Skin Pain in Patients with Atopic Dermatitis or Psoriasis: A Web-based Survey

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Chronic cutaneous pain and itch are the most bothersome subjective symptoms of skin diseases and may have a significant detrimental impact on patients' health-related quality of life. In the past, cutaneous pain has been underestimated in various skin conditions, and very few studies specifically assessing pain in patients with skin diseases have been published. Notably, Misery et al. (1) and Verhoeven et al. (2) documented that at least one-third of patients with various skin diseases experience skin pain during the course of the disease. Similar results have been published recently by other groups, showing that more than 50% of patients with psoriasis or atopic dermatitis (AD) experience skin pain (3–6). Itch and skin pain are more severe in patients with AD, while joint pain is more common in patients with psoriasis (3). The pathogenesis of cutaneous pain in AD and psoriasis is not known. Huet et al. (4) suggested that skin pain in AD has a neuropathic component. Pain and itch sensations can overlap in both AD and psoriasis, although different neural pathways may be involved. Itch is a common co-symptom, and could mask pain, but may also cause severe pain due to excessive scratching and damage to the skin (7). Skin pain has a negative impact on patients' lives and has been shown to significantly reduce physical activity level, impair sleep, and make the patient more irritable, depressed, less able to concentrate on tasks, and to withdraw from social activities (7).

The aim of this web-based survey was to explore the frequency and character of cutaneous pain in patients with AD or psoriasis.

METHODS AND RESULTS

A web-based survey of 2 groups of patients, with AD or with psoriasis, was performed. The anonymous questionnaire comprised 4 questions focussing on the presence of skin pain, ability to discriminate between itch and skin pain, terms used to describe the feeling of skin pain, and whether physicians asked about skin pain during patients' routine visits to outpatient clinics (**Table I**). The questionnaire was shared between patients on the web pages of patient advocacy groups: the Polish Association of Atopic Diseases (https://ptca.pl/) and the Union of Psoriatic Patient Associations (http://luszczyca.edu.pl/). Statistical analysis was performed with Statistica v12.0 software (Statsoft, Kraków, Poland) using Fisher's exact test. p-values <0.05 were considered significant.

A total of 272 patients with AD and 859 patients with psoriasis voluntarily completed the web-based questionnaire. Skin pain was reported by 92.2% of patients with AD and 92.9% of patients with psoriasis. At least half of them were able to distinguish clearly between feeling of cutaneous pain and itch (Table I). Although the prevalence of cutaneous pain was similar in both groups, patients described it differently. The majority of patients with AD described experiencing the cutaneous pain as a stinging, burning or annoying sensation. In patients with psoriasis, the descriptions of pain were more variable, as dull, sharp or superficial (Table I). Despite a high prevalence of cutaneous pain among study participants, the majority of subjects (79.4% with AD and 63.4% with psoriasis) reported that their physicians never asked about skin pain.

Table I. Results of the web-based questionnaire on skin pain

	Atopic dermatitis $n=272$, n (%)	Psoriasis $n=859$, n (%)	p-value
Have you ever suffered from skin pain?			1.0
Yes	251 (92.3)	798 (92.9)	
No	8 (2.9)	50 (5.8)	
Do not know/Hard to say	13 (4.8)	20 (2.3)	
If you have suffered from skin pain or itch, are you able to definitely distinguish the 2 symptoms?			
Yes	137 (50.4)	516 (60.1)	
No	62 (22.8)	225 (26.2)	
Difficult to say	73 (26.8)	124 (14.4)	
I do not feel any skin pain or itch	–	3 (0.3)	<0.01
If you have suffered from skin pain, how would you describe it?			
Stinging/burning	210 (77.2)	258 (30.0)	<0.001
Annoying	165 (60.7)	369 (43.0)	<0.001
Sharp	80 (29.4)	187 (21.8)	0.01
Superficial	50 (18.4)	281 (32.7)	<0.001
Dull	20 (7.4)	270 (31.4)	<0.001
Other descriptors	6 (2.2)	–	–
Has your physician ever asked if you suffer from skin pain?			
Yes	29 (10.7)	278 (32.4)	
No	216 (79.4)	545 (63.4)	
I do not remember	27 (9.9)	36 (4.2)	<0.001

DISCUSSION

Chronic cutaneous pain is frequently reported by patients with various skin diseases, such as hidradenitis suppurativa, leg ulcers, or bullous dermatoses (1). The current study showed that cutaneous pain is also a frequent symptom in AD and psoriasis, being present in more than 90% of patients in this study. Some over-representation of subjects with cutaneous pain may be expected in our cohorts, since these subjects may be more willing to complete the online survey. However, other authors also emphasized a high prevalence of cutaneous pain in inflammatory skin conditions (3–6). In a study, that included 103 patients with AD, 78% of participants reported concomitant pain and itch (8). Intensity of skin pain correlated significantly with severity of AD assessed by the Eczema Area and Severity Index (8). In another study, 43% of patients with AD reported cutaneous pain, with a mean severity of 5.3 ± 2.9 points (9). Furthermore, approximately 14% of patients with AD report severe or very severe cutaneous pain (10).

Similarly to patients with AD, patients with psoriasis also frequently experience pain. As shown by Ljosaa et al. (11) and Patruno et al. (12), approximately 42–44% of patients with psoriasis reported skin pain, with a mean visual analogue scale (VAS) score of 7.1 points. The intensity of pain correlated significantly with psoriasis severity evalua-

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ted with the Psoriasis Area and Severity Index (PASI). It was also observed that changes in PASI predicted changes in intensity of skin pain (13). Importantly, the current survey found that only some of the dermatologists asked the patients about cutaneous pain. This could be partially explained by the fact that these diseases have, for a long time, been considered as painless conditions (7). Given the high prevalence and burden of subjective feelings regarding the skin in inflammatory dermatoses, clinicians should pay more attention to these symptoms in order to manage them effectively. It is important to increase awareness of these symptoms, as it has been shown that even minor improvements in the severity of psoriasis can lead to dramatic improvements in skin pain (14).

An effective treatment strategy is of great relevance, as cutaneous pain significantly interferes with sleep, leisure activities, and activities of daily living (1, 7, 11). In patients with AD cutaneous pain is associated with increased self-consciousness (10). Patients deal with their skin pain in different ways. Some patients take action to alleviate the pain and divert attention from the pain. However, most patients use strategies for maladaptive and passive coping, such as enduring the pain, avoiding painful activities, fearing or trivializing pain (7). Treating skin lesions may also be insufficient for proper pain management, since the healing process is not always immediate. Efficacious relief options for acute pain include mild analgesics, such as acetaminophen, non-steroidal anti-inflammatory drugs (NSAIDs), or mild opiates (11). Recent studies have also shown significant efficacy of 2 plant protein-free extracts of Rhealba oat plantlets (Laboratoires A-Derma, Pierre Fabre Dermo-Cosmetique, Lavaur, France) and *Uncaria tomentosa*, in reducing cutaneous pain (15). In addition, psychological coping strategies and relaxation techniques are important and should be offered to all patients with cutaneous pain.

Ljosaa et al. (7) indicated that patients with psoriasis used a variety of adjectives and metaphors to describe their pain. The nature of pain in our questionnaires was most often described as "burning", "stinging" or "annoying", but we detected significant differences regarding the terms used to describe skin pain. The use of different terms by patients to describe skin pain in AD or psoriasis may suggest that the underlying pathomechanism of pain could differ between these conditions. It is also notable that patients with AD were significantly less often able to clearly differentiate the feeling of pain from itching, which further supports the suggestion of different pathologies of skin pain in AD and psoriasis. However, this phenomenon requires further research.

This study detected a high prevalence of skin pain in patients with AD and psoriasis. However, the results should be regarded with caution due to several limitations. The web-based design of the questionnaire does not enable confirmation of whether patients did actually have the diseases studied, and it was not possible to assess the disease severity. Furthermore, patients with more severe cutaneous pain may have been more willing to complete the online questionnaire, which would result in overestimation of the actual prevalence of cutaneous pain. The web-based questionnaire has not been validated; thus, generalization of the findings of this study is questionable. Nevertheless, the authors consider that the results are of importance, as they indicate that both patient populations have cutaneous pain. Further studies are needed to better characterize skin pain in relation to demographic and clinical parameters.

A high prevalence of cutaneous pain occurs in AD and psoriasis. Clinicians should routinely assess skin pain and itch severity in all patients with AD or psoriasis. The range of terms used by patients to describe pruritus in AD or psoriasis might suggest differences in the pathogenesis of this symptom in these conditions. Further research is needed to determine the precise mechanisms and optimal treatment for cutaneous pain.

Conflicts of interest: AR has been a consultant or speaker for AbbVie, Bioderma, Celgene, Chema Elektromet, Eli Lilly, Galderma, Janssen, Leo Pharma, Medac, Menlo Therapeutics, Novartis, Pierre-Fabre, Sandoz and Trevi; and a principal investigator or sub-investigator in clinical trials sponsored by AbbVie, Drug Delivery Solutions Ltd, Galderma, Genentech, Janssen, Kymab Limited, Leo Pharma, Menlo Therapeutics, MetrioPharm, MSD, Novartis, Pfizer and Trev.

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