cross-reacting allergen. Thus, the primary groups at risk to become allergic to latex are those with exposure to latex gloves and other medical devices, namely health care workers and surgical patients.¹ Nonetheless, severe reactions have been reported in atopic persons without such exposures, who presumably became sensitized via nonmedical latex products or cross-reacting foods.¹ Described here is a patient who appears to have become allergic to latex through exposure to latex swim caps.

A 20-year-old woman with allergic rhinitis and asthma reported apparent allergic reactions while swimming. The reactions began as itching and swelling of the face, and progressed to generalized hives and asthma symptoms. She had determined that the reactions only occurred when she wore latex swim caps, were more severe with new latex swim caps, and did not occur if she wore silicone swim caps. She also reported similar reactions to ingestion of avocado and banana beginning after the swimming-related episodes, and she was now strictly avoiding these

TABLE I. Latex allergen by inhibition immunoassay

Source/extracting solution	Allergy units*/mL
Latex cap brand A/PBS	611
Latex cap brand A/pool water	566
Latex cap brand B/PBS	505
Latex cap brand B/pool water	498
Silicone cap/PBS	<50
Silicone cap/pool water	<50
Pool water alone	<50

*See Yunginger et al.²

foods. She had swum competitively since before age 13 when the reactions began, often spending several hours per day in the pool. The reactions began before her being sexually active and, having concluded that she was allergic to latex, she had avoided any exposure to condoms. She had never had a job requiring latex exposure, nor had she ever had surgery.

A crude extract was prepared by soaking 2 fingers of a powdered latex glove in 20 mL normal saline for 20 minutes. A skin prick test with this solution resulted in a 7-mm wheal and 50-mm flare, compared with a positive histamine control of 4/25, and a negative saline control of 0.

To assess the possible allergenicity of latex swim caps, 2 brands of latex swim caps were extracted in PBS, as well as in swimming pool water. As a control, a silicon swim cap was similarly extracted. The latex allergen content of the extracts was then measured by an inhibition immunoassay previously described.² The results indicated that the latex swim caps contain extractable latex allergen in amounts comparable to those previously found in latex gloves² (Table I).

The patient described here clearly appears to be allergic to latex. She has a history of symptoms consistent with mast cell degranulation shortly after latex exposure and a positive immediate type skin test result to a latex extract. She appears to have been sensitized via cutaneous exposure to latex swim caps while swimming, since this was her only substantial exposure to natural rubber latex, and she lacked any other known risk factor except her atopic predisposition. Her food allergies, while likely related, began after her latex reactions.

Had the patient not established the connection to latex swim caps, the episodes could otherwise have been misconstrued as exercise-induced anaphylaxis. In fact, the progression of her reactions from contact urticaria to generalized urticaria and asthma symptoms may have been enhanced by exercise (swimming).

Latex swim caps clearly contain extractable latex allergen as per the assay. Prolonged cutaneous exposure to the caps in a wet environment presumably allowed absorption of allergen via the skin. Two previous reports have mentioned swim caps in relation to latex allergy; however, it is not clear in these papers whether the subjects had immediate or delayed-type reactions to the caps.^{3,4}

Prolonged exposure to natural rubber latex swim caps appears to be another, nonmedical route of sensitization and IgE-mediated allergic reaction to latex.

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Aspiration before immunotherapy injection is not required

To the Editor:

Immunotherapy is an effective treatment for patients with allergic rhinitis, allergic asthma, and insect sting hypersensitivity. A number of safety recommendations regarding immunotherapy have been proposed, including aspiration of the syringe to check for blood before injection.¹ This recommendation is based on expert opinion only because neither the 1994 nor 2002 general immunization recommendations support this practice.^{2,3} Further, there are no published reports regarding experience with syringe aspiration before injection of an allergy shot. Despite the lack of data to support aspiration before injection, many health care professionals still practice this method.³

To determine whether the practice of aspiration should be continued, our experienced allergy nurses were asked at the end of 2004 whether they “had ever seen blood in the syringe after aspiration” during the previous 3 years—a period when aspiration before administration of either an allergy shot or immunization was a standard operating procedure (Table I). Since recall bias may have affected previous unrecorded observations, our nurses prospectively documented whether blood was observed during syringe aspiration for each injection in 2005 (Table I). Based on the absence of a single instance when blood was observed during syringe aspiration, our clinic has ceased the policy of aspiration before injection, which is in general agreement with current Advisory Committee on Immunization Practices immunization guidelines.³

I recognize there are some limitations to these conclusions. Our immunotherapy patient demographics varied as to be expected from a hospital-based allergy practice.

TABLE I. Allergen immunotherapy and routine vaccinations, 2002-2005

Year	Allergy shots		Immunizations	
	Number	Blood*	Number	Blood*
2002-4†	25,285	0	3540	0
2005‡	6642	0	683	0

*Number of times blood was observed in the syringe.

†Recall reporting.

‡Prospective observation.

Median (range) patient age and arm circumference were 45 years (7-78) and 32 cm (16-46), respectively. Median (range) body mass index (BMI) was 27 (15-46), with 5% of patients underweight (BMI < 18.5), 30% normal (BMI, 18.5-24.9), 41% overweight (BMI, 25.0-29.9), and 30% obese (BMI > 30.0). Our clinic uses a 29-gauge BD Safety Glide insulin syringe (Becton Dickinson, Franklin Lakes, NJ) for allergy shots with shots administered at a 45° angle into the posterior-lateral aspect of the upper arm. The skin fold is gently lifted during administration, which was shown to be a safe practice without aspiration in a small study documenting 204 insulin injections.⁴ The 29-gauge needle is slightly smaller than the recommended 26-gauge or 27-gauge needle, although the needle is the same recommended length ($\frac{3}{8}$ to $\frac{1}{2}$ inch).¹ Further, there were no reported events of blood observed using larger and longer needles during routine intramuscular (23-gauge) and subcutaneous (25-gauge) vaccinations (Table I).

Theoretically, injection of immunotherapy directly into the intravascular space could result in rapid and possibly fatal anaphylaxis. Although previous reports on fatal and near-fatal reactions to immunotherapy do not mention aspiration as a factor in these events, health care providers may still desire to aspirate as a safety step.^{5,6} Lifting the skin fold during administration of immunotherapy may also reduce the risk for inadvertent administration into a blood vessel.⁴ However, the absence of blood in the syringe during aspiration of more than 36,000 allergy shots and routine immunizations suggests that injection without aspiration is a safe practice.

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