

ORIGINAL ARTICLE

Questionnaire survey of the efficacy of emollients for adult patients with atopic dermatitis

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ABSTRACT

Emollients are useful and important treatment adjuncts for patients with atopic dermatitis (AD). Heparinoid mucopolysaccharide creams or lotions are emulsion ointments for moisturizing the skin. The objective of this study was to investigate the view among adult AD patients regarding the effectiveness of emollients. We developed a questionnaire at our University Hospital to characterize how patients with AD viewed the efficacy of emollients. Patients were asked to participate prior to treatment and the questionnaire was given within 1 month of treatment. The severity of AD was graded as mild, moderate, severe or very severe. The severity scoring was performed only when the participants answered the questionnaire. Of the 110 enrolled AD patients, 103 returned the completed questionnaires. Ninety-eight patients (95.1%) used heparinoid mucopolysaccharide creams or lotions. There was a strong correlation between their view of the efficacy of the emollient and the condition of dry skin, pruritus and eczematous skin. There was a significant correlation between AD severity and the perceived efficacy of the emollient for dry skin, pruritus and eczematous skin. There was a greater sense of efficacy among patients with milder AD than in more severe AD cases. Patients who felt sufficient efficacy of the emollient for pruritus were significantly older than those who felt there was no efficacy. In addition, the age of onset of AD was significantly higher among those who felt sufficient efficacy for pruritus compared to those who felt little efficacy. We speculate that the efficacy of emollients could be demonstrated in the treatment of milder AD, but may only have partial efficacy in more severe cases. Emollient therapy might have lower efficacy for pruritus among younger or earlier onset AD patients.

Key words: adult, atopic dermatitis, emollients, heparinoid mucopolysaccharide, pruritus, questionnaire survey.

INTRODUCTION

Atopic dermatitis (AD) is a frequent, chronic inflammatory disease influenced by local, immunological, genetic and environmental factors. The barrier dysfunction of dry skin is thought to be an important etiological factor in the pathogenesis of AD. Therefore, appropriate use of emollients is an essential part in the management of AD. Emollients are useful and important treatment adjuncts for the daily skin care of patients with dry and inflamed skin associated with AD. After the AD is stabilized, the addition of maintenance treatment with emollients to topical corticosteroid treatment significantly reduces the risk of

relapse.^{1,2} There have been many clinical studies on the efficacy of emollients by using non-invasive biophysical methods and/or clinician's visual assessment but few clinical studies from the aspect of patients' view. Information about the effectiveness has been lacking and, in this study, we assessed the effectiveness of emollients based on the view of AD patients. To the best of our knowledge, questionnaire survey about AD patients' minds or opinion for the efficacy of emollients has not been reported previously.

Heparinoid mucopolysaccharide creams and lotions are emulsion ointments of the water in oil type and the oil in water type, respectively.^{3–5} These topical preparations (Hirudoic; Maruho, Osaka, Japan)

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are used for moisturizing the skin. The active ingredient of Hirudoid is mucopolysaccharide polysulfuric acid ester which is similar to the body's naturally occurring mucopolysaccharides. The drug is a commercial and original product from Japan and can only be obtained by prescription in Japan.

METHODS

Participants

We developed a questionnaire to determine the view of emollients in the treatment of adult AD patients in Japan. One hundred and ten patients with AD were enrolled at the Department of Dermatology, St Marianna University School of Medicine between 2008 and 2009. AD was diagnosed by experienced dermatologists based on the Japanese Dermatological Association criteria for the disease.⁶ These criteria are very similar to those of Hanifin and Rajka.⁷ The patients used emollients twice a day for 1 month before enrollment in the study. The patients continued using the same antihistamines and the same topical corticosteroid and/or tacrolimus during the period used to evaluate the efficacy of the emollient. The emollients were applied just after the corticosteroid/tacrolimus. We asked the patients to respond to the following questionnaire.

Questionnaire

The questionnaire was given to them by hand and the patients submitted them to the clerks in our clinic on the same day.

Do you feel that the emollient is effective for treating your dry skin due to atopic dermatitis?

Sufficiently/somewhat/no

Do you feel that the emollient is effective for treating your itching due to atopic dermatitis?

Sufficiently/somewhat/no

Do you feel that the emollient is effective for treating your eczematous skin due to atopic dermatitis?

Sufficiently/somewhat/no

In which season are your symptoms the worst?

Spring/summer/autumn/winter/unsure

How old were you at the onset of atopic dermatitis?

Assessments

The severity of AD was graded as mild, moderate, severe or very severe according to the Japanese

Dermatological Association criteria for the disease.⁶ The patients were assessed for severity on the day they responded to the questionnaire. We also determined their oral and topical treatments for AD.

Statistical analysis

The χ^2 -test was used to compare the response rate for each question (Q1–4) and the severity of AD; the level of significance was set at $P < 0.05$ in all cases. The statistics were analyzed by paired Student's *t*-test to compare each question (Q1–4), age and onset age (Q5); the level of significance was set at $P < 0.05$ in all cases. All data are expressed as means \pm standard deviation.

This study was based on the ethical principles of Good Clinical Practice and was approved by the St Marianna University School of Medicine Institutional Review Board for Human Subjects Research (no. 1426).

RESULTS

Characterization of patients

Of the 110 enrolled AD patients, 103 returned the completed questionnaires. Ninety-eight of the patients (95.1%) used heparinoid mucopolysaccharide creams or lotions. The response profile for each question in adult AD patients who used the heparinoid mucopolysaccharide cream or lotion is shown in Table 1. Of the 98 patients (61 men, 37 women), 40 (40.1%) had mild symptoms, 42 (42.9%) had moderate symptoms, 11 (11.2%) had severe symptoms and five (5.1%) had very severe symptoms. Almost all of the enrolled AD patients received topical corticosteroid treatment (92 patients, 94.0%).

Views among adult AD patients regarding the effectiveness of emollients

As might be predicted, all respondents felt the emollient was effective or somewhat effective for treating their dry skin (Q1). Patients who felt sufficient efficacy for dry skin (Q1) tended to feel that there was significant improvement in their pruritus (Q2) ($\chi^2 = 8.45$, $P = 0.015$; Table 2). Interestingly, 81 patients (82.7%) felt the emollient was effective or somewhat effective for treating their pruritus. In addition, there was a close relationship between patients who felt sufficient efficacy for their dry skin (Q1) and those who felt

Table 1. Patient characteristics and response rates to the questionnaire

	Patients	Prevalence %
Sex		
Male	61	62.2
Female	37	37.8
Dry skin (Q1)		
Sufficiently	67	68.4
Somewhat	31	31.6
No	0	0.0
Pruritus (Q2)		
Sufficiently	28	28.6
Somewhat	53	54.1
No	17	17.3
Eczematous skin (Q3)		
Sufficiently	33	33.7
Somewhat	34	34.7
No	31	31.6
Season (Q4)		
Spring	6	6.1
Summer	24	24.5
Autumn	3	3.1
Winter	24	24.5
Unsure	27	27.6
Summer + winter	9	9.2
Autumn + winter	2	2.0
Others	3	3.1
Atopic dermatitis severity		
Mild	40	40.8
Moderate	42	42.9
Severe	11	11.2
Very severe	5	5.1
Oral treatment		
Antihistamines	77	78.6
No antihistamines	21	21.4
Topical treatment		
Corticosteroids	63	64.3
Corticosteroids + tacrolimus	29	29.6
No	6	6.1

sufficient efficacy for their eczematous skin (Q3) ($\chi^2 = 6.93$, $P = 0.031$; Table 2). Sixty-seven patients (68.4%) felt the emollient was effective or somewhat effective for treating their eczematous skin. In other words, patients who felt that the emollients were effective for treating their dry skin also tended to report efficacy for pruritus and eczematous skin. There was a significant correlation between AD severity and perceived efficacy of the emollient for dry skin (Q1), pruritus (Q2) and eczematous skin (Q3) ($\chi^2 = 19.41$, $P = 0.00023$; $\chi^2 = 13.61$, $P = 0.034$; $\chi^2 = 19.13$, $P = 0.0039$, respectively; Table 3). On the other hand, we did not find any significant correlation between AD severity and age of AD. Patients who felt that emollients were effective for treating their pruritus (Q2)

Table 2. Correlation of efficacy of emollients for treating dry skin (Q1), pruritus (Q2) and eczematous skin (Q3) in atopic dermatitis patients. Patients who felt that the emollients were effective for treating their dry skin (Q1) tended to report efficacy for pruritus (Q2), and eczematous skin (Q3)

	Dry skin (Q1)			Total
	Sufficiently	Somewhat	No	
$P = 0.015$				
Pruritus (Q2)				
Sufficiently	25	3	0	28
Somewhat	33	20	0	53
No	9	8	0	17
Total	67	31	0	98
$P = 0.031$				
Eczematous skin (Q3)				
Sufficiently	28	5	0	33
Somewhat	22	12	0	34
No	17	14	0	31
Total	67	31	0	98

Table 3. Correlation between atopic dermatitis (AD) severity and efficacy of emollients for treating dry skin (Q1), pruritus (Q2) and eczematous skin (Q3). There was a significant correlation between AD severity and perceived efficacy of the emollient for dry skin (Q1), pruritus (Q2) and eczematous skin (Q3)

	AD severity				Total
	Mild	Moderate	Severe	Very severe	
$P = 0.00023$					
Dry skin (Q1)					
Sufficiently	29	34	4	0	67
Somewhat	11	8	7	5	31
No	0	0	0	0	0
Total	40	42	11	5	98
$P = 0.034$					
Pruritus (Q2)					
Sufficiently	12	16	0	0	28
Somewhat	22	20	9	2	53
No	6	6	2	3	17
Total	40	42	11	5	98
$P = 0.0039$					
Eczematous skin (Q3)					
Sufficiently	15	18	0	0	33
Somewhat	13	15	6	0	34
No	12	9	5	5	31
Total	40	42	11	5	98

were significantly older than those who did not (Q2) (mean age 37.2 ± 7.9 vs 32.1 ± 6.3 years; $P = 0.011$; Fig. 1). In addition, the mean age of onset of AD (Q5)

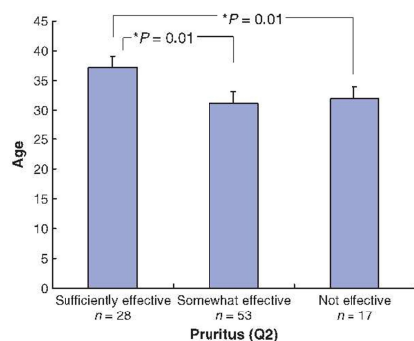


Figure 1. Comparison of efficacy of emollients for treating pruritus (Q2) as a function of age.

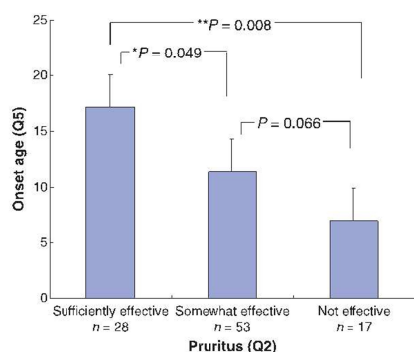


Figure 2. Comparison of efficacy of emollients for treating pruritus (Q2) as a function of mean age of onset of atopic dermatitis (Q5).

was significantly higher among patients who felt sufficient efficacy for pruritus (Q2) (17.1 ± 15.2 years) compared to those who felt there was no efficacy (Q2) (7.0 ± 8.7 years; $P = 0.008$) (Fig. 2).

DISCUSSION

This study was designed to explore the feelings of adult AD patients towards emollients. The AD patients who took heparinoid mucopolysaccharide

creams and lotions and felt there was sufficient efficacy for their dry skin tended to also report reasonable efficacy for treating their pruritus and eczematous skin, all of which are important symptoms of AD. Standard treatment of AD is based on topical glucocorticosteroids or calcineurin inhibitors to treat flares combined with moisturizer treatment to alleviate dry skin symptoms. Some studies have suggested that once AD patients are stabilized with topical corticosteroid treatment, the risk of relapse of AD could be significantly reduced by regular emollient therapy in addition to intermittent topical corticosteroids.^{1,2} Wirén *et al.*⁸ concluded that maintenance treatment with a barrier-improving moisturizer on previous eczematous areas in patients with AD reduced the risk of relapse to approximately one-third of that of no treatment. Based on the view of AD patients in the present survey, emollient therapy in mild to moderate AD patients could prove to be useful in establishing treatment effects. In contrast, none of our AD patients with severe or very severe symptoms felt there was sufficient efficacy of emollients for treating pruritus and eczematous skin. We speculate that the efficacy of emollients could be demonstrated in the treatment of milder AD, but may only have partial efficacy in more severe cases.

According to the questionnaire-based patients' minds or opinion, patients who reported sufficient efficacy of emollients for pruritus tended to be older than those who reported little or no efficacy. In addition, the age of onset of AD was significantly higher among those who felt sufficient efficacy for pruritus compared to those who felt little efficacy. Emollient therapy might have lower efficacy for pruritus among younger or earlier onset AD patients. AD is a multifactorial disease which is increasingly being considered a primary disorder of stratum corneum dysfunction, where major predisposing factors for the eczema are mutations in the filaggrin gene.⁹⁻¹¹ We suggest that dry skin in younger AD patients could be influenced by genetic factors, and therefore emollients would not effectively treat the underlying causes of the dry skin associated with the pruritus. Unfortunately, our data may not be sufficient to discuss the relationship of age with the efficiency of emollients for pruritus in AD patients. The effectiveness of other agents, antihistamines,

topical corticosteroids and tacrolimus, may have influenced these results. Further studies are required to confirm the emollient therapy for the pruritus. We expect that the results of our questionnaire analysis will be useful to some extent for improving the ability of dermatologists to determine the appropriate role of emollients in the treatment regimen for AD.

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