

Glove-related hand urticaria caused by disposable gloves in healthcare workers

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doi:10.1111/cod.12201

Key words: allergy; contact dermatitis; hand eczema; irritation; nurse; occupational; patch testing; urticaria.

Many factors may contribute to hand dermatitis in healthcare workers who wear disposable gloves. We present a case series of nurses who presented with pruritic hands occurring within minutes of wearing non-powdered disposable gloves, both latex and nitrile. This was thought to be an immediate localized urticaria occurring in a group of dermatographic patients. This phenomenon affecting the hands has previously been described just twice in the literature (1, 2). We propose that this phenomenon is both under-recognized and under-diagnosed, and should be considered as a differential diagnosis of hand dermatitis occurring in those wearing disposable gloves

Case 1

A 27-year-old female dental nurse presented with a 6-month history of immediate-onset pruritus of the dorsal hands when wearing disposable gloves. This commenced when the dental practice changed to using non-sterile nitrile gloves, having previously utilized latex. There was no history of atopy, and clinical examination was largely unremarkable, with only moderate dermatographism in response to a standardized scratch performed by a dermatologist (R.N.). A radioallergosorbent (RAST) test gave a negative result with latex, and patch testing with an extended European baseline series, a rubber series, antiseptics and the subject's own samples gave negative results. Symptoms were reproduced with exposure to a nitrile glove which was slightly too small. Swelling, erythema and discomfort were noted within 2 min, and progressed for a further 10 min until the glove was

removed. Symptoms were less severe when a looser-fitting glove was worn, and, interestingly, latex gloves were found by the patient to be more flexible and less problematic than nitrile gloves.

Case 2

A 29-year-old female endoscopy nurse presented with a 12-month history of a recurrent erythematous eruption on both hands. Her condition was precipitated by wearing disposable gloves, irrespective of type, both sterile and non-sterile. A latex RAST test gave negative results. On examination, both hands were unremarkable, but marked dermatographism was noted. The patient recalled similar symptoms on the arms when carrying a pair of crutches in the past. Extensive patch testing gave negative results. Symptoms were also reproduced by the wearing of gloves, and were adequately controlled with antihistamines.

Case 3

A 42-year-old female nurse presented with a 4-month history of an intermittent and erythematous urticarial eruption on both hands and wrists, accompanied by stinging and soreness. This was triggered by disposable glove use, but settled rapidly after the gloves were removed. Symptoms began while the patient was wearing disposable latex gloves, but subsequently also occurred with nitrile gloves. The patient noted similar symptoms when wearing a new watch. A latex RAST test gave negative results. On examination, the hands were unremarkable, but, again, marked dermatographism was noted. On further questioning, it was ascertained that the gloves worn often felt too tight. Symptoms were subsequently well controlled with antihistamines. Patch testing was not performed, as history and examination were consistent with localized dermatographism exacerbated by pressure in the setting of wearing gloves.

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Conflicts of interest: The authors declare no conflict of interests.

Discussion

We present a case series that illustrates a form of glove intolerance, previously termed 'glove-related hand urticaria' (1) and 'localized dermographism' (2). This clinical presentation was diagnosed after exclusion of latex allergy and, where appropriate, negative patch testing results. All 3 patients described a localized, immediate urticarial response, which was triggered and reproduced by the pressure of tight-fitting gloves and alleviated by the use of looser-fitting gloves. Symptoms often started after introduction to the workplace of a new brand of glove that was a tighter fit than the gloves previously supplied.

This phenomenon was first reported in 1999, with a hospital laboratory worker developing a pruritic, urticarial response related to the wearing of gloves. This was referred to as 'glove-related hand urticaria' (1). Also in 1999, 3 hospital workers were described as showing an urticarial response within minutes of wearing gloves. The authors believed that the urticarial response was secondary to the shearing forces created by the application and removal of gloves, rather than the pressure caused by the gloves. They called this 'localized dermographism' (2).

It has been reported that 5% of people have an exaggerated physiological response to skin stroking, which is termed 'dermographism', and a further minority experience associated pruritus, which is termed 'symptomatic dermographism' (3). Symptomatic dermographism is simply diagnosed by inducing a linear, pruritic weal within 10 min of stroking the skin with a calibrated dermographometer at a tip pressure of $< 36 \text{ g/mm}^2$ (3). This phenomenon has also been referred to as dermographic urticaria or urticaria factitia (4).

Previous authors have felt that it is the recurrent application and removal of gloves that triggers the urticarial response (2). Our observations strongly suggest that it is the pressure, rather than the recurrent application and removal of gloves, that is largely responsible for this response. However, this is difficult to prove objectively, as our subjects did not undergo standardized testing for either dermographism or delayed dermographism. Furthermore, cholinergic, traction or other physical stimuli may also have partially contributed to this urticarial response.

Despite the possibility that this urticarial response is multifactorial, this phenomenon is under-reported, but it is very important to recognize in clinical practice. We suggest that it should continue to be referred to as 'glove-related hand urticaria', as this term is already in use, and provides more insight into the aetiology than the alternative designations of 'localized dermographism' (2) and 'symptomatic dermographism' (3).

The diagnosis of 'glove-related hand urticaria' may be suspected from the history of immediate symptoms, the presence of dermographism, and the exclusion of latex allergy. Symptoms may be reproduced on wearing of a tight-fitting glove. The need for patch testing may be obviated, as occurred in Case 3, once the nature of the condition had been appreciated. This condition is usually easily treated with the use of less tightly fitting gloves, or if necessary, with prophylactic antihistamines. It should be considered in the differential diagnosis of healthcare workers who report problems in tolerating disposable gloves, particularly when they give a history of multiple different glove types causing similar reactions.

References

- 1 Armstrong D K, Smith H R, Rycroft R J. Glove-related hand urticaria in the absence of Type I latex allergy. *Contact Dermatitis* 1999; **41**: 42.
- 2 Thomson K F, Wilkinson S M. Localized dermographism: a differential diagnosis of latex glove allergy. *Contact Dermatitis* 1999; **41**: 103–104.
- 3 Grattan C E H, Kobza Black A. Urticaria and Mastocytosis. In: *Rook's Textbook of Dermatology*, Burns T, Breathnach S, Cox N, Griffiths C (eds): London, Wiley Blackwell, 2010: pp. 1–36.
- 4 Zuberbier T, Bindslev-Jensen C, Canonica W et al. EAACI/GA2LEN/EDF guideline: definition, classification and diagnosis of urticaria. *Allergy* 2006; **61**: 316–320.