

SHORT COMMUNICATION

Atopic Dermatitis and Non-atopic Hand Eczema Have Similar Negative Impacts on Quality of Life: Implications for Clinical Significance

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Accepted Dec 19, 2012; Epub ahead of print Mar 26, 2013

Chronic hand eczema represents more than 90% of occupational skin diseases and has serious consequences, including prolonged sick leave, increased health costs, and reduced quality of life (QoL) (1–4). Wet work, in particular, is an important risk factor for the development of hand eczema (1, 3, 4). Hospital nurses are prone to develop hand eczema due to the nature of their job, which entails repetitive hand hygiene (5). Atopic dermatitis (AD) has been recognized as the most important risk factor for development of hand eczema among nursing staff (5). However, a population-based twin study has suggested that genetic factors other than AD contribute to the development of hand eczema (6), and it has been shown that hand eczema with onset at a young age portends unfavourable prognosis regardless of atopic status (7). Therefore, AD and non-atopic hand eczema represent distinct disorders. Previous studies have demonstrated that impairment of QoL is a strong predictor of prolonged sick leave in patients with occupational dermatitis (8). Intriguingly, QoL scores do not always correlate with the clinical severity of skin conditions including hand eczema, acne and ichthyosis (5, 9, 10). Therefore, QoL scores, rather than clinical signs, may be a better predictor for disease burden in certain skin diseases, such as hand eczema. The objective of this study is to determine the potential differences between AD and non-atopic hand eczema in terms of QoL scores among a university hospital nursing population in Taiwan.

MATERIALS AND METHODS

Study population

A total of 1,218 nursing staff from Kaohsiung Medical University Hospital was invited to participate in this cross-sectional study. Of the invited participants, 1,132 completed the study. Diagnosis of AD was made by dermatologists according to Hanifin & Rajka criteria (11). For identification of hand eczema, a validated questionnaire was used. This questionnaire, which comprised 13 questions, was developed to evaluate the signs and symptoms, locations of affected skin areas, duration of symptoms, and differential diagnoses of hand eczema (3, 5). The phenotypes of the participants were categorized into 3 groups: (i) AD ($n=90$), (ii) non-atopic hand eczema ($n=205$), and (iii) control group, with no aforementioned skin conditions ($n=837$). The demographic information of the participants is

shown in Table SI (available from <http://www.medicaljournals.se/acta/content/?doi=10.2340/00015555-1584>).

Assessment of quality of life

Short Form-36 (SF-36), a validated self-questionnaire, was used for evaluation of QoL. SF-36 is a generic QoL index evaluating the QoL and giving scores for 8 specific domains: physical functioning (PF: limitations in performing physical activities such as dressing), role physical (RP: limitations with work and other daily activities as a result of physical health), role emotional (RE, limitations with work and other daily activities as a result of emotional problems), bodily pain (BP: how severe and limiting is pain), social functioning (SF: interference with normal social activities due to physical or emotional problems), vitality (VT: feeling tired and worn out vs. feeling full of energy), mental health (MH: feeling nervous and depressed vs. peaceful, happy, and calm), and general health (GH: how general personal health is evaluated by the patient) (12). The scores for each domain range from 0 to 100, with higher scores indicating a better QoL. This questionnaire was used for current study since Wallenhammer et al. (13) have shown that SF-36 is a suitable tool for measurement of QoL affected by hand eczema.

Statistical analysis

Statistical analysis was performed with SAS version 9.2 for Windows (SAS Institute Inc, Cary, NC, USA). An alpha level of 0.05 was accepted as significant for all statistical procedures. Characteristics of study participants are presented as means with their standard deviation (SD) values for normally distributed variables, medians with 25th to 75th percentile for non-normally distributed variables, and frequencies for categorical variables. For comparison of QoL scores, one-way ANOVA analyses were performed followed by *post-hoc* Tukey for direct comparison between specific groups.

RESULTS

Table I demonstrates the analyses of the SF-36 scores between different groups. QoL was significantly lower for patients with AD compared with controls in 5 out of 8 domains, including SF, BP, VT, MH and GH. Similarly, QoL of the non-atopic hand eczema group was significantly lower than that of the controls in 3 out of 8 domains, including BP, MH and GH. No significant difference was found between the AD group and the non-atopic hand eczema group in all domains of QoL investigated.

Table I. Differences in the Short Form (SF)-36 domain scores between control, atopic dermatitis (AD) and non-atopic hand eczema groups

	Control (n=837) Mean ± SD	AD (n=90) Mean ± SD	Non-atopic hand eczema (n=205) Mean ± SD	p-value (ANOVA)	Post-hoc test: Tukey
Physical functioning	91.8 ± 12.3	90.8 ± 11.3	90.0 ± 14.0	0.16	
Role – Physical	85.8 ± 29.7	78.9 ± 34.9	82.7 ± 31.5	0.07	
Role – Emotional	76.1 ± 37.3	71.5 ± 39.8	71.4 ± 38.1	0.19	
Social functioning	77.0 ± 16.8	72.4 ± 19.4	74.3 ± 15.3	0.01	Control >AD
Bodily pain	82.0 ± 17.9	73.6 ± 20.0	76.8 ± 18.7	0.00	Control >AD Control >non-atopic hand eczema
Vitality	55.0 ± 16.4	49.7 ± 18.4	53.8 ± 16.7	0.02	Control >AD
Mental health	61.8 ± 14.0	57.1 ± 15.8	58.9 ± 13.0	0.00	Control >AD Control >non-atopic hand eczema
General health	61.8 ± 17.8	53.2 ± 20.7	58.2 ± 18.3	0.00	Control >AD Control >non-atopic hand eczema

One-way analysis of variance (ANOVA) was used to compare mean between the groups. When ANOVA showed a significant difference (p -value <0.05), Tukey's test was used for *post-hoc* multiple comparisons among different group means.

DISCUSSION

We have shown previously that non-atopic hand eczema makes up the majority of the nursing population with hand eczema (5). Intriguingly, while the impacts of AD and chronic hand eczema on QoL has been studied extensively (2–4, 8, 14–17), a *vis-à-vis* comparison has not been performed. As clearly demonstrated in this study, both AD and non-atopic hand eczema impart significant negative impacts on QoL of those affected. It should be noted that, since the lesions of AD tend to have a more generalized distribution, the effect of AD on overall physical appearance probably contributed to the lower scores in SF and VT domains compared with controls. Nevertheless, no significant differences were found between AD and non-atopic hand eczema groups in any QoL domains, and both conditions imposed significant negative impact on BP, MH and GH compared with controls. In this study, the majority of the participants were female. Further investigation is required into how gender affects the result.

In summary, AD and non-atopic hand eczema imposed similar negative impact on affected individuals in terms of QoL. As non-atopic hand eczema is the most commonly encountered occupational skin disease, more attention should be focused on this condition in order to provide more efficient preventive/therapeutic strategies.

ACKNOWLEDGEMENT

This study is supported by National Health Research Institute, Taiwan (NHRI-CN-PD9611P).

The authors declare no conflicts of interest.

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