UV radiation is required to be carcinogenic in immunocompromised patients secondary to their underlying immunosuppression. The literature surrounding SCC in immunocompromised patients also points to a permissive microenvironment to explain these findings. Furthermore, the significantly higher contribution of UVA and ROS and lesser contribution of UVB to SCCs in high-risk areas of the face may be due to the thinner epidermal layer and shorter distance that UVA has to travel to become carcinogenic. Because these anatomic areas are somewhat equally sun exposed, there also appears to be an inherent risk in certain locations due to patterns of vascularization and lymphatic drainage. Further studies are warranted to examine additional mutational differences between SCC in these groups of patients.

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REFERENCES

- Rogers HW, Weinstock MA, Feldman SR, Coldiron BM. Incidence estimate of nonmelanoma skin cancer (keratinocyte carcinomas) in the US population, 2012. *JAMA Dermatol*. 2015; 151(10):1081-1086.
- Brash DE, Rudolph JA, Simon JA, et al. A role for sunlight in skin cancer: UV—induced p53 mutations in squamous cell carcinoma. Proc Natl Acad Sci U S A. 1991;88(22):10124-10128.

- Pickering CR, Zhou JH, Lee JJ, et al. Mutational landscape of aggressive cutaneous squamous cell carcinoma. *Clin Cancer Res.* 2014;20(24):6582-6592.
- **4.** Lindelöf B, Sigurgeirsson B, Gäbel H, et al. Incidence of skin cancer in 5356 patients following organ transplantation. *Br J Dermatol*. 2000;143(3):513-519.
- Agar NS, Halliday GM, Barnetson RS, et al. The basal layer in human squamous tumors harbors more UVA than UVB fingerprint mutations: a role for UVA in human skin carcinogenesis. Proc Natl Acad Sci U S A. 2004;101(14):4954.

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Patients with hidradenitis suppurativa may suffer from neuropathic pain: A Finnish multicenter study



To the Editor: Patients with hidradenitis suppurativa (HS) have a diminished quality of life (QoL), and pain being a major contributor to poor QoL. ^{1,2} A recent study reported that pain was the only contributor for decreased QoL if the severity of disease was excluded. ³ Despite the immense impact of pain in patients with HS, there is lack of studies that more closely analyze the pain in these patients.

This multicenter study was conducted in Finland. Patients who were diagnosed with HS at least 6 months before the study period were retrospectively identified. Pain intensity and type were evaluated during the study visit using the visual analog scale (VAS) and the pain *DETECT* questionnaire. The Dermatology Life Quality Index questionnaire and Beck's Depression Inventory were used to evaluate the patients' QoL and the severity of depression. Methods are described in detail in additional materials (available at Mendeley (DOI:10.17632/rrw9wmmnyb.2).

The study included 92 patients. Patient characteristics are presented in Table S1 (available at Mendeley, DOI:10.17632/rrw9wmmnyb.2). In pain DETECT, 31.5% of patients were defined as having suspicion of neuropathic pain (NeP, "NeP positive"), 41.3% as having no NeP ("NeP negative"), and 27.2% were classified as having unclear results (Table I). Most patients reporting moderate to severe pain by VAS were also NeP positive (Table I). The percentage of patients in different pain groups stratified by disease severity is provided in Table I.

Patients reporting NeP had more psychiatric comorbidities (13 of 29 [44.8%]), such as depression and sleep disorders, compared with patients in the NeP-negative (9 of 38 [23.7%]) or NeP-unclear (6 of 25 [24.0%]) groups, but this finding was not statistically significant. No other differences were found

Table I. Distribution of patients in the visual analog scale for pain (pain-VAS) and painDETECT groups and distribution of patients in pain DETECT groups by reported pain-VAS

Variable*	Pain-VAS				pain <i>DETECT</i>			
	No pain (0-4 mm)	Mild pain (5-44 mm)	Moderate to severe pain (45-100 mm)	P value	Pain negative (0-12)	Unclear (13-18)	Pain positive (19-38)	P value
Total	34 (37.0)	42 (45.7)	16 (17.4)		38 (41.3)	25 (27.2)	29 (31.5)	
Sex								
Male	16 (39.0)	18 (43.9)	7 (17.1)		17 (41.5)	13 (31.7)	11 (26.8)	
Female	18 (35.3)	24 (47.1)	9 (17.6)	.9326	21 (41.2)	12 (23.5)	18 (35.3)	.5838
Hurley stage								
I	9 (56.3)	6 (37.5)	1 (6.3)		9 (56.3)	5 (31.2)	2 (12.5)	
II	20 (32.3)	30 (48.4)	12 (19.4)		23 (37.1)	17 (27.4)	22 (35.5)	
III	5 (35.7)	6 (42.9)	3 (21.4)	.4399	6 (42.9)	3 (21.4)	5 (35.7)	.4581
IHS4								
Mild	20 (55.6)	13 (36.1)	3 (8.3)		19 (52.8)	9 (25.0)	8 (22.2)	
Moderate	10 (29.4)	18 (52.9)	6 (17.6)		13 (38.2)	6 (17.7)	15 (44.1)	
Severe	4 (18.2)	11 (50.0)	7 (31.8)	.0212	6 (27.3)	10 (45.5)	6 (27.7)	.0610
BDI score								
0-12	27 (41.5)	29 (44.6)	9 (13.9)		30 (46.1)	20 (30.8)	15 (23.1)	
13-18	4 (26.7)	7 (46.6)	4 (26.7)		7 (46.6)	4 (26.7)	4 (26.7)	
19-63	3 (25.0)	6 (50.0)	3 (25.0)	.5674	1 (8.3)	1 (8.3)	10 (83.4)	.0017
Psychiatric comorbidity					9 (23.7)	6 (24.0)	13 (44.8)	.1259
Pain-VAS								
No pain (0-4 mm)					20 (58.8)	9 (26.5)	5 (14.7)	
Mild (5-44 mm)					17 (40.5)	12 (28.6)	13 (31.0)	
Moderate to					1 (6.3)	4 (25.0)	11 (68.7)	.0016
severe (45-100 mm)								
DLQI	3.03 (0-9)	8.76 (0-23)	13.69 (4-29)	<.001 [†]	4.53 (0-16)	8.84 (1-23)	10.55 (0-29)	.0001 [†]
BDI	6.68 (0-4.0)	9.26 (0-30)	13.06 (1-32)	.0198 [†]	6.84 (0-20)	7.68 (0-19)	12.86 (0-32)	.0030 [†]

BDI, Becks Depression Inventory; DLQI, Dermatology Life Quality Index; IHS4, International Hidradenitis Suppurativa Severity Score System. *Categorical data are presented as the number (%) and continuous data as the mean (range).

[†]The statistical analyses used analysis of variance for these P values and the rest were by the χ^2 test.

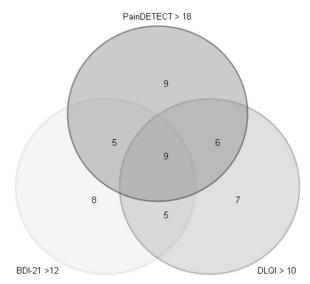


Fig 1. Number of patients with severe impairment in quality of life (Dermatology Life Quality Index [DLQI] >10), depression (21-question Beck Depression Inventory [BDI-21] > 12), or neuropathic pain (pain DETECT > 18). Of 92 patients reported, 49 indicated changes in >1 of the parameters, and 9 patients indicated changes were present in all of the 3 parameters.

between these groups in comorbidities. The NeP-negative group used less pain medication (Table S2, available at Mendeley, DOI:10.17632/ rrw9wmmnyb.2).

Dermatology Life Quality Index and Beck's Depression Inventory scores were significantly lower in the NeP-negative group compared with the other pain DETECT groups (Table I). Of the 92 patients, 49 reported severe impairment in QoL, depression, or NeP (Fig 1).

Despite the overall mild pain level reported by the HS patients, one-third of our patients were NeP positive using the pain DETECT tool, which suggests they possibly suffer from NeP. In addition, many were classified as unclear, which may reflect the view that nociceptive and NeP pain could be seen as different points of the same continuum rather than different entities.⁴ Anxiety and depression are known to be associated with both chronic pain and HS.⁵ Although we found no differences in the somatic comorbidities diagnosed between pain DETECT groups, significantly higher Beck's Depression Inventory scores were seen among the

NeP-positive patients. When the coexistence of NeP and depression was analyzed in our patients, only slightly more than half of the patients with indicators of depression had suspicion of comorbid NeP (Fig 1).

Our results further strengthen the findings that patients with HS suffer from pain and indicate that this HS-related pain may have elements of NeP. It is important that dermatologists assess the pain in patients with HS regularly and consult with other pain specialists to comprehensively treat their pain. Further studies are needed to analyze NeP in dermatologic conditions.

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Genzyme, and UCB Pharma for consulting and/or speaking; and is an investigator for AbbVie. Dr Lipitsä has received educational grants from AbbVie and is an investigator for AbbVie. Dr Harvima has received educational grants from AbbVie. Dr Vibervaara has received educational grants from AbbVie, Jansen, Novartis, and Celgene. Dr Pasternack has received educational grants from AbbVie, Janssen, LEO Pharma, Novartis, Pfizer, and Sanofi Genzyme; bonoraria from AbbVie, Galenica, Eli Lilly, Janssen, Novartis, and Sanofi Genzyme for consulting and/or speaking; participated in clinical studies sponsored by AbbVie, Novartis, Eli Lilly, and Regeneron, and is an investigator for AbbVie. Dr Kouri has received educational grants from Pfizer. Authors Ranta and Hirvonen are employees of AbbVie and may or may not own AbbVie stock. Author Sintonen has no conflicts of interest.

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REFERENCES

- von der Werth JM, Jemec GB. Morbidity in patients with hidradenitis suppurativa. Br J Dermatol. 2001;144(4):809-813.
- Onderdijk AJ, van der Zee HH, Esmann S, et al. Depression in patients with hidradenitis suppurativa. J Eur Acad Dermatol Venereol. 2013;27(4):473-478.
- Matusiak L, Szczech J, Kaaz K, Lelonek E, Szepietowski JC. Clinical characteristics of pruritus and pain in patients with hidradenitis suppurativa. Acta Derm Venereol. 2018;98(2):191-194.
- Cohen SP, Mao J. Neuropathic pain: mechanisms and their clinical implications. BMJ. 2014;348:f7656.
- Huilaja L, Tiri H, Jokelainen J, Timonen M, Tasanen K. Patients with hidradenitis suppurativa have a high psychiatric disease burden: a Finnish nationwide registry study. *J Invest Dermatol*. 2018;138(1):46-51.

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Diabetes mellitus and hyperglycemic complications in bullous pemphigoid



To the Editor: Corticosteroids remain the mainstay of treatment for bullous pemphigoid (BP). Glucocorticoid-induced hyperglycemia and glucocorticoid-induced diabetes mellitus (DM) are