



## Short Communication

# Skin writometer: A novel instrument for assessing provocation threshold in patients with symptomatic dermatographism

Kiran Godse<sup>1,\*</sup>, Gauri Godse<sup>2</sup>, Anant Patil<sup>3</sup>

<sup>1</sup>Dept. of Dermatology, DY Patil Deemed to be University, School of Medicine, Nerul, Navi Mumbai, Maharashtra, India

<sup>2</sup>Shree Skin centre, Nerul, Navi Mumbai, Maharashtra, India

<sup>3</sup>Dept of Pharmacology, DY Patil Deemed to be University, School of Medicine, Nerul, Navi Mumbai, Maharashtra, India



## ARTICLE INFO

### Article history:

Received 18-03-2021

Accepted 20-04-2021

Available online 26-05-2021

### Keywords:

instrument

Symptomatic dermatographism

Usefulness

## ABSTRACT

Symptomatic dermatographism, a type of physical urticaria is a common condition affecting patient's quality of life. For its diagnosis, clinicians in India currently use tip of the ball point pen for estimating the provocation threshold. However, because of single tip of fixed length, ball point pen can-not differentiate between different grades of symptomatic dermatographism. With variations in the intensity of stroke, there is a possibility of even missing the diagnosis. Hence, there is a need of a better method to diagnose symptomatic dermatographism and determine the provocation threshold. Skin writometer, a plastic instrument with three arms of varying length can be novel in this regards. This instrument is simple, user friendly, easy to use and inexpensive. It can be used for diagnosis as well as assessment of treatment response in patients with symptomatic dermatographism.

© This is an open access article distributed under the terms of the Creative Commons Attribution License (<https://creativecommons.org/licenses/by/4.0/>) which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

## 1. Introduction

Physical urticaria is a diverse group of determinable conditions in which patients suffer from a chronic predisposition to develop localized or generalized urticaria upon contact with physical stimuli. Mechanical, thermal or electromagnetic stimuli can produce these responses. It accounts for nearly 20% to 30% of cases of chronic urticaria.<sup>1</sup>

Dermatographism can be simple or symptomatic.<sup>2</sup> Simple dermatographism, a natural physiological response to physical stimuli is reported in about 1.5-5% healthy people.<sup>1,2</sup> On the other hand, symptomatic dermatographism, can result in symptoms such as itching and burning due to wheal and flare response after slight pressure.<sup>1,2</sup> Symptomatic dermatographism can impair the quality of life.<sup>3,4</sup> The severity of symptomatic dermatographism differs among individuals.<sup>3</sup>

### 1.1. Current method for diagnosis of dermatographism and its limitation

Conventionally, the diagnosis is made by stroking the skin with a wooden tongue blade<sup>2</sup> or a ballpoint pen with an empty refill.<sup>1</sup> Use of ballpoint pen with empty refill is associated with some limitations in clinical practice. The length of the tip of ballpoint pen is fixed. Hence, the intensity of the stroke produced can be variable. Moreover, with traditional single stroke, there is chance of missing the diagnosis.<sup>1</sup> Estimation of provocation threshold i.e. the lowest level of shear force required to produce a positive wheal response is difficult with instruments with single tips/arms. The other methods to diagnose symptomatic dermatographism include Dermatographic tester, a spring-loaded dermatographometer and Fric Test.<sup>3</sup> Dermatographic tester also has only one tip<sup>5</sup> whereas Fric Test dermatographometer is not available in India.<sup>6</sup>

Considering the limitation of current method, a user friendly, simple but inexpensive method of eliciting

\* Corresponding author.

E-mail address: [drgodse@hotmail.com](mailto:drgodse@hotmail.com) (K. Godse).

**Table 1:** Graded response with skinwritometer

Grade	Response after skin stroke of ~10 cm length after 10 minutes
Mild dermographism	Wheal and pruritus with only longest arm of Skin Writometer
Moderate dermographism	Wheal and pruritus with longest and middle arm or Skin Writometer
Severe dermographism	Wheal and pruritus with with all the three arms of the Skin Writometer

dermographism is required.

### 1.2. Skin writometer

We propose a novel instrument, known as the skin writometer for eliciting dermographism. This can be used for diagnosis as well as evaluation of treatment response to dermographism/symptomatic urticaria.

This plastic instrument has 3 smooth arms of varying lengths i.e. 2.5 mm, 3.0 and 4 mms placed 2 cm apart. These arms can be used to strike on the skin in patients of urticaria. [Figure 1]



**Fig. 1:** Skin writometer

#### 1.2.1. Proposed use

1. Hold the Skin writometer perpendicular to the forearm
2. Apply pressure to the Skin writometer so that the tips are almost invisible
3. Apply a single firm stroke of ~10 cm
4. Taking the reading after 10 minutes

#### 1.2.2. Precautions while using Skin writometer

1. Skin at the test site should be unbroken
2. Skin at the test site should be free of any obvious signs of infection.

#### 1.2.3. Interpretation of the response

1. Development of wheal with pruritus at the site of largest test arm can be considered as a positive

response.

2. A positive response with all the three arms including the shortest exerting lowest stroke stimulus can be considered as severe dermographism.
3. A wheal with only the longest arm can be considered as a positive response, but of mild grade.

Skin writometer has been suggested by others as an alternative option to Fric Test.<sup>7</sup> Although found useful in clinical practice, a formal evaluation through a clinical study is needed to assess its usefulness compared ballpoint pen test.

The suggested approach for conducting clinical investigation may include giving a firm stroke of ~10 cm with the help of a ballpoint pen on one arm and same stroke with Skin writometer on the other arm. The extent of wheals can be measured on both the sides after 10 minutes. The sensitivity and specificity of Skin writometer in identification and diagnosis of symptomatic dermographism can be compared. Similar approach can be used for comparison with the Fric Test.

## 2. Conclusion

Skin writometer, may be used as a simple, user friendly and inexpensive instrument for accurate diagnosis of symptomatic dermographism.

## 3. Source of Funding

No financial support was received for the work within this manuscript.

## 4. Conflicts of Interest

There are no conflicts of interest.

## References

1. Godse K. Use of a ballpoint pen in the diagnosis of physical urticaria. *Indian J Dermatol.* 2011;56(1):119–20. doi:10.4103/0019-5154.77576.
2. Taskapan O, Harmanyeri Y. Evaluation of patients with symptomatic dermographism. *J Eur Acad Dermatol Venereol.* 2006;20(1):58–62. doi:10.1111/j.1468-3083.2005.01372.x.
3. Schoepke N, Mlynek A, Weller K, Church MK, Maurer M. Symptomatic dermographism: an inadequately described disease. *J Eur Acad Dermatol Venereol.* 2015;29(4):708–12. doi:10.1111/jdv.12661.
4. Wallengren J, Isaksson A. Urticarial Dermographism: Clinical Features and Response to Psychosocial Stress. *Acta Derm Venereol.* 2007;87(6):493–8. doi:10.2340/00015555-0306.
5. Mlynek A, dos Santos RV, Ardelean E, Weller K, Magerl M, Church MK. A novel, simple, validated and reproducible instrument for assessing provocation threshold levels in patients with symptomatic dermographism. *Clin Exp Dermatol.* 2013;38(4):360–6. doi:10.1111/ced.12107.
6. Godse K, Mehta A, Agarwal S, Patil S. Feasibility and utility of the fric test in symptomatic dermographism: A pilot study. *Indian J Dermatol.* 2015;60(6):638. doi:10.4103/0019-5154.169167.
7. Gandhi G, Vasani R. White dermographism. *Indian J Paediatr Dermatol.* 2018;19:173–5.

**Author biography**

**Kiran Godse**, Professor

**Gauri Godse**, Consultant Dermatologist

**Anant Patil**, Assistant Professor

**Cite this article:** Godse K, Godse G, Patil A. Skin writometer: A novel instrument for assessing provocation threshold in patients with symptomatic dermographism. *IP Indian J Clin Exp Dermatol* 2021;7(2):178-180.