



## Chronic Pain in Patients with Skin Disorders

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Accepted May 10, 2017; Epub ahead of print May 12, 2017

Itching and pain have both been found to be highly present in patients with skin disorders and associated with depression, which can also lower the threshold for both sensory symptoms (1).

A systematic literature review of the MEDLINE database using the keywords “pain” and “skin” revealed increasing interest in the topic (from 54 articles in 1970 to 1,484 in 2015). However, very few of these studies specifically assessed pain in patients with skin diseases. The current study analysed the presence and frequency of pain in patients seeking dermatological care, and investigated variations in pain by age and sex, clinical characteristics of pain, with a focus on neuropathic pain, and associations between skin diseases and burden of pain.

### PATIENTS AND METHODS

Outpatients older than 18 years seeking consultations at 7 investigator centres in France completed self-administered questionnaires. Dermatological diagnoses were assessed by dermatologists, and only those skin disorders thought to be associated with pain, including leg and pressure ulcers, psoriasis, atopic dermatitis (AD), sexually transmitted diseases (STD) and reactive skin, were proposed to the investigator for selection as a diagnosis associated with pain.

The DN4 (Douleur Neuropathique – 4 questions) is a questionnaire designed to detect neuropathic pain (2). A score of DN4i  $\geq 3$  is indicative of neuropathic pain syndrome (3).

Statistical analysis was performed using SAS<sup>®</sup> V9.4 software (SAS Institute, Raleigh, NC, USA). Student's *t*-tests and Wilcoxon tests were used for analysis when distributions of variables were normal and not normal, respectively. The significance level was set at  $p=0.05$ .

### RESULTS

Overall, 1,587 patients were contacted and 1,565 responded to the questionnaire. Mean age was 53.1 years (range 18–100 years; 54.7% women, 45.3% men) with the following diagnoses: psoriasis (13.6%), AD (9.8%), leg ulcers (4.7%), reactive skin (1.6%), pressure ulcers (0.4%), STDs (0.4%) and other (62.6%).

Skin pain was reported by 36.4% of patients; specifically, by 67.6% of patients with leg ulcers, 54.7% of patients with AD, 54.2% of patients with reactive skin, 51.9% of patients with psoriasis, 50% of patients with pressure ulcer, 20% of patients with

STD, and 27.5% of patients with other diagnoses. The mean duration of pain was 25.8 months (range 0–552 months). The pain was chronic in 25.7% and transitory in 74.3% of patients. The pain had been treated in only 59.3% of patients. The mean pain intensity was  $4.7 \pm 2.4$  out of a possible score of 10 in patients reporting pain, of whom 22.6% reported a pain intensity  $> 7$ .

Skin pain was frequently associated with other sensations (**Table I**).

Calculation of a DN4i score was possible for only 402 patients. The mean  $\pm$  standard deviation (SD) score was  $2.65 \pm 1.58$ , and did not differ significantly by type of skin disease. The score was  $\geq 3$  in 53% and  $< 3$  in 47% of the 402 patients. No significant differences in score were noted by age, sex, or type of skin disease, and DN4i  $> 3$  were identified in 58.3% of patients with psoriasis, 57.5% of patients with AD and 56.1% of patients with leg ulcers.

The burden of pain was moderate (Fig. S1<sup>1</sup>), but it was significantly greater in patients with a pain intensity  $> 7$  than in those  $< 7$  ( $p < 0.0001$ ) (**Table II**) and in patients with neuropathic pain, as assessed by DN4i  $> 3$ , than in those without neuropathic pain ( $p < 0.0001$ ).

The population was divided into 2 groups: patients aged  $< 50$  years ( $n = 666$ , 59.9% females and 40.1% males) and patients aged  $> 50$  years ( $n = 921$ , 50.9% females and 49.1% males). Only leg ulcers (0.3 vs. 7.8%,  $p < 0.0001$ ), pressure ulcers (0 vs. 0.7%) and STDs (0.9 vs. 0%) differed significantly between the 2 groups for all dermatological diagnosis. In the younger group, 33.6% reported skin pain, while 38.5% reported skin pain in the older group ( $p = 0.05$ ). There were no

<sup>1</sup><https://doi.org/10.2340/00015555-2694>

**Table I. Percentage of patients experiencing other sensations associated with pain by type of skin disease diagnosis**

Sensation	Atopic dermatitis <i>n</i> (%)	Psoriasis <i>n</i> (%)	Leg ulcers <i>n</i> (%)	Pressure ulcers <i>n</i> (%)	Reactive skin <i>n</i> (%)
Burning	45 (71.4)	65 (72.2)	28 (68.3)	2 (66.7)	6 (100.0)
Cold pain sensations	6 (14.3)	8 (11.0)	4 (12.1)	1 (33.3)	1 (25.0)
Electric shock sensations	11 (25.6)	17 (22.1)	18 (46.2)	1 (33.3)	2 (40.0)
Tingling	10 (25.6)	18 (26.1)	16 (44.4)	0 (0)	2 (33.3)
Prickling	30 (65.2)	45 (57.7)	28 (70.0)	0 (0)	4 (66.7)
Numbness	9 (23.7)	14 (20.3)	14 (41.2)	1 (33.3)	1 (20.0)
Itch	60 (96.8)	85 (92.4)	22 (56.4)	1 (33.3)	5 (83.3)

**Table II. Percentage of patients experiencing pain who reported disruption of their activities due to pain severity**

Activity	Pain intensity $\geq 7$ Mean $\pm$ SD	Pain intensity $< 7$ Mean $\pm$ SD
Daily activity	57.4 $\pm$ 30.5	26.2 $\pm$ 27.5
Joy of living	56.3 $\pm$ 32.8	27.3 $\pm$ 27.4
Sleep	55.7 $\pm$ 31.0	22.5 $\pm$ 27.2
Work	54.2 $\pm$ 32.9	25.2 $\pm$ 30.1
Walking	50.4 $\pm$ 36.9	17.9 $\pm$ 28.7
Relationships with others	46.3 $\pm$ 36.7	18.1 $\pm$ 26.7

*p*-value  $< 0.0001$  of Student's *t*-tests or Wilcoxon tests for all intragroup comparisons.

significant differences by age in the presence and treatment of pain; however, pain was reported as chronic by 19.3% of younger patients and 30.5% of older patients ( $p < 0.01$ ). The pain was less intense in younger than in older patients (mean score of 4.3 vs. 4.9 and score  $> 7$  in 16.9% vs. 27% for younger and older patients;  $p < 0.05$  and  $p = 0.01$ , respectively). Some differences in symptoms were noted ( $p < 0.05$ ); specifically, electric shock sensations (31.5 vs. 20.8%), tingling (36.6 vs. 24.1%) and numbness (27.3 vs. 18%) were more frequent in older than younger people. There were no significant differences in pain burden between the 2 groups, with the exception of walking disruption (30.4 vs. 17.9% for older and younger patients,  $p < 0.001$ ).

## DISCUSSION

This study showed that pain was a very frequent symptom (present in one-third of skin disease patients). Pain was present not only in association with wounds and scars, but also very frequent in patients with inflammatory dermatoses, such as AD and psoriasis. Pain was especially frequent in older patients in our study. Pain intensity was usually moderate, but was higher in older patients, and it is notable that 22.6% of patients with pain reported intensity  $\geq 7$ .

Many other unpleasant sensations were identified, suggesting that pain may have a neuropathic component in almost two-thirds of patients with pain. A neuropathic component of pain has been identified recently in patients with reactive skin (4), vulvodynia (5), burning mouth syndrome (6, 7) and leg ulcers (8) and, less frequently, in patients with squamous cell carcinoma (9). In this study, we showed a neuropathic component of pain in patients with psoriasis and AD.

The main limitation of our study was that the population was not representative of the general French population and excluded children and adolescents. Nonetheless, a Dutch study performed on a similar number of patients, but on a more representative sample, also showed that approximately one-third of patients with skin diseases experience skin pain (with a lower mean score of 1.6) (10).

In our study, the burden of pain was notably greater in patients with a higher pain intensity and neuropathic pain. Hence, the burden of skin diseases is not only associated

with itching, visible skin lesions and co-morbidities, and there is a need to take pain burden into consideration, especially in older people.

Moderate intercorrelations between itch, pain and fatigue suggested that these symptoms are experienced as different syndromes (10). A higher intensity of skin pain in older people might be associated with the type of skin disease (especially leg ulcers) (8) and severity of skin disease (10); however, other determinants may also be important to this association with age, including cognitive and behavioural reactivity to pain (11), sensitization to pain (12) or a neuropathic component to pain (11, 13), as well as alterations in both the central and peripheral nervous systems in older people (13).

Based on the present findings, clinicians should be encouraged to assess pain and other abnormal sensations in patients with care, especially in older patients with skin diseases. Furthermore, clinicians should treat these symptoms, as the attention given to symptoms is one of the factors that most influences overall satisfaction with outpatient care (14).

## ACKNOWLEDGEMENT

A-DERMA brand sponsored the implementation of this study in France.

## REFERENCES

- Halvorsen JA, Dalgard F, Thoresen M, Bjertness E, Lien L. Itch and pain in adolescents are associated with suicidal ideation: a population-based cross-sectional study. *Acta Derm Venereol* 2012; 92: 543–546.
- Bouhassira D, Attal N, Alchaar H, Boureau F, Brochet B, Bruelle J, et al. Comparison of pain syndromes associated with nervous or somatic lesions and development of a new neuropathic pain diagnostic questionnaire (DN4). *Pain* 2005; 114: 29–36.
- Bouhassira D, Letanoux M, Hartemann A. Chronic pain with characteristics in diabetic patients: a French cross-sectional study. *PlosOne* 2013; 8: e74195.
- Saint-Martory C, Sibaud V, Theunis J, Mengeaud V, Lauzé C, Schmitt AM, Misery L. Arguments for neuropathic pain in sensitive skin. *Br J Dermatol* 2015; 172: 1120–1121.
- Tersiguel AC, Bodéré C, Schollhammer M, Postec E, Tandéo P, Quinio B, et al. Screening for neuropathic pain, anxiety and associated chronic pain conditions in vulvodynia. *Acta Derm Venereol* 2015; 95: 749–751.
- Heo JY, Ok SM, Ahn YW, Ko MY, Jeong SH. The application of neuropathic pain questionnaires in burning mouth syndrome patients. *J Oral Facial Pain Headache* 2015; 29: 177–182.
- Sevrain M, Brenaut E, Le Toux G, Misery L. Primary burning mouth syndrome: a questionnaire study of neuropathic and psychological components. *Am J Clin Dermatol* 2016; 17: 171–178.
- Eusen M, Brenaut E, Schoenlaub P, Saliou P, Misery L. Neuropathic pain in patients with chronic leg ulcers. *J Eur Acad Dermatol Venereol* 2016; 30: 1603–1605.
- Poulaliou A, Legoupil D, Schoenlaub P, Herault M, de Fonclare AL, Poulaliou M, et al. Itch and pain characteristics in skin carcinomas. *Acta Derm Venereol* 2016; 96: 697–698.
- Verhoeven EW, Kraaimaat FW, van de Kerkhof PC, van Weel C, Duller P, van der Valk PG, et al. Prevalence of physical symptoms of itch, pain and fatigue in patients with skin diseases in general practice. *Br J Dermatol* 2007; 156: 1346–1349.

11. Eusen M, Brenaut E, Schoenlaub P, Saliou P, Misery L. Neuropathic pain in patients with chronic leg ulcers. *J Eur Acad Dermatol Venereol* 2016; 30: 1603–1605.
12. Verhoeven EWM, Kraaimaat FW, Duller P, van de Kerkhof P, Evers A. Cognitive, behavioral, and physiological reactivity to chronic itching: analogies to chronic pain. *Int J Behav Med* 2006; 13: 237–243.
13. Paladini A, Fusco M, Coaccioli S, Skaper SD, Varrassi G. Chronic pain in the elderly: the case of new therapeutic strategies. *Pain Physician* 2015; 18: E863–E876.
14. de Salins CA, Brenaut E, Misery L, Roguedas-Contios AM. Factors influencing patient satisfaction: assessment in outpatients in dermatology department. *J Eur Acad Dermatol Venereol* 2016; 30: 1823–1828.