

Quality of Life in a Population of Patients with Hand Eczema: A Six-month Follow-up Study

Marianne Hald¹, Tove Agner², Jette Blands³ and Jeanne D. Johansen¹; on behalf of the Danish Contact Dermatitis Group

¹The National Allergy Research Centre, ²Department of Dermato-Allergology, Gentofte University Hospital, Niels Andersens vej 65, DK-2900 Hellerup, and

³The National Board of Health, Copenhagen, Denmark. E-mail: marianne_hald@dadlnet.dk

Accepted November 26, 2011.

Hand eczema is a disease with a potentially profound effect on an individual's life in terms of daily functioning and interpersonal relationships. Accordingly, methods for measuring health-related quality of life (QoL) are increasingly used to evaluate the effect of various treatments.

In studies of skin diseases the most widely used dermatology-specific questionnaire is the Dermatology Life Quality Index (DLQI) (1). The various scales applied, in the context of skin diseases, were evaluated by Both et al. (2). Their paper, which evaluated the interpretability of the DLQI, revealed a need for reports concerning the minimal change of score that is relevant to the patients. A similar need was expressed in a review by Basra et al. (3).

The aim of the present study was to explore potential factors related to a low health-related QoL among patients with hand eczema and to examine the responsiveness of the DLQI score to clinical changes.

MATERIALS AND METHODS

The study involved six private clinics and three outpatient clinics at university hospitals. The study population comprised consecutive hand eczema patients, aged 18 years or older, referred with present hand eczema to one of the clinics and enrolled during the period January 2006 to February 2007. At the first consultation the clinical severity of hand eczema was assessed by the patients using a self-administered photographic guide (4). All patients were patch-tested with the European Baseline Series (5). In the case of exposure to other known allergens, additional patch tests were applied, for example the hairdressing series in hairdressers. Patients completed a self-administered questionnaire at the time of patch testing.

Approximately 6 months later (median 7 months; range 4–15 months) patients received a questionnaire package by post, which included a follow-up questionnaire and a self-administered photographic guide. The DLQI questions were included in both the baseline and the follow-up questionnaire (permission granted). A detailed description of the study cohort including a dropout analysis of the non-respondents has been published previously (6).

The DLQI is a 10-item questionnaire covering six aspects of daily life experienced during the past week. It is calculated by summing the score, of each question, with a maximum score of 30 and a minimum score of 0; the higher the score, the greater the impairment in QoL (1). In this study cut-off points were made dichotomizing the DLQI total score into low QoL corresponding to the one-third of the cohort with the highest score (score 7–30) and a score <7 identifying those with moderate to high QoL at baseline. By subtracting the DLQI score, the course from baseline to follow-up was defined as improved or unchanged/diminished QoL.

The data from the DLQI questionnaires were analysed by non-parametric statistics, as the DLQI score of the cohort was not normally distributed (Kolmogorov-Smirnov test, $p < 0.001$).

The Wilcoxon signed-rank test was used to compare paired data, and the Mann-Whitney test or Kruskal-Wallis test was used for analysis of two or more independent groups.

The association of the explanatory factors with the likelihood of having a low QoL (score ≥ 7) at baseline or having improved in QoL by the time of follow-up was analysed using a logistic regression model. Results were expressed as odds ratios (OR) with 95% confidence intervals. Statistical significance was defined as $p < 0.05$. All analysis was carried out using Statistical Products and Service Solutions package (SPSS Inc., Chicago, IL, USA) for Windows (release 15.0).

RESULTS

The study population comprised 799 patients, each centre provided from 18 to 184 individuals. The median age of the cohort was 41 years (age range 18–84 years) at baseline, 65.2% ($n = 521$) were women and 34.8% ($n = 278$) were men (6). The present clinical severity, assessed by the patients using the self-administered photographic guide, was reported as severe or very severe by 25.3% of the patients, 35.0% had moderate symptoms, 33.1% had mild symptoms and 6.7% reported being free of hand eczema (6). In all, 697 patients (response rate 87.2%) completed all 10 questions on the DLQI questionnaire at baseline; 571 individuals completed the DLQI at follow-up. The median DLQI score was 4.0 points (interquartile range (IQR) 2.0–9.0, range 0–30) at baseline, and the mean score was 6.0 (standard deviation (SD) 5.5). In all, 6.6% of the population had a score of 0 points initially, and 0.1% achieved the maximum score of 30 points. Self-reported clinical severity was significantly associated with impairment in QoL, with a median score range from 2.0, among those who were free of hand eczema at the time of inclusion, to 9.5 points among patients with very severe hand eczema (Table SI (available at <http://www.medicaljournals.se/acta/content/?doi=10.2340/00015555-1093>)). Patients with contact allergy had a higher median DLQI score than did the rest of the cohort (5.0 points vs. 4.0 points) (Table SI). The association of greater impairment in QoL with clinical severity and with contact allergy was confirmed by a logistic regression analysis. Furthermore, the patient's age was relevant: in the adjusted regression model a greater impairment in QoL was found among the youngest patients, while the impairment declined with increasing age (Table SI).

The median DLQI score at follow-up was 3.0 points (IQR 1.0–6.0, range 0–30). Among the 528 patients with a DLQI assessment at both baseline and follow-up,

a statistically significant improvement was observed (Wilcoxon signed-rank test, $p < 0.001$). The absolute median difference was 1 point, or 25% of the initial score. In all, 55.7% ($n = 294$) had a lower total DLQI score, while 44.3% ($n = 234$) had no change or were more affected by their hand eczema at follow-up compared with baseline. For clinical severity, assessed by the self-administered photographic guide, improvement of the clinical symptoms was reported by 49.0% ($n = 201$). In this group the median DLQI score had declined by 2.0 points (IQR 0.0; -5.0). Among the 38.5% ($n = 158$) of patients with unchanged clinical severity, the absolute difference was 0 point (IQR -2.25; 2.0), while the 12.4% ($n = 51$) of patients with aggravated clinical symptoms correspondingly increased in DLQI score by 1.0 point (IQR -1.0; 4.0). Patients with a positive patch test were more likely to improve in terms of QoL, with an OR of 2.2 (IQR 1.4-3.4) (Table SII (available at <http://www.medicaljournals.se/acta/content/?doi=10.2340/00015555-1093>)).

DISCUSSION

This study shows that hand eczema has a measurable impact on QoL. The result supports previous papers addressing the subject and reporting a measurable negative influence of hand eczema with a mean DLQI score of 5.5-9.7 points (3, 7-9). However, according to a previously established banding system of the DLQI, a median score of 4 points should be considered as only a small effect (10, 11). The validity of the DLQI was supported by the fact that patients who assessed their visible symptoms more severely using the self-administered photographic guide had a correspondingly higher DLQI score.

When adjusted for the objective clinical finding, younger patients were more negatively affected in terms of QoL. A possible explanation is that, unlike younger patients, many older patients have had hand eczema for a long period, which could have led them to evolve certain coping strategies, thereby diminishing the implication of hand eczema on QoL. In contrast to a previous study of patients with occupational hand eczema (8), QoL was not found to depend on the patient's socioeconomic background.

At the 6-month follow-up 55.7% had improved in terms of QoL. An association of self-reported clinical improvement with an increased QoL was found, which further supports the validity of the DLQI. Patients with a positive patch test result were more likely to improve compared with the rest of the cohort. Irrespective of the outcome of the patch test, the examination in itself has been shown to improve the QoL among patients with contact eczema (12). The present findings highlight the importance of patch testing not only to achieve a better clinical outcome, but also because personal knowledge

of which allergens to avoid is seemingly an independent factor improving QoL. No information about medical treatment, adherence or other interventions during the follow-up period was provided by the study. These factors might interfere with the outcome, but were not adjusted for in the present analyses.

At the 6-month follow-up a statistically significant decrease in the total DLQI score was found.

A benchmark of the minimal important difference of DLQI score has not yet been established for patients with hand eczema. Selecting patients who had reported a clinical improvement, the absolute median difference was 2.0 points. As the self-administered photographic guide conceptually illustrates meaningfully different levels of clinical severity of hand eczema, this suggests two points as a possible benchmark for the minimal important difference of the DLQI. However, this estimate is slightly lower, compared with the minimal important difference of the DLQI in other specific skin diseases (range 2.2-6.9), such as psoriasis, chronic idiopathic urticaria and hyperhidrosis (3, 13, 14). The relatively low initial median score and the small absolute difference from baseline to follow-up indicate a need for a more detailed scoring instrument as the complexity of the course seems difficult to capture in a two-point score value. A disease-specific instrument designed to evaluate the specific problems encountered by patients with hand eczema would be a potentially relevant supplementary tool when monitoring the disease.

ACKNOWLEDGEMENTS

The study was performed in collaboration with members of the Danish Contact Dermatitis Group: Niels Kren Veien; Grete Laurberg; Torkil Menné; Christian Avnstorp; Knud Kaaber; Berit Kristensen; Ove Kristensen; Klaus Ejner Andersen; Evy Paulsen; Jens Thormann; Mette Sommerlund; Niels Henrik Nielsen.

We thank Basilea Pharmaceutica for providing the original photographic guide for this study. The study was funded by the National Board of Health, Denmark, the Foundation for professional development in private practice, Denmark, the Danish Regions and Aage Bangs Foundation.

REFERENCES

1. Finlay AY, Khan GK. Dermatology Life Quality Index (DLQI) - a simple practical measure for routine clinical use. *Clin Exp Dermatol* 1994; 19: 210-216.
2. Both H, Essink-Bot ML, Busschbach J, Nijsten T. Critical review of generic and dermatology-specific health-related quality of life instruments. *J Invest Dermatol* 2007; 127: 2726-2739.
3. Basra MKA, Fenech R, Gatt RM, Salek MS, Finlay AY. The Dermatology Life Quality Index 1994-2007: a comprehensive review of validation data and clinical results. *Br J Dermatol* 2008; 159: 997-1035.
4. Hald M, Veien NK, Laurberg G, Johansen JD. Severity of hand eczema assessed by patients and dermatologist using a photographic guide. *Br J Dermatol* 2007; 156: 77-80.

5. Bruze M, Andersen KE, Goossens A. Recommendation to include fragrance mix 2 and hydroxyisohexyl 3-cyclohexene carboxaldehyde (Lyréal) in the European baseline patch test series. *Contact Dermatitis* 2008; 58: 129–133.
6. Hald M, Agner T, Blands J, Veien NK, Lauerberg G, Avns-torp C, et al. Clinical severity and prognosis of hand eczema. *Br J Dermatol* 2009; 160: 1229–1236.
7. Agner T, Andersen KE, Brandao FM, Bruynzeel DP, Bruze M, Frosch P, et al. Hand eczema severity and quality of life: a cross-sectional, multicentre study of hand eczema patients. *Contact Dermatitis* 2008; 59: 43–47.
8. Cvetkovski RS, Zachariae R, Jensen H, Olsen J, Johansen JD, Agner T. Quality of life and depression in a population of occupational hand eczema patients. *Contact Dermatitis* 2006; 54: 106–111.
9. van Coevorden AM, van SE, Bouma J, Coenraads PJ. Assessment of severity of hand eczema: discrepancies between patient- and physician-rated scores. *Br J Dermatol* 2006; 155: 1217–1222.
10. Finlay AY. Current severe psoriasis and the rule of tens. *Br J Dermatol* 2005; 152: 861–867.
11. Hongbo Y, Thomas CL, Harrison MA, Salek MS, Finlay AY. Translating the science of quality of life into practice: What do dermatology life quality index scores mean? *J Invest Dermatol* 2005; 125: 659–664.
12. Anderson RT, Rajagopalan R. Effects of allergic dermatosis on health-related quality of life. *Curr Allergy Asthma Rep* 2001; 1: 309–315.
13. Shikiar R, Harding G, Leahy M, Lennox RD. Minimal important difference (MID) of the Dermatology Life Quality Index (DLQI): results from patients with chronic idiopathic urticaria. *Health Qual Life Outcomes* 2005; 3: 36.
14. Shikiar R, Willian MK, Okun MM, Thompson CS, Rivicki DA. The validity and responsiveness of three quality of life measures in the assessment of psoriasis patients: results of a phase II study. *Health Qual Life Outcomes* 2006; 4: 71.