Symptomatic Dermographism

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Urticaria is caused by physical factors in almost 12 percent of cases. These factors include pressure. Dermographism is the appearance of whealing and erythema within minutes where skin has been exposed to pressure or mechanical irritation. Symptomatic dermographism is present when "normal" pressures, such as those encountered in the activities of daily living, cause urticaria. Individuals with symptomatic dermographism can be shown to have a lower pressure threshold for the production of dermographism than normal individuals. A case of symptomatic dermographism is presented, and the differential diagnosis is discussed.

Urticaria is a common clinical problem seen by family physicians. Champion et al reviewed 554 patients with urticaria and angioedema and found the etiology to be unknown in 79 percent.[1] Physical factors were the cause in 11.9 percent. Pressure was the most common of these factors, being the cause of 8.4 percent of the cases of urticaria and angioedema. Other physical factors that can cause urticaria include heat, cold, light, water, and decompression.

Dermographism (skin writing) is the occurrence of whealing and erythema within minutes where skin has been exposed to pressure or mechanical irritation such as stroking or scratching. Dermographism can occur in normal individuals if the stimulus is great enough. When "normal" pressures such as those encountered in the activities of daily living cause urticaria, the terms "symptomatic dermographism," "urticarial dermographism," or "immediate pressure urticaria" are then employed.

This case report and discussion of a patient with symptomatic dermographism call attention to dermographism, symptomatic dermographism, and urticaria of physical etiology.

Case Report

A 32-year-old white man in good health presented with a one-year history of recurrent pruritus, erythema, and wheals usually confined to a waistband distribution, usually occurring in late afternoon or evening, and aggravated by tight fitting garments. Occasional episodes of erythema,

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edema, and pruritus of the left wrist (under the wristwatch), the neck (in a distribution conforming to the shirt collar), and the lower axillae had also been noted. The duration of the symptoms, from 30 minutes to three hours, depended upon the amount of scratching. There was no history of atopy, infection, psychic stress factors, or aggravation by cold, heat, exercise, or sunlight. There was no prior history of urticaria, contact dermatitis, or dermatologic disease other than acne. The patient was on no regular medications, and the symptoms were not related to the use of over-the-counter medications including aspirin. There was no family history of urticaria or atopy.

Subsequent visits revealed a history of several years' duration of intermittent swelling and pruritus of the hands after operating a lawn mower or snowblower.

Physical examination was initially unremarkable, although subsequent visits did confirm an urticarial eruption in the waistband area. The initial impression was either contact dermatitis or a pressure related urticarial process.

Because of the localization of the symptoms, the negative review of systems, and the apparent importance of pressure as an etiologic factor, no further laboratory tests (such as complete blood count, chest films, urinalysis, thyroid function tests, and stool for ova and parasites) were performed. Changes in detergents, underwear waistbands and styles, and elimination of bleach in the wash were recommended without benefit. The patient was referred to a dermatologist for patch testing. Minimal dermographism was noted on stroking with mild fingernail pressure. Patch testing to the elastic waistband and to a battery of common contact allergens, including elastic ingredients, was negative.

The patient was referred to another dermatologist for confirmatory tests for immediate or delayed dermographism. Graded pressures from 48 to 234 gm/sq mm (pinpoint and strokes) were applied on several areas of the body using a dermographometer, a calibrated, spring loaded device similar to a ballpoint pen.[2] The patient responded to stroking at all pressures with a typical wheal and flare. The reaction was most pronounced after six minutes, and there was no reaction at eight hours. The reaction was more prominent on the trunk and less prominent on the arms.

Effective therapy included loosely fitting garments, oral H_1 antihistamines of several types (dysphoria and drowsiness restricted their use) and 200 to 300 mg of cimetidine as needed.

Discussion

This case illustrates many features of the typical clinical pattern of symptomatic dermographism as described by Warin and Champion[3] and Kirby et al.[4] The onset is usually gradual, and although it may last for many years, it often clears within a year or two. Minor pressure from clothing, chair seats, working with various tools, and even clapping the hands or energetic kissing have been described as common precipitating factors.[3] Once a few wheals develop, subsequent scratching often leads to the formation of additional wheals. While the wheals are usually superficial, some deep extension may occur. The lesions usually clear within an hour. Salicylates do not affect the ability to demonstrate dermographism, but penicillin may.[3] Since the patient's scratching can lead to further symptoms, it is not surprising that physicians often note an association with emotional stress. Insect stings, as well as scabies infestation, may provoke short episodes of dermographism.

Treatment of symptomatic dermographism includes avoidance of pressure stimuli. Antihistamines, for example, 4 mg of chlorpheniramine or 25 mg of hydroxyzine three times daily, are usually effective.[5] Recently, it has been shown that cimetidine, an H_2 antihistamine, may be effective.[6] This case seems to support the use of cimetidine in patients with symptomatic dermographism.

The differential diagnosis in this case included dermal contact dermatitis and delayed pressure urticaria. Contact dermatitis was suggested by the definite pattern of the lesions (waistband), with sharply defined boundaries. Possible sensitizers included compounds in the elastic waistbands of the patient's underwear and soaps and detergents because lesions were noted at several different pressure points. Another possibility was that because elastic can undergo a chemical change when washed with bleach, it produced a sensitizer in the waistband.[7] If this were the cause, elastic that had not been washed with bleach would not produce the reaction.

Delayed pressure urticaria is a condition characterized by deep, painful, nonpruritic wheals which develop four to six hours after skin pressure.[8,9] Commonly affected are pressure bearing areas such as the hands, soles, buttocks, and back. Delayed pressure urticaria may respond to systemic corticosteroids, but it is unresponsive to antihistamines and other medications.[8,9] In this case, the clear relationship to pressure and the occurrence of the wheals typically in the late afternoon raised the possibility of delayed pressure urticaria.

Individuals who present with urticaria should be asked about the possibility of a relationship between the urticaria and physical factors such as pressure. They should also be tested for dermographism. However, it should be remembered that patients with urticaria, like normal individuals, may have dermographism even if the urticaria is not caused by pressure.

Results of surveys of the incidence of dermographism in the normal population have yielded disagreement because of the use by most investigators of different amounts of pressure. Lewis observed that about 5 percent of young people responded to a single "firm" stroke with "conspicuous" whealing.[10] Lorincz used standardized pressures and studied individuals with "clinically annoying symptomatic urticarial dermographism" and normal individuals.[11] He stroked the skin with a ball-like metal point that could be weighted in a graduated fashion. The symptomatic individuals all showed whealing under a load of 32 gm/sq mm or less, whereas in a series of 40 apparently normal individuals, this level of loading never caused whealing. When the load was increased to 160 gm/sq mm, which was rather painful, about 20 percent of the normal individuals showed minimal to mild whealing.[11] Bart and Ackerman tested 13 patients with symptomatic dermographism and found that they all whealed in response to 32 gm/sq mm, and in many 16 gm/sq mm induced whealing.[2] All normal individuals tested whealed when 250 gm/sq mm was applied.

The family physician should be aware of the importance of using appropriate pressure in testing for dermographism, as these studies suggest. Since he or she may not have a measured pressure device in the office, he should stroke the trunk quite firmly with an instrument such as the edge of a tongue blade. Failure to use adequate pressure will result in an unimpressive response, as occurred with this patient initially. Another factor in the degree of dermographic reactivity is the part of the body which is tested. Areas of the skin that frequently experience pressure, such as the buttocks and extremities, are less reactive. The trunk, especially the back, is a more reactive site.

Vibration has been considered as a possible cause of urticaria independent of pressure, but it is difficult to separate the two factors when testing patients. This patient reacted to vibration and pressure with edema and pruritus of the hands.

Urticaria is thought to be the result of vasoactive mediators, such as histamine, being released from mast cells and basophils. Immunologic, genetic, chemical, hormonal, cholinergic, and physical factors apparently affect the release of the mediators.[12] The success of antihistamine therapy in many cases of urticaria and symptomatic dermographism suggests that histamine is possibly the mediator in these cases. Delayed pressure urticaria, with its markedly different clinical course and its lack of response to antihistamines, may be due to another vasoactive mediator.

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