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LETTERS TO THE EDITOR

Gender Differences in Topical Treatment of Allergic Contact Dermatitis

Eline Noiesen[1], Martin D. Munk[2], Kristian Larsen[3], Marianne Høyen[3] and Tove Agner[4]

[1]National Allergy Research Centre, Gentofte Hospital, University of Copenhagen, [2]The Danish National Institute of Social Research, [3]The Danish University of Education, Copenhagen, and [4]Department of Dermatology, Roskilde Hospital, Roskilde, DK-4000 Roskilde, Denmark. E-mail: t.agner@dadlnet.dk

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Sir,

Females report skin disease more often than males (1–3), and female gender is a predisposing factor to allergic contact dermatitis because of gender differences in exposure patterns (4–6). No significant differences in quality of life (QoL) scores have been reported between males and females with allergic contact dermatitis, but females report a higher degree of emotional distress (7, 8) and a higher degree of discomfort from eczema than males (3). Recent data on QoL in patients with hand eczema showed that QoL was equally affected in males and females, although disease severity was higher in males (9). The negative cosmetic influence of dermatitis may traditionally be expected to cause more distress in females, and was recently reported to do so in female patients with atopic dermatitis (10).

Data on treatment of allergic contact dermatitis is limited, and differences between males and females with respect to treatment are not well described. Although the clinical experience is that females are more familiar with and more willing to use topical treatments, this has not been investigated or documented. The aim of this study was to compare treatment patterns among males and females with respect to conventional therapy. A second aim was to compare treatment patterns among healthcare workers and non-healthcare workers.

METHODS

The present study is based on a questionnaire survey among patients with contact allergy to preservatives and/or fragrances in consumer products. Questions were formulated based either on previously used questions or on interviews with patients with allergic contact dermatitis (11).

A preliminary questionnaire, which consisted of 95 questions, was tested in a pilot group of 10 out-patients (4 men and 6 women, age range 26–65 years, mean 48 years). The relevance and understanding of each question in the completed questionnaire were discussed with the participants. Categories were added or removed, ambiguous questions were omitted or changed, which left 83 questions in the final questionnaire.

The questionnaire included questions about the duration, location and severity of the eczema. Severity was assessed by the patient on a 100-mm visual analogue scale (VAS), with numbers from 0 to 10. The exact wording of the question was: "How would you grade your eczema on a scale from 0 to 10?", where 0 = no eczema and 10 = severe eczema. Marks placed between numbers were registered as the lowest number plus 0.5. Questions also included frequency of eruptions (no eruptions, few eruptions (less than 4 per year), frequent eruptions (more than or exact 4 per year) or constant eruptions). The variable "work-related problems" comprises patients, who consulted the doctor because of problems attending to their jobs. On the basis of respondents' occupations the variable "high-risk occupation" was constructed according to the most frequent occupations to cause occupational hand eczema (12).

Patients were asked about use of topical treatment using 4 response categories: often, occasionally, rarely and never. Furthermore, the questionnaire included questions about respondents or their partners educated or working in the healthcare system.

Questionnaires were posted in summer 2004. A reminder was sent after two weeks and after a period of an additional two weeks non-respondents were sent another reminder. The questions were formulated in Danish, and the questions in English reported in this article have not undergone any linguistic validation.

Participants were patients with eczema visiting the outpatient dermatological clinics at three different centres in the period 1 July 2000 to 30 June 2003. The centres are located in Sealand, Funen and Northern Jutland.

Inclusion criteria were: age range 18–65 years; contact dermatitis and contact sensitization to preservatives or fragrances (identified as a positive patch test to one or more of the following allergens: formaldehyde, quaternium-15, methyldibromo glutaronitrile, methylisothiazdinone/methylchloroisothiazolinone, parabens, Balsam of Peru and Fragrance mix). Exclusion criteria were: atopic dermatitis; not Danish-speaking. Permission was obtained from The Danish Data Protection Agency.

The three participating centres all belong to the network of the Danish Contact Dermatitis group. At their visit to the centres all patients were instructed to use moisturizers for prevention and topical corticosteroids for treatment of eczema, as well as in avoidance of relevant allergens. Instructions were given by the doctor (male/female evenly distributed).

The χ^2 was used for comparison of groups. For small group sizes Yates correction was applied. All *p*-values are two-sided, and a 5% level of statistical significance was used.

RESULTS

A total of 485 patients were available for the study. Of these, 382 (109 men and 273 women) responded to the questionnaire; an overall response rate of 78.8%. Ten questionnaires (2.1%) were returned with address unknown. Seven patients (1.4%) declined to participate for various reasons. Eighty-six patients (17.7%) did not respond. The mean age among respondents was 48 (range 19–65) years. Non-respondents were slightly younger, but not statistically significantly (mean age 46, range 20–65 years). No significant differences between respondents and non-respondents were found regarding distribution of gender, allergies and recruitment centres.

Contact allergies (preservatives and fragrances), eczema duration, frequency of eruptions within the last year and current eczema in males and females are given in Table I. A significantly higher proportion of females

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Table I. *Distribution of contact allergies, eczema duration, frequency of eruptions within the last year, current eczema severity, work-related skin problems and high-risk occupations in males and females*

Variables	Males ($n=109$) *n* (%)	Females ($n=273$) *n* (%)
Allergic to		
fragrances	57 (52)	129 (47)
preservatives	48 (44)	101 (37)
perfume and preservatives	4 (4)	43 (16)*
Eczema duration (years)		
<3	38 (35)	74 (27)
≥3	71 (65)	192 (71)
Missing values		7 (2)
Frequency of eruptions		
Constant or frequent eruptions	63 (58)	156 (57)
Few or no eruptions (<4/year)	45 (42)	116 (43)
Missing values	1 (1)	1 (0)
Eczema severity		
0–4.5	68 (62)	147 (54)
5–10	41 (38)	125 (46)
Missing values		1 (0)
Work-related/not work-related		
Work-related problems	31 (28)	120 (44)**
No work-related problems	78 (72)	152 (56)
Missing values		1 (0)
High-risk occupation		
High-risk occupation	11 (10)	141 (53)*
No high-risk occupation	97 (89)	131 (47)*
Missing values	1 (1)	1 (0)

*$p<0.001$ and **$p<0.005$ with χ^2-test for equal distribution between the sexes.
Columns do not add up to 100% as several of the respondents had eczema in different locations.

than males were allergic to both preservatives and fragrances (4% vs. 16%, $p=0.001$). One-third of the patients had eczema debut within the last 3 years. No significant difference was found between males and females with respect to disease duration, recruitment centres or eczema eruptions and eczema severity (Table I).

Eczema was located on the hands in 78% of females and 73% of males (not significant). Face eczema was more frequent in females than in males (41% vs. 28%, respectively, $p=0.021$), but otherwise there was no gender-related difference regarding eczema localization. Females reported work-related problems significantly more frequently than males ($p=0.005$), and more females were employed in high-risk occupations ($p=0.001$) (Table I).

Data on treatment of eczema is given in Table II. Females reported that they used topical steroids significantly more often than males ($p=0.004$), and 13% of females had never used topical steroids, compared with 27% of males. With respect to moisturizers, 80% of all females reported frequent/occasional use of moisturizers, while this was reported by 73% of males (not significant). One percent of females and 6% of males reported that they never used any kind of treatment ($p=0.028$).

Table III shows data for healthcare workers (26 males and 105 females) vs. non-healthcare workers with respect to treatment. No differences were found between healthcare workers and the rest of the patients.

Table II. *Use of topical treatment in males and females*

Variables	Males ($n=109$) *n* (%)	Females ($n=273$) *n* (%)
Treatment with steroids		
Often	32 (29)	107 (39)*
Occasionally	27 (25)	77 (28)
Rarely	14 (13)	44 (16)
Never	30 (27)	35 (13)
Missing values	6 (6)	10 (4)
Treatment with moisturizers		
Often	59 (54)	167 (61)
Occasionally	21 (19)	51 (19)
Rarely	9 (8)	23 (8)
Never	16 (15)	24 (9)
Missing values	4 (4)	8 (3)

*$p=0.004$. χ^2-test for equal distribution between the sexes.

DISCUSSION

This study is the first to describe gender differences in the use of conventional therapy in patients with allergic contact dermatitis. The data shows that females use topical steroids significantly more often than males, and that more males than females leave their eczema untreated, and this observation has not previously been documented.

An important factor known to influence use of treatment is disease severity, which in the present study was assessed by the patient as VAS score and number of eruptions. No significant difference was reported between females and males with respect to severity. In a previous study comparing doctor-assessed to patient-assessed severity, a tentative agreement between objective and self-rated evaluation was found (13), since the patient-assessed severity takes into consideration the patient's distress and discomfort from the disease, which the objective assessment does not. More females seem to be emotionally distressed from dermatitis than males (7, 8), and this could eventually lead to a higher degree of severity reported in the female group. The fact that

Table III. *Distribution of treatment of eczema in healthcare workers and non-healthcare workers*

Variables	Healthcare* worker ($n=131$) *n* (%)	Non-healthcare worker ($n=249$) *n* (%)
Treatment with steroids		
Often	45 (34)	94 (38)
Occasionally	43 (33)	61 (25)
Rarely	18 (14)	40 (16)
Never	19 (15)	45 (18)
Missing values	6 (4)	9 (3)
Treatment with moisturizers		
Often	82 (63)	144 (58)
Occasionally	25 (19)	46 (18)
Rarely	11 (8)	21 (9)
Never	9 (7)	31 (12)
Missing values	4 (3)	7 (3)

*Missing values.

this was not found in the present study further supports the hypothesis that the increased use of steroids among females was not due to increased severity of eczema.

Another important factor influencing treatment may be the location of the eczema, since hand eczema may call for more frequent treatment than eczema located elsewhere. However, no gender-related difference with respect to frequency of hand eczema was found in the present study. Female gender has previously been reported as an important factor influencing frequent use of complementary and alternative medicine (14), and the present data indicates that females are more active in using conventional treatment too. Although females may be more interested in alternative medicine and more frequent users of such products, this does not generally seem to influence use of topical steroids in a negative way. Contact dermatitis is known to cause a higher degree of discomfort and emotional distress in females than in males (3, 7, 8), and the negative cosmetic influence of the disease seems to be of more importance for females (10). This may explain the increased treatment activity in females. In the present study work-related eczema and high-risk occupations were predominant in females, indicating a generally higher degree of exposure in females, which may also lead to increased treatment activity.

While females with healthy skin traditionally use moisturizers for cosmetic purposes, this tradition does not extend to males. A Norwegian study of healthy people with no skin diseases found that 83% of females and 23% of males used moisturizers every day, respectively (15). This traditional pattern for use of moisturizers probably makes it easier for females to use topical therapy

Contact dermatitis is a chronic disease, and presence of contact allergy indicates a poor prognosis (16). This explains the disease activity found in patients in the present study months and years after diagnoses. Use of topical treatment of eczema in patients with a professional relationship to the healthcare system has not previously been investigated. The expectation would be an increased level of information and acceptance of use of topical steroids in this group, and therefore increased use of treatment. However, our data indicates that use of topical steroids and use of moisturizers do not differ between patients with and without a professional relationship to the healthcare system. This may lead to speculation that other factors than just increased level of information are important for use of conventional treatment.

The strength of the present study is the high response rate together with the detailed information about the participants with respect to disease as well as treatment habits. The study has focused on patients with contact allergies to preservatives and fragrances, since these allergies may influence use of topical treatment due to the presence of relevant contact allergens in the products, since these allergies occur with similar frequency in females and males with contact dermatitis, and since they are occurring with increasing frequency in the general population too. The weakness of the study is that the data is questionnaire-based, and that information about eczema severity is assessed by the patient. No attempt was made to judge the relevance of the contact allergies, and a possible influence of other diagnosed contact allergies influencing patients' treatment habits was not taken into consideration.

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