

GRADING THE RESPONSE IN DERMOGRAPHIC URTICARIA

J S Pasricha and Inder Preet Dhillon

An instrument named Dermographism-Testing-and-Grading device was used for grading the response of patients having dermographic urticaria, in comparison with controls. This device is capable of stroking the skin with four different grades of pressure. The pressures used were such that none of the 250 controls (including 50 normal subjects, 100 patients having non-allergic skin diseases, 50 patients having non-urticarial allergic diseases and 50 patients having non-dermographic urticaria), showed dermographism with even the maximum pressure employed, while all the 25 patients having dermographic urticaria developed dermographism. Depending upon the minimum pressure required to elicit dermographism in these patients, the severity of dermographism could be graded as grade I in 8 patients, grade II in 6, and grade IV in 11 patients. None of the patients in this group showed grade III dermographism. The dermographic grade varied at different body sites and local applications of oil, talcum powder and even tap water lowered the dermographic grade.

Key Words ; Urticaria, Dermographism, Grading

Dermographism is commonly tested by stroking the skin of the individual with any blunt object such as the pen, the end of a key, tongue depressor and the like. It is obvious however, that the pressure used for stroking the skin can vary from investigator to investigator and also from one test to the other. No wonder therefore, that the incidence of dermographism has been differently reported in different studies.¹⁻⁷ To obviate this flaw, it is necessary to have a device which can stroke the skin with a measured pressure so that the results are comparable and reproducible. Some instruments have been reported in the past,^{3, 5, 8-12} but none has been adequately popularised for routine clinical use. The present study was undertaken to evaluate one such device designed by one of us (JSP) and named Dermographism-Testing-and-Grading device (Dermograder). This device not only gives a measured dermo-

graphic stimulus to the skin, but it also allows the skin to be stroked with four different pressures. By determining the least pressure which produces definite whealing in a patient, the dermographic response of the patient can be graded into 4 different grades.

Instrument

The Dermograder consists of a template and a stroker. The template (Fig. 1), made of

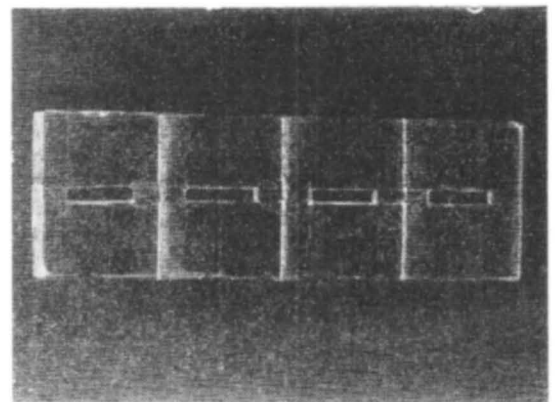


Fig. 1. The template used for dermographic grading.

From the Department of Dermatology and Venereology, All India Institute of Medical Sciences, New Delhi-110 029, India.

Address correspondence to : Dr. J. S. Pasricha.

perspex, is 10 cm long and 3.5 cm wide. Its thickness however increases step-wise from 11 mm, through 13 mm and 15 mm to 17 mm. Each step has in its centre a slot 3 mm wide and 15 mm long.

The stroker (Fig. 2) consists of a 2.5 cm long

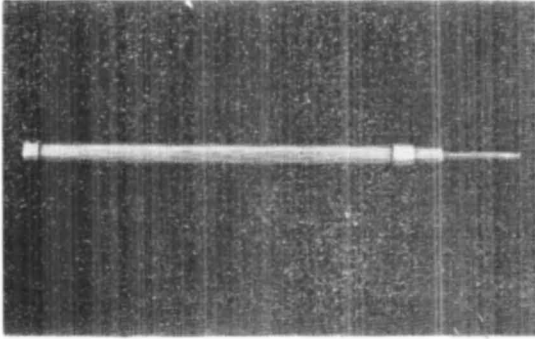


Fig. 2. The stroker for dermographic grading.

cylindrical stylus, 2 mm in diameter, supported against a spring in a housing.

Test

For eliciting the dermographic response, the template is firmly placed flat on the skin, the stroker is maximally pressed into the skin perpendicularly through each of the four slots in the template and drawn from one end to the other. The step of the template with the least thickness allows the stylus to be pressed maximally against the spring causing the skin to be stroked with the maximal pressure, while the step with the maximum thickness allows the stroker to exert the minimum pressure.

The stroked sites are then observed during the next 30 minutes for evidence of whealing. The least pressure which is able to elicit whealing in a patient is considered the dermographic grade (dermograde) in that patient.

Precautions

Before eliciting dermographism, it was ensured that, (1) the individual had not taken

any antihistaminic drug or oral corticosteroids during the previous 24 hours, (2) the site under test was free from any kind of skin lesions, and (3) it had not developed wheals during the last 8 hours. Otherwise, all patients were having active disease during the period of this study. Dermographism was always elicited on the lower back, in the lumbar region, about 5 cm from the middle on either side.

Dermograde in the Patients and Controls

The device was tested on 25 patients having dermographic urticaria, 50 patients having urticaria due to causes other than dermographism, 50 patients having allergic disorders other than urticaria, 100 patients having non-allergic skin diseases and 50 normal subjects. A clinical diagnosis of dermographism was made only if the urticarial lesions were linear and restricted to the scratched areas.⁷

Out of 25 patients having dermographic urticaria included in this study, 11 were males and 14 females, the age range being 17-50 years. The 250 controls in this study included 150 males and 100 females between the ages of 7 and 80 years.

The results of dermographism are shown in table I. None of the controls developed wheal-

Table I. Dermographic response in patients having dermographic urticaria and the control groups.

Group	Number of patients	
	Tested	Positive
1. Dermographic urticaria	25	25
2. Normal controls	50	—
3. Non-allergic skin diseases	100	—
4. Non-urticarial allergic diseases	50	—
5. Non-dermographic urticaria	50	—

ing even with the maximum pressure used, while all the 25 patients having dermographic urticaria developed whealing. The dermograde was I in 8 patients, II in 6 patients and IV in

11 patients. Grade III was not seen in any of the patients (Table II).

Table II. Dermographic grade in patients having dermographic urticaria.

Dermographic grade	Number of patients
I	8
II	6
III	0
IV	11
Total	25

Effect of Local Applications on the Dermograde

Since dermographism is based on the friction produced by the dermograder on the skin, it was considered worth investigating, if excessive sweating or other local applications are likely to modify the response to the dermograder. In 4 patients having dermographic urticaria, therefore, dermographism was elicited on 4 adjoining areas on the back, one of the areas having been wetted with tap water, the second area smeared with oil, the third area smeared with talcum powder and the fourth area kept as the control site without any application.

The dermogrades at the 4 sites in the 4 patients are shown in table III. Application of

Table III. Effect of local applications on the dermograde.

Patient number	Dermograde at the site			
	Control	After the application of		
		Talcum powder	Water	Postman oil
1.	4	3	2	0
2.	4	2	4	1
3.	4	3	2	1
4.	4	2	1	1

oil, talcum powder and even water led to a significant decrease in the dermograde in all the patients.

Comments

Fisher and Schwartz² reported that urticarial whealing occurs in about 5% of the general population on firm stroking of the skin. According to Champion,⁶ firm stroking can induce the triple response in 25-50% of the normal individuals, while Lewis¹ and Bart and Ackerman¹² believed that this response can be elicited in almost all normal individuals provided adequate pressure is applied during stroking. In our earlier study,¹³ we had used 5 different grades of pressure for stroking the skin and observed whealing in 28-36% of the subjects in different control groups with the maximum pressure. When the pressure was reduced to the next grade, whealing was seen in only 2% of each of the control groups, and when the pressure was reduced further, none in the control groups showed any whealing. It is thus obvious that the tendency for whealing in the control groups (general population) depends upon the pressure used for stroking the skin. In the patients having dermographic urticaria, the pressures required for eliciting dermographism were much lower and it was quite easy to select a pressure which will elicit dermographism in all the patients having dermographic urticaria, but in none of the controls including patients having urticaria due to other causes. The present study shows that the pressures used in the dermograder fulfill this criterion.

In addition, the dermograder also helps to grade the severity of dermographism in patients having dermographic urticaria. With the pressures used in the previous study,¹³ almost all the patients got either grade III or grade IV. This spanning of the grades was considered too narrow to be satisfactory. With the present dermograder, different patients having dermographic urticaria showed different grades ranging from grade I to grade IV. It was thus possible to have a wider spectrum of grades in different patients. Determining the grade during follow-

up helps to judge the progress of the disease and to objectively evaluate the effect of the therapeutic methods used.

In the earlier study,¹³ it had also been observed that the dermatographic response is different at different body sites. Out of the lower back, upper back, arm, forearm, abdomen, thigh and leg, the response on the lower and the upper back was usually the maximum. At all other sites, at least some patients showed a lower grade. Thus, it seems essential to perform the test at a fixed body site, and the upper or the lower back was found to be the most suitable site for this purpose.

Decrease in the dermografe following applications of even water on the skin, indicates the necessity to wipe the skin dry if there is any sweating and to clean it with spirit if the skin is oily. This information can also be used to decrease the dermatographic tendency of the patient.

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