

Erythematous reactions on removal of Scanpor® tape in patch testing are not necessarily caused by dermatographism

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Removal of Scanpor® tape after occlusion for 2 days in patch testing sometimes elicits a localized erythematous skin reaction under the tape. Usually, a 'cooling-off period' of a few minutes allows the erythema to fade, ensuring that weakly positive patch test results are not missed. This reaction is commonly believed to be a form of dermatographism, a physical form of urticaria caused by a light shearing force being applied to the surface of the skin, resulting in various degrees of pruritus accompanied by whealing. The role of dermatographism in such red reactions during patch testing has never been previously investigated. Additionally, within the field of cutaneous allergy, no formal population data exist on the current incidence of symptomatic dermatographism in the general population, although the incidence of simple dermatographism (a milder form with no pruritus) has been estimated to be ~ 5% (1).

This pilot study was designed to determine whether those with erythema in the occluded area after removal of Scanpor® tape had a history of dermatographism or urticaria, and also whether they would show objective signs of dermatographism on skin testing.

Twenty consecutive patients with erythema on removal of Scanpor® tape during patch testing in our unit between October 2008 and February 2009 [median age 32 years, range 23–64 years; 5 (25%) male] were recruited to the study group. A further 9 consecutive patients with no erythema on removal of the tape were included as a control group.

A history of dermatographism or urticaria was recorded. Each patient was then tested for dermatographism with a calibrated dermatographometer (Hook & Tucker, Croydon,

UK). All patients gave verbal consent. Two perpendicular lines were drawn across the skin on the back of one shoulder. The dermatographometer (Fig. 1) was held at



Fig. 1. Calibrated dermatographometer (Hook & Tucker, Croydon, UK). Exclusion criteria included use of a short-acting antihistamine within 24 hr and a long-acting antihistamine within 72 hr, along with age < 18 years, to prevent spurious results from hyper-reactive skin present on children and adolescents. No subjects were excluded.

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Table 1. Results of the positive reaction group

Patient	Sex	Age at testing (years)	Signs of dermographism ^a		History of urticaria	History of dermographism
			0	5		
1	F	24	None	None	None	None
2	F	25	None	None	None	None
3	F	25	Mild	Mild	None	None
4	F	26	None	Mild	None	None
5	F	27	None	None	None	None
6	F	28	None	None	Mild	None
7	F	30	None	Severe	None	Mild
8	F	31	None	Moderate	None	Mild
9	F	31	None	Moderate	None	Mild
10	F	32	None	Mild	None	None
11	F	32	None	Mild	None	None
12	M	36	None	Mild	Moderate	None
13	M	37	None	Moderate	None	Mild
14	F	41	Moderate	Moderate	None	Mild
15	M	43	None	Mild	None	None
16	F	44	None	Moderate	None	Mild
17	F	48	None	Mild	None	Mild
18	M	51	None	Mild	None	None
19	F	62	None	None	None	None
20	M	64	None	None	None	None

F, female; M, male.

^aThe dermographometer was used on two separate areas, on settings 0 (control) and 5 (maximum pressure – 5% of the population expected to be positive).

Table 2. Results of the control group

Patient	Sex	Age at testing (years)	Signs of dermographism ^a		History of urticaria	History of dermographism
			0	5		
1	F	30	None	Mild	None	None
2	F	18	None	Mild	None	None
3	M	52	None	None	None	None
4	F	17	None	None	Mild	None
5	F	43	Moderate	Severe	Severe	Mild
6	M	39	None	None	None	None
7	F	25	None	None	Mild	None
8	F	18	None	None	None	None
9	F	42	None	Mild	Mild	None

F, female; M, male.

^aThe dermographometer was used on two separate areas, on settings 0 (control) and 5 (maximum pressure – 5% of the population expected to be positive).

90° to the skin, and lines were drawn at settings of 0 and 5 (corresponding to pressures of 196 and 654 kPa, respectively). The response to both was measured at 3 min, and recorded as negative, mild, moderate, or severe.

The results are shown in Tables 1 and 2 and two charts (Figs. 2 and 3), highlighting differences between the study and control groups.

This study shows that erythematous reactions on removal of Scanpor® tape are not necessarily caused by dermographism. In spite of a lack of controls

from a general population, the rates of positivity on dermographometry seem higher than would be expected. It is possible that, given the considerable intra-individual variability seen with dermographometry, some of the patients may have shown false-negative results on testing. We propose that traction urticaria may be the cause of these red reactions. A recent report (2) highlighted the phenomenon of urticaria resulting from traction on individual hairs, and showed that it may occur secondarily to removal of patch tests. In our study,

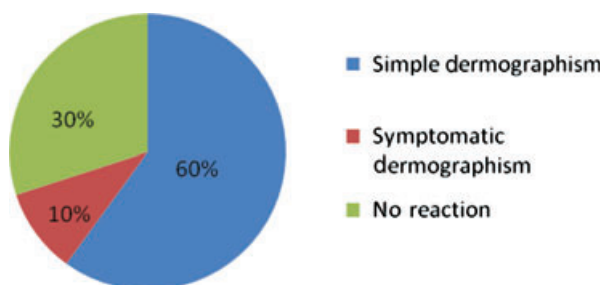


Fig. 2. Results of the study group. Six of 20 (30%) did not react at pressures of either 0 or 5 on the dermographometer, which was a higher number than expected, given the suspected aetiology of the red reaction. Twelve of 20 (60%) reacted to a pressure of 5, but not to a pressure of 0. This was interpreted as simple dermographism. Two of 20 (10%) reacted to both a pressure of 0 and a pressure of 5, indicating symptomatic dermographism. Seven of 20 (35%) had a history of dermographism – only half of those with symptoms on testing, highlighting the intra-individual variation in response, and the consequent difficulty in interpreting this type of urticaria. Of the 2 patients (10%) with a history of urticaria, only 1 had simple dermographism, and 1 had no reactions on dermographometry.

we did not make any observations during data collection regarding the coverage of hairs over the test area, nor did we formally test for signs of traction urticaria. It could also be possible that red reactions could simply represent a localized response to the adhesive on the Scanpor® tape.

References

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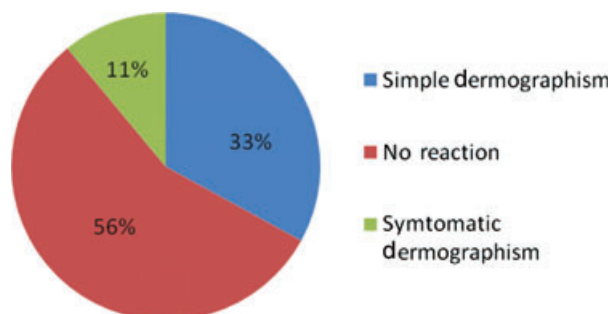


Fig. 3. Results of the control group. Five of 9 (56%) did not react at pressures of either 0 or 5 on dermographometry, which was a lower number than expected, given the suspected incidence in the population; this is probably a reflection of the selection bias seen in any group of skin disease patients. Three of 9 (33%) reacted to a pressure of 5, but not to a pressure of 0. One of 9 (11%) reacted to both a pressure of 0 and a pressure of 5, indicating symptomatic dermographism. One of 9 (11%) had a history of dermographism – this was the patient with symptoms. Of the 4 patients (44%) with a history of urticaria, half showed signs of dermographism, supporting the lack of any obvious link.

In summary, our small study suggests that red reactions on removal of Scanpor® tape are not necessarily caused by dermographism; however, a larger sample size would be needed to allow any firm conclusions to be drawn, with age-matched and sex-matched controls from the general population providing a better reference for the study group as a whole.