

Local Cholinergic Urticaria at Methacholine Test Site

Sir,

Cholinergic urticaria can best be elicited by cycling, treadmill exercise and hot baths (1). After intradermal injections of relatively high concentrations of cholinergic agents, the typical satellite pinpoint weals around the central large weal are seen only in patients with severe cholinergic urticaria (1). Three patients with moderate cholinergic urticaria, exhibiting strong local cholinergic urticaria at the sites of methacholine testing, but only following an exercise test, are presented.

An ergometric exercise test was used for triggering rash of cholinergic urticaria in a normal laboratory room. Before exercise, the local sweating response on healthy upper back skin to intradermally injected (0.1 ml) methacholine chloride (MCh) (Aldrich, Germany), diluted in saline, was routinely measured with the Evaporimeter (Evaporimeter EP1, ServoMed, Sweden). An MCh concentration of 5×10^{-7} mol/l was used, as it has previously been shown suitable for the measurement of sweating response (2). Apparently such a low MCh concentration has not previously been used to demonstrate a local cholinergic urticarial rash.

During supervised ergometric cycling the subjects wore tight sporting suits to maximize their thermal sweating. The cycling load (range 49–98 W) varied according to the patients' fitness level and the cycling time from 10 to 15 min.

CASE REPORTS

Case 1

A 10-year-old atopic girl in whom rhinitis and conjunctivitis were elicited by birch pollen and oral mucosal symptoms by some fruits, starting about 1 year earlier, exhibited pinpoint itching papules, especially following exercise and sweating. She had also, after exposure to cold weather, flushed lesions rather than frank urticaria on the lower limbs and occasionally swelling around the knees.

Skin prick tests were positive to birch, alder, grasses, cat, dog, mouse, potato, pea, kiwi fruit, hazelnut, peanut, almond and curry. Her total IgE was 460 U/ml. Eosinophils were 13%. Cryoglobulins and nuclear antibodies were negative. Sinus X-ray was normal. In local skin tests to cold and heat flushing but no weals occurred around the test areas.

Case 2

A 27-year-old male with no history of atopy had suffered during the past 10 months from itching pinpoint weals, developing preferentially on the upper trunk and the upper limbs. Lesions were elicited by sweating.

His general health was good. He had only mild perennial rhinitis. Results of routine laboratory tests were normal. The sinus X-ray was normal and skin prick tests were negative.

Case 3

A 56-year-old female, with no history of atopy, had been on antihypertensive medication (atenolol, hydrochlorothiazide + triamteren and enalapril maleate) for 4 years and on peroral medication (metformin hydrochloride) for diabetes mellitus for 1 year. Acetylsalicylic acid and some other nonsteroidal anti-inflammatory medicines had elicited urticarial skin reactions. For 1 year she had been suffering from small urticarial papules, especially on her upper trunk, elicited by heat and sweating.

Her general health was good. Routine laboratory tests and thyroidea function tests were normal; blood sugar was 8.0 mmol/l, alanine aminotransferase 60 U/l, and blood pressure 130/90.



Fig. 1. Methacholine-triggered local cholinergic urticarial satellite weals at the test site of the upper back skin in a 10-year old girl after bicycle ergometry.

RESULTS

In case 1 small urticarial papules developed densely about 3 cm around the test sites 5 min after cycling (Fig. 1) and then diffusively on the trunk and upper limbs. In cases 2 and 3 a similarly dense cluster of urticarial papules developed within 5–10 min around the test sites in a slightly wider area, i.e. about 4–5 cm from the injection sites. As in case 1 relatively few solitary weals developed a few minutes later diffusely on the trunk.

DISCUSSION

The sweating responses of all 3 patients to MCh were comparable with the levels of other patients with cholinergic urticaria (data not presented) and were also in accordance with the data obtained from young men tested with the same MCh concentration (3).

Commens & Greaves (1) tested 12 patients with cholinergic urticaria by exercise and by intradermal tests with methacholine. Although they used 100–1,000 times higher MCh concentrations, their intradermal testing was positive only in those patients with severe to moderate cholinergic urticaria and it was often not reproducible. The phenomenon of local cholinergic urticaria appearing in our patients after very mild MCh stimulation, but only when the skin was additionally stimulated by exercise, may be regarded perhaps as an accumulative effect after two separate cholinergic stimulations.

Adachi et al. (4) tested 20 patients with cholinergic urticaria with autologous sweat and all showed positive immediate-type reactions. Only a few patients with acute or chronic urticaria and none of 20 controls gave a positive reaction. In view of

these results, it is possible that our 3 patients were particularly sensitive to their own sweat or that their sweat might escape into the tissue more readily than in many other patients with the same disease. On the other hand, visible sweating is not an essential feature, as cholinergic urticaria has been described also in anhidrosis (1).

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