

Stinging and Rosacea

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A total of 32 rosacea patients (25 with the papulopustular type of rosacea and 7 with the erythematotelangiectatic type) and 32 healthy persons were single-blind tested with a solution of 5% lactic acid and pure water applied to their cheeks. Twenty-four patients and 6 controls reacted positively as “stingers” ($p < 0.001$) in this objective test of sensitive skin. All 7 of the patients with erythematotelangiectatic rosacea, but only 17/25 with the papulopustular type, were stingers (n.s.). The reason why some patients react with subjective symptoms, such as itching, burning, stinging, prickling or tingling, is unclear. The findings in this study are not surprising, but do support the theory that impairment due to different stimuli, most likely because of vascular sensitivity, is a central mechanism in the aetiology of rosacea. The correlation between sensitive vessels and sensitive skin has, however, not yet been determined. Key words: lactic acid test; skin irritation.

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Rosacea is a cutaneous vascular disorder (1), which is related to migraine (2–3) and ocular symptoms. The disease is often aggravated by various factors, e.g. sun-bathing, hot beverages (4), spicy food, alcohol and external treatment. The sensitivity to external treatment is rarely caused by contact allergy; instead it is thought to be due to vascular sensitivity in the skin of the cheeks (1), but the correlation between this sensitivity and sensitive skin has not yet been determined. The stinging sensation in rosacea patients is similar to that experienced in other patients with stinging reactions (5). Non-allergic stinging reactions in facial skin have been studied mainly in patients sensitive to cosmetic products without positive patch test results (5–9) and patients with skin problems related to visual display units (VDU) (10). The sensitive skin in these patients is thought to be due to a thin stratum corneum (5), and therefore a defective stratum corneum barrier (5, 9), increased dermal blood flow (6), or a direct neuronal influence (6). Rosacea patients have not been included in previous studies using the stinging test (5–10). The aim of the present study was to determine whether rosacea patients are stingers.

MATERIALS AND METHODS

Thirty rosacea patients and 32 control persons with healthy skin employed by Karolinska Hospital were enrolled in the study. The patients were selected randomly among out-patients from the Department of Dermatology at the hospital. Twenty-five of the patients had the papulopustular type (PP) of rosacea and 7 had the erythematotelangiectatic (ET) type. Nine were men and 23 women, and their mean age was 50 years (range 24–83 years). They were recruited consecutively, irrespective of whether or not they had

stinging sensations, but 18 of them experienced impairment in their disease due to various factors (hot spices 10, alcohol 6, stress 5, heat 4, menstruation 3, sun bathing 2, cold 1, hot beverages 1). They had medium-severe rosacea and all of them were well-treated with either tetracycline tablets or metronidazole cream, with minor objective signs at the time of the test. The control group was matched with regard to age, gender, skin type (11), atopic diseases and family history of atopy.

The lactic acid test, which is used to elicit sensory or subjective irritation, was performed according to Frosch & Kligman (5) and Lammintausta et al. (6). After cleaning the facial area below the eyes with soap and water, facial sweating was induced by exposure to a commercial facial sauna (Silhouet-Tone 50126, Canada) for 15 min. A solution of 5% lactic acid in water was then applied with a swab in a gentle rotating motion to one side of the cheek from the side of the upper lip upwards across the cheek. Water was applied as a placebo control in the same manner to the opposite side. After 2, 4 and 5 min the persons studied were asked to describe the presence and intensity of skin sensation in the test area. The following scale was used: 0 = none, 1 = slight, 2 = moderate, 3 = severe. If the cumulative score at 2, 4, and 5 min of skin sensations was 3 or more, the subject was considered to be a “stinger”.

The number of patients with positive reactions (“stingers”) vs. those in the control group were compared with the exact chi-squared test. The total sum of scores for persons in the groups was compared using the Kruskal-Wallis one-way analysis of variance, and maximal scores in any of the 3 instances (2, 4 and 5 min) were compared with the Kruskal-Wallis exact test with Monte-Carlo estimation. The groups were considered to differ significantly when $p < 0.05$.

The study was approved by Ethic Board at the Karolinska Hospital No KS97-088.

RESULTS

Twenty-four out of 32 patients (7/7 erythematotelangiectatic and 17/25 papulopustular) and 6 out of 32 subjects in the control group ($p < 0.001$) reacted positively as “stingers” (i.e. had a total score of ≥ 3) (Fig. 1). Five patients and 2 controls had stinging sensations from the placebo test with water. The

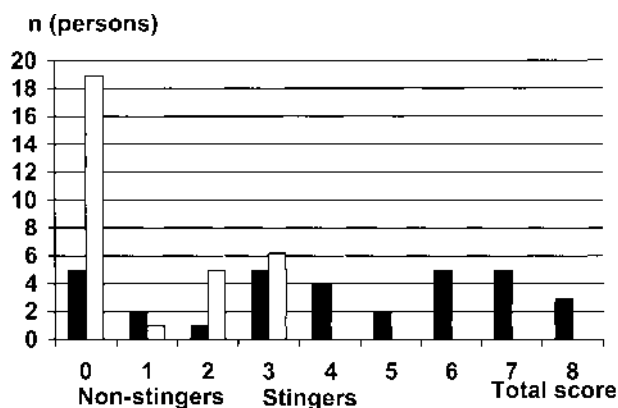


Fig. 1. Total sum of scores (2, 4 and 5 min) after application of a solution of 5% lactic acid to the cheek for persons in the rosacea group ■ ($n = 32$) and the control group □ ($n = 32$).

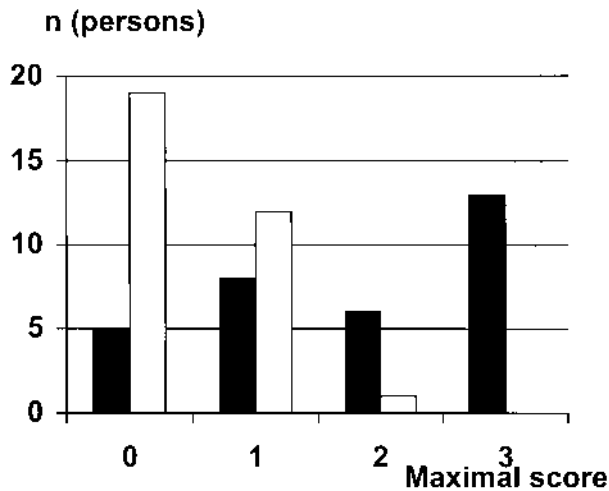


Fig. 2. Maximal score in any of the 3 instances after application of a solution of 5% lactic acid to the cheek for the rosacea group ■ ($n=32$) and the control group □ ($n=32$).

groups differ significantly for the total sum of scores of stinging ($p<0.01$) and for the maximal score at any of the 3 time points ($p<0.001$) (Fig. 2).

DISCUSSION

It is not surprising that this study shows that rosacea patients are more frequently stingers. The evaluation is objective since we used pure water as a control on the opposite cheek, and this was performed double-blind (i.e. left/right side chosen double-blind). If the patients had been more disposed to having a low perception, they would also react to water. In this test, hydration of the skin with the facial sauna is essential in provoking symptoms from lactic acid, while in our experience the concentration of lactic acid is of minor importance. The lactic acid test has formerly been shown to be useful in detecting patients who are sensitive to cosmetics without having a positive patch test (6). Patients with a positive stinger test have had an increased dermal blood flow (6), which also is presented in rosacea patients (1). Our group has earlier shown that patients with facial skin symptoms related to working with VDUs are more frequently stingers than are healthy control persons, although they do not have visible skin signs. Most likely many of these patients have rosacea or a rosacea-like skin disease (12). When comparing the 2 groups of patients, our rosacea patients are significantly more often stingers ($p<0.05$). A previous study of rosacea patients (13) indicated that a relationship may exist between rosacea and VDU work, but a large-scale epidemiological study of 809 office employees showed that rosacea was equally common in those who did not work with VDUs (14).

There was a tendency for those in the ET group of rosacea patients more often to be stingers than those in the PP group. Although the number of patients in the ET group ($n=7$) was too small to draw any significant conclusion, this may indicate

that the blood vessels are of importance in stinging sensations. A connection seems to exist between sensory or subjective irritation and cutaneous vascular reactivity, which, however, may be a secondary phenomenon (6). As a result, we are now trying to treat the telangiectases of rosacea stingers with a laser, performing the lactic acid test before and after treatment.

The reason why some patients react with subjective skin symptoms without having any visible skin signs is still obscure. Lammintausta & Maibach (7) and Maibach et al. (8) have found increased frequency of stingers in the following groups: infants, women, elderly, persons with skin type I, a history of atopic dermatitis or dry skin. Our group has recently found increased frequency of stingers in patients with VDU-associated skin symptoms (10).

Stingers are thought to have a defective stratum corneum barrier (5, 9) and they show a lower skin pH than control persons after application of lactic acid to the skin (9). Further studies are needed to confirm the results described above and to explore the role of skin neuropeptides in stinging.

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