PHYSICAL URTICARIA PRESENTING AS CHOLINERGIC URTICARIA WITH DERMATOGRAPHISM

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ABSTRACT
About half of the cases of chronic urticaria in the general population are due to physical urticaria. The different types of physical urticaria are: acquired cold urticaria, delayed-pressure urticaria, solar urticaria, vibratory urticaria, urticarial dermatographism and cholinergic urticaria. Physical urticarias are not known to be related to specific occupations, but can present or be aggravated in any occupational setting. This holds true especially for cholinergic urticaria and delayed-pressure urticaria which are the commoner types found in occupational settings requiring heavy work.

Cholinergic urticaria presents clinically in young adults as extremely itchy, pinhead-size wheals on an erythematous background and is due to an increase in body core temperature.

A case of cholinergic urticaria with dermatographism in an underwater diver is presented and discussed.

INTRODUCTION
Urticarias are recognised by itchy, red wheals which develop rapidly and disappear in a short time, leaving skin appearance normal.

The physical urticarias present as localised or generalised urticaria/angio-oedema of the skin and/or mucosa in response to physical stimuli, which may be mechanical, thermal or solar.

Of the 50% of chronic urticarias caused by physical stimuli, demographlc urticaria is the most common, followed by cholinergic urticaria. Physical urticarias are most common in the young adult population between the ages of 16 and 35. The precipitating factor is often not identified and the physical urticaria may persist for years, often resolving spontaneously. Only the rare, familial, autosomal-dominant urticarias persist lifelong.

In most cases urticaria is caused by direct mast-cell degranulation in response to the physical stimuli. Rarely a genetic predisposition to physical urticaria or an associated disease such as atopic dermatitis has been described.

Specific occupations do not cause physical urticaria; however certain tasks involving heavy work have been associated with occupational cholinergic urticaria (Table I).

CASE REPORT
A 27-year-old underwater diver presented to the occupational dermatology clinic with a 2-year history of an intermittent, itchy, palpable, transient rash which resolved leaving no marks. It was most pronounced on the upper part of the body and the legs were relatively spared.

The patient had worked as a diver in the navy for 2 years prior to the development of the rash. His occupation involved significant, heavy manual labour underwater. He associated the rash with deep diving, hot showers and jogging, and on hot days it appeared in occlusive areas of the body such as around the waist. The rash would appear within 15 minutes of undertaking the triggering activity. The use of regular loratadine had kept the symptoms under control despite ongoing exposure to triggering factors. The patient also reported a lifelong allergy to pork and beef. There were no comorbid conditions.

On examination the patient was generally well and the skin was normal apart from linear discolouration corresponding to areas of scratching on the back.

Investigations showed a normal full blood count, and IgE of 205 (0-158 IU/ml).

A diagnosis of physical urticaria was made with a differential of cholinergic and heat-related urticaria. An exercise-provocative test caused pinpoint follicular papules with surrounding erythema on scattered areas of the trunk (Fig. 1). Linear erythematous urticarial streaks were seen at sites of scratching (Fig. 2). Dermatographism was readily elicited (Fig. 3). Tests for hot and cold temperature provocation were negative after 20 minutes. A diagnosis of cholinergic urticaria with dermatographism was confirmed.

| Table I. Epidemiological data on physical urticaria and related occupational activities |
|----------------------------------------|-----------------|------------------|
| Urticaria (descending order of frequency) | Mean disease duration (years) | Occupational activities affected |
| Dermatographic urticaria | 6.5 | Heavy manual work |
| Cholinergic urticaria | 5.3 | Professions requiring physical exertion |
| Pressure urticaria | 6.0 | Heavy manual work |
| Cold urticaria | 4.2 | Outdoor work in the cold, freezing industry |
| Solar urticaria | 7.1 | Daytime outdoor work |
| Heat urticaria | 1.0 | Work in hot environment |
| Vibratory urticaria | NK | Work on vibrating machines |

NK - Not known
(Modified from Kanerva et al.)

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also been reported. It may occur in combination with sweating and the symptoms persist for about 48 hours.7,8

Physical exercise, usually following intake of certain foods, particularly crab or celery. The wheals are larger and the symptoms persist for about 48 hours.

Exercise-induced anaphylaxis is the most common differential diagnosis, and occurs about 5-30 minutes after physical exertion, usually following intake of certain foods, particularly crab or celery. The wheals are larger and the symptoms persist for about 48 hours.7,8

Cholinergic urticaria is thought to carry a good prognosis. Spontaneous remission occurs within 5.3 years, as shown in Table I. Sometimes attacks can be aborted by immediate cooling like taking a cold shower. Non-sedating H1 antihistamines are the treatment of choice as they suppress itching and whealing. Depending on the severity, the antihistamine can either be taken daily or for prophylaxis before engaging in the activities that provoke the reaction. Severely affected unresponsive patients can be treated cautiously, off-label, with an anabolic steroid such as stanozolol or danazol.

RELEVANCE TO OUR PATIENT

Our patient manifested symptoms 2 years after starting his occupation as a clearance diver which involves removing obstructions underwater by use of explosives in order to make harbours and safety channels for ships. Our patient also reported dealing with heavy items when at work, as well as underwater mining and welding. No clear precipitant was identified. Although it is difficult to ascribe causality to his work environment, the cholinergic urticaria is aggravated by his occupation. It is important to weigh the risks of his continuing his occupation with or without antihistamine cover.

There is a small risk of developing angio-oedema underwater. Chronic antihistamine use in a deep-sea diver may lead to drowsiness and disorientation underwater.

The final decision should really be left to the patient after explaining all the pros and cons to him and his employers. The best and safest option would be to relocate him to alternative work until the urticaria resolves. He could then consider resuming diving.

Declaration of conflict of interest

The author declares no conflict of interest.

REFERENCES


