

Recall urticaria: A case report

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The appearance of local reactions related to allergen immunotherapy is frequent.^{1,2} These reactions very often arise as a wheal surrounded by erythema at the site of the injection. However, the appearance of local reactions outside the injection area is not very common. Local reactions outside the injection area quite often develop in previously injected areas. Various stimuli, including specific allergens and nonspecific stimuli, may activate local reactions in the previously injected areas.² This phenomenon has been termed *recall urticaria*.³

Recall urticaria develops in the previously injected area when antigens enter the body from another source. The entrance of the antigens may be through an injection in the opposite arm or inhalation of the antigen.

CASE REPORT

A 50-year-old patient had complaints of runny nose, nasal itching, sneezing, dyspnea, coughing, and wheezing, which had persisted typically from April through August over the previous 10 years. Skin prick tests produced positive reactions (wheal with pseudopods and erythema) with a diameter of more than 20 mm in response to *Poa pratensis*, *Festuca elatior*, *Dactylis glomerata*, and *Phleum pratense*.

The patient began immunotherapy with an equal mixture of these four antigens at a dilution of 1:200,000 wt/vol and a dose of 0.1 ml. With gradually increasing doses, the treatment reached a maximal dose of 0.1 ml of the 1:2,000 wt/vol dilution. Because of systemic reactions, the maintenance dose was not reached. The immunotherapy program is outlined in Table I. The 4-year immunotherapy of the patient was applied to the left arm at his own request. During the immunotherapy, local reactions of not more than 1 cm in diameter were seen in the injection area.

Aqueous allergenic extracts (Greer laboratories, Lenoir, N.C.) were used for skin tests and immunotherapy. Concentrated extracts were kept refrigerated at +4°C.

The extracts were diluted in our laboratory by diluent (including phenol 0.4% and sterile saline 0.9%) produced by Greer Laboratories.

In May, 3 months after the immunotherapy ended, the patient first experienced allergic rhinitis symptoms when walking through a garden where the grass had just been cut; at the same time, an urticarial plaque of 1 cm in diameter developed in the previous injection region (Fig. 1). Results of physical examination were otherwise normal. These symptoms recurred five times when the patient was walking through a garden where the grass had just been cut or having a picnic in a grassy area (Table II). Each time the urticarial plaque remained for about 1 hour. It was also noted that the reaction did not occur on a regular basis but was related to intensive allergen contact. Although the patient had rhinitis symptoms during the pollen season, the urticarial plaque in that region did not always occur. It developed simultaneously with severe rhinitis symptoms only when he had intensive antigen contact.



FIG. 1. Case. Appearance of urticarial plaque.

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TABLE I. Immunotherapy schedule

Interval	Dilution (wt/vol)		Dose (ml)									Duration
Twice a week	1:200,000	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9		1 mo
Twice a week	1:20,000	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9		1 mo
Weekly	1:2,000	0.1*										34 mo
Twice a month	1:2,000	0.1*										6 mo
Once a month	1:2,000	0.1*										6 mo

*Because of systemic reactions, this dose could not be increased.

TABLE II. Recall urticaria episode

Episode no.	Grass pollen exposure	Date	Interval between allergen inhalation and skin reactions	Location	Type	Duration
4	When walking through a garden where pollinating grass had just been cut	April-June 1993-1994	About 30 min	Injection area	Urticaria plaque	About 1 hr
1	When picnicking	June 1994	About 30 min	Injection area	Urticaria plaque	About 1 hr

Provocation tests were recommended, but the patient refused.

DISCUSSION

Local reactions caused by immunotherapy generally occur around the site of the injection. However, the recall urticaria phenomenon can occur at a previous injection site or can be reactivated by various stimuli, as indicated by Feinberg.² Stimuli can include food, a new kind of shot, or inhalation of an antigen. Kelso et al.³ have published two recall urticaria cases induced by injected allergen. However, in our case the inhaled allergen acted as the trigger for the focal skin reaction at the sites of previous allergen injections. Four of the five reactions developed when the patient was walking through the hospital garden where the grass had just been cut. When the garden grass was examined, it was observed to be a mixture of *P. pratensis*, *F. elatior*, and *Lolium perenne*. Our patient had a history of immunotherapy with *P. pratensis* and *F. elatior*. After the dense re-inhalation of these antigens, edema plaques developed in the previous injection area.

The mechanism of this type of reaction has not been ascertained yet. It has been proposed that axonal reflex mechanisms and severe late reactions

play important roles in the pathogenesis of the recall urticaria phenomenon.^{3,4} These theories, however, are not sufficient to explain this situation. Recall urticaria is believed to occur because of changes in the previously injected area. It is possible that the mast cells in the area degranulate more easily or increase in number. Inhaling or injecting the antigen in a distant site leads to mast cell degranulation through systemic antigen absorption or release of histamine-releasing factors. This phenomenon may also be related to the priming effect observed in allergic rhinitis⁵ or the mechanisms involved in fixed drug eruptions. Unfortunately, all of these theories are insufficient to explain the pathophysiology of recall urticaria.

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