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Title	Association between nail psoriasis and obesity : a cross-sectional study at a single institution
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Citation	Journal of dermatology, 52(3), e227-e228 https://doi.org/10.1111/1346-8138.17481
Issue Date	2024-09-30
Doc URL	https://hdl.handle.net/2115/96168
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Type	journal article
File Information	main document_R2_CLEAN.pdf

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JDE-2024-1025.R2

Journal of Dermatology / Letter to the Editor

Association between nail psoriasis and obesity: a cross-sectional study at a single institution

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Word count: 495 words, 0 figures, 1 table, 4 references

Funding sources: This work was supported by the Project for Junior Scientist Promotion of Hokkaido University and a grant from Sun Pharma.

Conflict of interests: H. Ujiie is an Editorial Board member of Journal of Dermatology and a co-author of this article. To minimize bias, he was excluded from all editorial decision-making related to the acceptance of this article for publication.

Running head: A cross-sectional study of nail psoriasis associated with obesity.

Keywords: Psoriatic arthritis, obesity, psoriasis, nail psoriasis

Dear Editor,

Psoriasis is a systemic inflammatory skin disorder that affects 2-4% of the global population.[1] Among its various common manifestations, nail involvement occurs in 50% of psoriasis patients and has a lifetime incidence of 80-90%.[2] As nail psoriasis is painful and debilitating, it significantly impairs the quality of life of affected individuals. Recent studies have confirmed an association between psoriasis and obesity. However, to our knowledge, the relationship between nail psoriasis and obesity has not been thoroughly examined. Here, we present a cross-sectional study on this relationship in Japanese psoriasis patients at a single institution. Our motivation stemmed from the idea that weight reduction could be a potential option for managing nail psoriasis if a correlation between nail psoriasis and obesity were established.

A retrospective review of medical records was conducted at Hokkaido University Hospital between April 2021 and March 2022. Obesity was defined as a body mass index (BMI) of ≧ 30 kg/m^2, according to World Health Organization criteria. Discrete comparable items between cases and controls were analyzed using the Fisher's exact test, while PASI scores were tested using the Mann-Whitney U-test. The study was approved by the institutional review board of Hokkaido University Hospital (ID: 019-0355) and conducted in accordance with the Declaration of Helsinki Principles. Written informed consent was obtained from all participants.

Table 1 summarizes the clinical features of all cases. The average BMI of the patients in this study was 25.8 for males and 23.6 for females, higher than the general Japanese population (23.7 for males and 21.8 for females).[3] Of the patients, 13% were defined as being obese (12/95). Seventy-four patients were affected with psoriasis vulgaris, 10 of whom were obese. Out of the 95 patients, 54 had nail psoriasis, and 70% (38/54) of nail psoriasis patients had nail bed involvement, with the most frequent symptoms being onycholysis (46%, 25/54), followed by oil stains (29%, 26/54), splinter

hemorrhages (11%, 6/54), and thickening (5%, 3/54). Nail matrix involvement was present in 74% (40/54) of the patients, characterized by pitting (51%, 28/54), crumbling (33%, 18/54), leukonychia, and a red spot in the lunula (3%, 2/54 each). The prevalence of nail psoriasis was not significantly higher in the obesity group, and the types of nail psoriasis signs were comparable between obese and nonobese patients.

To date, several lines of evidence suggest that the severity of psoriasis cutaneous symptoms and psoriatic arthritis (PsA) are associated with obesity. Obesity was observed in 4-41% of the psoriasis group, and the mean BMI was 23.29-30.1 in patients with psoriasis.[4] Our study suggests that the prevalence of nail psoriasis during adequate systemic treatment is not always influenced by higher BMI.

Limitations of our study include the fact that therapeutic interventions, including biologics, were already in place for many patients at the time of the survey. Treatment modifications make it impossible to determine the precise relationship between the prevalence of nail psoriasis and obesity rates. It would be desirable to clarify this relationship before initiating systemic treatment for psoriasis.

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Table. Univariate analysis of the association of BMI with each clinical sign of nail psoriasis.

	total	BMI≧30	BMI＜30	P-value
All patient	95	12	83	
Age (average)	58.6	55.2	59.1	
Sex (male/female)	62/33	9/3	53/30	
PASI (average)	2.1	2.3	2.1	
Systemic therapy				
Ultraviolet phototherapy	2	0	2	
Oral medications (cyclosporin, methotrexate, apremilast, salazosulfapyridine, or etretinate)	26	2	24	
Biologics	63	10	53	
Type of psoriasis				
Psoriasis vulgaris	74 (77%)	10 (83%)	64 (77%)	
Pustular psoriasis	12 (12%)	2 (16%)	10 (12%)	
Erythroderma	2 (2%)	0 (0%)	2 (2%)	
Psoriatic arthritis	43 (45%)	10 (83%)	33 (39%)	
Nail psoriasis	54 (56%)	7 (58%)	47 (56%)	>0.9999
Signs of nail bed involvement	38 (70%)	3 (42%)	35 (74%)	0.3508
Onycholysis	25 (46%)	2 (28%)	23 (48%)	0.5079
Thickening	3 (5%)	0 (0%)	3 (6%)	>0.9999
Splinter hemorrhages	6 (11%)	1 (14%)	5 (10%)	0.5657
Oil stain	16 (29%)	2 (28%)	14 (29%)	>0.9999
Signs of nail matrix involvement	40 (74%)	5 (71%)	35 (74%)	>0.9999
Pitting	28 (51%)	5 (71%)	23 (48%)	0.3279
Leukonychia	2 (3%)	0 (0%)	2 (4%)	>0.9999
Crumbling	18 (33%)	0 (0%)	18 (38%)	0.1142

Red spot in the lunula	2 (3%)	0 (0%)	2 (4%)	>0.9999