

# Hand eczema: causes, course, and prognosis II

NIELS K. VEIEN, THAIS HATTEL AND GRETE LAURBERG  
The Dermatology Clinic, Vesterbro 99, DK-9000 Aalborg, Denmark

*Background:* Hand eczema is a common dermatosis, often with a chronic course.

*Objective:* To follow a well-described cohort of patients with hand eczema for 5 years.

*Patients and Methods:* 522 consecutive hand eczema patients (175 men and 347 women) seen in a private practice of dermatology were sent a questionnaire once a year for 5 years.

*Results:* After 1 year, the response rate was 80% (417 of 522), and after 5 years, the rate was 68%. After 1 year, 81% of the 417 respondents reported that they still had persistent or intermittent hand eczema. After 5 years, this number was 65% (232 of 355). The larger the area involved at the initial examination, the poorer the prognosis. After 1 year, 48% of the patients felt that their hand eczema had improved, while 6.7% felt that it had worsened. 25% of those who responded stated that they never used gloves. Few patients could provide new information about the cause of the dermatitis during the 5-year follow-up.

*Conclusions:* Hand eczema is a chronic dermatosis. Although treatment may improve hand eczema, it rarely clears completely. Evidence-based measures need to be developed for the long-term management of hand eczema.

*Key words:* chronicity; follow-up; long term; questionnaire. © Blackwell Munksgaard, 2008.

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A previous communication (1) presented detailed information about a prospective, consecutive cohort of 522 patients with hand eczema.

After completion of the above study, each patient was asked to complete a questionnaire describing the course of their hand eczema once a year for 5 years and, if possible, to provide additional information about the cause of their dermatitis.

## Materials and Methods

Once a year for 5 years, questionnaires were sent to the 522 patients initially included in the study. The questionnaire contained questions about the course of the dermatitis, current severity, and location and aggravating factors, such as wet work, contact with oil products, contact urticaria symptoms from food items, and aggravation following the ingestion of certain foods. There were also questions about the relationship of the dermatitis to the patient's current occupation.

If the answers to some of the questions were incomplete, a nurse contacted the patient by telephone for clarification. Patients who did not respond to the questionnaire were sent a reminder. As the response rate after 2 years was relatively low, an attempt was made to obtain information about possible change of address for the follow-up questionnaires to be sent after 3, 4, and 5 years.

Non-parametric statistical methods were used to compare the results.

## Results

After 1 year, the response rate to the questionnaire was 80% (417 of 522), and after 5 years, the response rate was 68%. The drop-outs at the 1-year questionnaire follow-up were mostly men. Their ages and the type or severity of their dermatitis did not differ from the responders.

After 1 year, 339 (81%) women and men reported that they still had persistent or intermittent hand eczema, while 51 (12%) had no dermatitis.

27 patients did not answer this question. The treatment response reported by the patients after 1 year is given in Table 1.

In the 1-year questionnaire, 20 men and 31 women stated that they had no dermatitis at the time the questionnaire was completed. 12% of these 51 patients had allergic contact dermatitis, 41% had irritant contact dermatitis, and 4% had atopic dermatitis. The remainder had other aetiological diagnoses or dermatitis of undetermined aetiology. 6 of the 20 men who indicated on the 1-year questionnaire that they had no hand eczema remained free of hand eczema throughout the 5-year study period compared with 13 of 31 women.

The patients were asked if they continued to treat their hand eczema. 271 patients (65%) noted that they continued to treat, while 135 (32%) did not. 11 patients did not answer this question.

199 patients (48%) felt that the dermatitis had improved, 115 felt that there was no change, and 28 noted aggravation. 65 patients were uncertain of any change in severity.

Irrespective of the aetiological diagnosis of their hand eczema, the patients were asked to identify possible aggravating contactants or other aggravating factors (Tables 2 and 3).

Among the 13 men and 68 women who indicated in the 1-year questionnaire that the intake of certain foods aggravated their dermatitis were 1 man and 14 women who had positive patch tests to nickel (5 of the women also had positive patch test reactions to cobalt), 2 women who reacted to cobalt and chromate, 8 women who reacted to the

Table 3. Responses to the question: does your hand eczema become worse because of 1 or more of the following?\*

|                      | Men,<br>n = 129 | Women,<br>n = 288 | Total,<br>n = 417 |
|----------------------|-----------------|-------------------|-------------------|
| Psychological stress | 22 (17%)        | 101 (35%)         | 123 (29%)         |
| Sweating             | 22 (17%)        | 68 (24%)          | 90 (22%)          |
| Premenstruation      | —               | 27 (9%)           | —                 |
| Mechanical trauma    | 23 (18%)        | 56 (19%)          | 79 (19%)          |
| Intake of food       | 13 (10%)        | 68 (24%)          | 81 (19%)          |

\*Questionnaire sent 1 year after the initial examination.

perfume mixture and/or *Myroxylon pereirae*, and 3 women who reacted to the sesquiterpene lactone mixture.

The following specific question was asked about contact with food items: 'Do you feel itching, burning or stinging within seconds or minutes of touching raw food items such as potato, tomato, meat or fish?' Among the women in this study, 132 responded that they did have such symptoms. This number was significantly higher for women who had had hand eczema for more than 10 years. 59 of 79 women compared with 73 of 181 whose dermatitis had lasted less than 10 years ( $P < 0.01$ ).

The most commonly noted foods were potato (64), tomato (64), meat (64), citrus fruits (32), fish (22), and apple (9). 50 patients listed various other food items, and many listed several food items.

The use of gloves is detailed in Table 4. The numbers were too small to allow for the meaningful calculation of the use of gloves in specific occupations.

The questionnaires sent 2, 3, and 4 years after the initial consultation showed little new information. A summary of the results of the questionnaires regarding the course of the hand eczema after 5 years is given in Table 5.

The area involved at the initial examination was compared with the outcome after 5 years. 26 of 207 (13%) patients with an involved area of less than one-third of the hands at the time of the initial examination stated at the 5-year follow-up

Table 1. Course of hand eczema according to a questionnaire sent 1 year after the initial examination

|                                   | Men,<br>n = 129 | Women,<br>n = 288 | Total,<br>n = 417 |
|-----------------------------------|-----------------|-------------------|-------------------|
| Hand eczema improved or cleared   | 55 (43%)        | 124 (43%)         | 179 (43%)         |
| Hand eczema improved but recurred | 52 (40%)        | 113 (40%)         | 165 (40%)         |
| No change                         | 14 (11%)        | 33 (12%)          | 47 (11%)          |
| Not stated                        | 9 (7%)          | 18 (6%)           | 27 (7%)           |

Table 2. Responses to the question: does your hand eczema appear to be worse after contact with 1 or more of the following?\*

|                        | Men,<br>n = 129 | Women,<br>n = 288 | Total,<br>n = 417 |
|------------------------|-----------------|-------------------|-------------------|
| Water                  | 27 (17%)        | 101 (35%)         | 128 (31%)         |
| Detergents             | 42 (34%)        | 190 (66%)         | 232 (56%)         |
| Handling of food items | 17 (13%)        | 133 (46%)         | 140 (34%)         |
| Oil products           | 21 (17%)        | 35 (12%)          | 56 (13%)          |
| Dirt                   | 19 (16%)        | 61 (21%)          | 80 (19%)          |

\*Questionnaire sent 1 year after the initial examination.

Table 4. Use of gloves\*

|                                                | Men,<br>n = 129 | Women,<br>n = 288 | Total,<br>n = 417 |
|------------------------------------------------|-----------------|-------------------|-------------------|
| Never                                          | 39 (30%)        | 66 (23%)          | 105 (25%)         |
| At work                                        | 47 (36%)        | 88 (31%)          | 135 (32%)         |
| During housecleaning                           | 20 (16%)        | 170 (59%)         | 190 (46%)         |
| During food preparation                        | 5 (4%)          | 49 (17%)          | 54 (13%)          |
| While carrying out other functions in the home | 28 (22%)        | 74 (26%)          | 102 (24%)         |

\*Gloves were often worn for more than 1 activity, thus explaining that the sum is more than 100%. Questionnaire sent 1 year after the initial examination.

Table 5. Course of hand eczema over a 5-year follow-up period ( $n = 522$ )

|                            | After 1 year,<br>$n = 417$ | After 2 years,<br>$n = 334$ | After 3 years,<br>$n = 372$ | After 4 years,<br>$n = 324$ | After 5 years,<br>$n = 355$ |
|----------------------------|----------------------------|-----------------------------|-----------------------------|-----------------------------|-----------------------------|
| Hand eczema all the time   | 118 (28%)                  | 72 (21%)                    | 72 (19%)                    | 64 (20%)                    | 62 (17%)                    |
| Hand eczema intermittently | 221 (53%)                  | 176 (53%)                   | 193 (52%)                   | 163 (50%)                   | 170 (48%)                   |
| No hand eczema             | 51 (12%)                   | 77 (23%)                    | 95 (26%)                    | 96 (30%)                    | 122 (35%)                   |
| Not given                  | 27 (7%)                    | 9 (3%)                      | 12 (3%)                     | 1 (0%)                      | 1 (0%)                      |

that they had had eczema all the time compared with 9 of 26 (35%) for whom more than two-third of the area of the hands was involved at the initial examination ( $P < 0.01$ ).

At the 5-year follow-up, 5 of 91 (6%) patients who had had hand eczema for less than 6 months at the time of entry into the study reported that they had had hand eczema throughout the study period compared with 23 of 80 (29%) patients who had had hand eczema for more than 10 years when they entered the study ( $P < 0.001$ ).

37 of 91 (41%) patients who had had hand eczema for less than 6 months at the time of entry into the study had no hand eczema at the 5-year follow-up compared with 12 of 80 (15%) who had had hand eczema for more than 10 years when they entered the study ( $P < 0.001$ ).

More women than men had had hand eczema throughout the 5-year study period, and more women than men had hand eczema at the time of the 5-year follow-up.

Among patients with an aetiological diagnosis of atopic dermatitis at the initial examination, 15 of 50 (30%) responded at the 5-year follow-up that they had had hand eczema all the time compared with 49 of 306 (16%) with other diagnoses or with an undetermined aetiological diagnosis ( $P < 0.05$ ). There was, however, no correlation between persistent hand eczema and a history of atopic dermatitis.

After 5 years, 83 of 355 patients who responded to this final questionnaire answered 'yes' to the question 'Have you obtained further information here or elsewhere about the cause of your dermatitis since the initial consultation in this clinic?', 215 patients answered 'no' to this question, and 53 did not know.

16 of the 83 patients who had obtained additional information about the cause of their dermatitis had allergic contact dermatitis at the initial examination, 25 had irritant contact dermatitis, and 16 had atopic dermatitis.

On the 5-year follow-up questionnaire, a nickel-allergic man who initially was thought to have irritant contact dermatitis responded that his hand eczema had disappeared after an electric kettle that leached nickel had been replaced. It is possible that he had systemic allergic dermatitis.

A woman diagnosed with allergic contact dermatitis probably had irritant contact dermatitis from wet work.

A nickel-allergic woman thought to have irritant contact dermatitis stated that food with nickel content was the most important aggravating factor for her dermatitis.

A man with no positive patch tests and a diagnosis of irritant contact dermatitis stated that his hand eczema cleared after he discontinued the use of chromate-tanned leather gloves.

Among the 16 patients with a diagnosis of atopic dermatitis, 6 mentioned that the intake of various foods caused flares of their dermatitis. 1 of the 16 wrote that she had been diagnosed with systemic lupus erythematosus, and another wrote that she had psoriasis.

## Discussion

The main purpose of this long-term follow-up of a well-defined group of patients with hand eczema was to determine the course of the dermatitis and, hopefully, gain some additional information about the cause of the dermatitis.

In spite of treatment and oral and written instructions on the prevention of hand eczema, 232 of 353 (65%) of the participants in this study still had constant or intermittent hand eczema after 5 years. It is, however, important to note that when completing the 1-year questionnaire, 48% stated that their dermatitis had improved. Only 6.7% felt that the dermatitis was worse than at the initial examination. The patients were asked the same questions throughout the follow-up period. As it is unlikely that after 5 years they could remember the severity of their dermatitis at the initial examination, we used primarily the data from the 1-year questionnaire.

The patients included in this study were referred from general practice. It is, therefore, likely that their hand eczema was more severe than that of a population-based study population.

The questionnaire follow-up design was chosen for practical reasons. It would have been very cumbersome to re-examine such a large study population. Follow-up based on physical examination is, of course, of a higher quality in terms

of reiteration of instructions and evaluation of severity of dermatitis.

Meding et al. (2) found in her well-defined cohort of hand eczema patients that after 15 years of follow-up, 44% of 868 patients had had hand eczema within the past year and 66% reported periods with hand eczema. The most important predictive factor for a poor prognosis was the extent of hand eczema at the initial examination or consultation. Other factors were a young age at the onset of hand eczema and a history of hand eczema or contact allergy.

In the current cohort of patients, there was a correlation between involvement of a large area of the hands and a poor prognosis. Likewise, there was a correlation between an aetiological diagnosis of atopic dermatitis and persistent hand eczema. There was, however, no correlation between a history of atopic dermatitis and persistent dermatitis. This is at variance with Meding and Swanbecks's findings (3).

When Lantinga et al. (4) re-examined a cohort of patients with dermatitis after 3 years, they found that the eczema of 41% of 105 patients had cleared. Only a few ascribed the clearing of their dermatitis to medical treatment. Yngveson et al. (5) found that among young patients with hand dermatoses, the dermatitis of young men cleared more frequently than the dermatitis of young women.

In another study, the hyperkeratotic dermatitis of the palms of only 2 of 32 patients had cleared at the time of re-examination after 10 years (6).

12% of 51 patients in this study whose hand eczema had cleared after 1 year had allergic contact dermatitis, 41% had irritant contact dermatitis, and 4% had atopic dermatitis. Only 19 of the 51 patients remained free of hand eczema throughout the 5-year study period.

In spite of the poor prognosis for the clearing of hand eczema, 32% stated in the 1-year questionnaire that they did not currently treat their hand eczema and 25% stated that they never used gloves (Table 4). This information indicates that there is a need for guidelines for the long-term treatment of hand eczema and for the protection of the hands.

In the initial study (1), we found that 3% of the men and 11% of the women felt that rubber gloves aggravated their hand eczema. Perhaps better instruction on the use of frequently changed cotton glove liners as well as gloves targeted for a specific type of work would help to overcome this problem. Such guidelines have been validated and found useful in wet-work occupations (7, 8).

The most common contactants that aggravated hand eczema were wet work and contact with dirt

and oil products (Table 2). It is interesting that 46% of the women felt that handling food items aggravated their hand eczema. When specifically asked to identify contact urticaria symptoms, 132 of 288 women (46%) answered that they had such symptoms. They were statistically significantly more common among those who had had hand eczema for more than 10 years than among those with hand eczema for a shorter period.

Systematically performed prick or prick-prick testing with suspected food items was not a part of this study. It is our experience that relatively few positive reactions are seen even in patients with severe symptoms.

Among other commonly mentioned aggravating factors was the intake of certain foods (Table 3). Some of the reactions to foods could be related to contact allergens such as nickel, cobalt, chromate, and flavourings. 35% of the women in this study felt that psychological stress aggravated their hand eczema (Table 3). In comparison, 47.5% of 101 patients with hand dermatitis were convinced that their dermatitis was worsened by psychological stress (9).

During the 5-year follow-up, only a few patients gave useful, additional information about the possible cause of their dermatitis. The aetiological diagnosis made at the first consultation remained virtually the same throughout the follow-up period.

It is hoped that the information gained in this questionnaire follow-up of hand eczema can be used to develop good instructions about preventive measures for hand eczema. The chronicity of hand eczema demonstrated in this study indicates a great need for more detailed instructions about the long-term management of hand eczema. A plethora of information about types of hand eczema and its management and prevention is provided in the second edition of 'Hand Eczema' edited by Menné and Maibach (10). Nonetheless, a review paper recently published by a European expert group concluded that the current treatment of hand eczema is inadequate (11).

It appears that most cases of hand eczema cannot be cured. A reduction of the severity of the eczema can help the patient lead a more normal life and be gainfully employed in many occupations.

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### Address:

Niels K. Veien, MD, PhD  
The Dermatology Clinic  
Vesterbro 99  
DK-9000 Aalborg  
Denmark  
Tel: +45 9816 5973  
Fax: +45 9816 8173  
e-mail: veien@dadlnet.dk