Dermatology Practical & Conceptual

Onychoscopy in Palmoplantar Psoriasis: A Comparative Study of Nonpustular Palmoplantar Psoriasis and Palmoplantar Pustulosis

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Key message: Nail lesions in palmoplantar psoriasis are different from nail lesions of psoriasis vulgaris. This study aimed to shed light on the heterogeneous presentations of nail psoriasis in psoriasis vulgaris and palmoplantar psoriasis.

Key words: psoriasis, palmoplantar, nail, dermoscopy, pustulosis, plaque

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ABSTRACT

Introduction: Palmoplantar psoriasis is classified as nonpustular palmoplantar psoriasis (NPPP) or palmoplantar pustulosis (PPP).

Objective: We sought to shed light on the phenotypic diversity of nail psoriasis and conducted a thorough study of the dermoscopic features of nail lesions from patients with NPPP and PPP.

Methods: A prospective study included 35 patients with NPPP and 20 patients with PPP who had findings of nail psoriasis in at least three of their nails. Demographic and clinical data, such as general characteristics, history, a thorough dermatological examination, and musculoskeletal assessment, were recorded. Each patient had their nails evaluated with videodermoscopy. The statistical analysis was carried out using SPSS software, including descriptive and analytical statistics.

Results: Dermoscopic patterns of nail lesions in both groups differed from those seen in psoriasis vulgaris. Trachyonychia was the most common dermoscopic pattern among NPPP patients. Nail bed pustules were found in 75% of the PPP patients, and they were the most common dermoscopic finding identifying PPP nail lesions. In comparison to the NPPP group, patients with PPP had a higher frequency of psoriatic arthritis (PsA) and higher palmoplantar psoriasis and nail psoriasis severity scores. In the PPP group, all patients with PsA had pustules.

Conclusions: Nail psoriasis has a heterogeneous presentation and various clinical manifestations in NPPP, PPP, and psoriasis vulgaris. The differences in dermoscopic patterns of nail lesions among NPPP, PPP, and psoriasis vulgaris reflect the diseases' distinct characteristics. A thorough dermoscopic examination of the nails may reveal information about both the underlying pathophysiological pathways and the overall course of psoriasis.

Introduction

Dermatoses that affect the palmoplantar region produce distinct lesions. Psoriasis can appear on the palms and soles in a variety of morphological patterns, ranging from sharply defined thick hyperkeratotic plaques, known as nonpustular palmoplantar psoriasis (NPPP), to pustular lesions or a combination of the two [1,2]. There has been considerable confusion regarding the clinical criteria for describing acral pustular psoriasis. Historically, some authors believed that palmoplantar pustulosis (PPP) and palmoplantar pustular psoriasis were distinct entities, whereas others saw them as manifestations of the same pathological process [3-6]. A molecular study based on gene expression microarray could not differentiate PPP from palmoplantar pustular psoriasis, suggesting that they are highly related diseases but showing them to be distinct from psoriasis vulgaris [7]. The European Rare and Severe Psoriasis Expert Network (ERASPEN), established to define consensus criteria for the diagnosis of pustular psoriasis, introduced two clinical forms of acral pustular psoriasis: PPP and acrodermatitis continua of Hallopeau, excluding the term palmoplantar pustular psoriasis from acral pustular psoriasis classification [8].

Nail psoriasis has many distinct dermoscopic features that make nail psoriasis easy to diagnose, even in the absence of lesions of cutaneous psoriasis. The use of dermoscopy in nail psoriasis is related not only to diagnosis but also to the management of the patients. It has been shown that some dermoscopic features of nail psoriasis are seen more commonly in patients with psoriatic arthritis (PsA) than in patients without PsA [10]. Dermoscopy may serve as a key diagnostic tool in evaluating patients with nail psoriasis, providing predictive information about accompanying PsA, which may necessitate a complete change in managing these patients [9,10]. Although dermoscopic features of nail lesions in psoriasis vulgaris have been investigated thoroughly [10-14], we sought to investigate and compare dermoscopic features of the nail findings of patients with NPPP versus PPP.

Methods

The present study included 35 patients with NPPP and 20 patients with PPP who had macroscopic nail psoriasis changes in at least three of their nails over 18 months. The study was carried out in accordance with the Helsinki Declaration and approved by the Ankara Bilkent City Hospital Ethics Committee (E1/2829/2022). In this study, patients with pustular lesions were regarded as having PPP but not palmoplantar pustular psoriasis, and the term PPP was used based on the ERASPEN classification. [8] We excluded patients with acrodermatitis continua of Hallopeau, which is a disease already affecting the nail unit [8]. The study's inclusion criteria were as follows: (a) patients over the age of 18 years; (b) patients with a confirmed diagnosis from a histopathological examination; (c) patients with macroscopic nail psoriasis changes in at least three nails. Patients with extra palmoplantar lesions covering more than 5% of their body surface area and those with acrodermatitis continua of Hallopeau, nail trauma, or onychomycosis were excluded from the study. Each patient received a comprehensive dermatological evaluation. If a patient had a medical record for PsA, it was recorded. Other patients without medical records indicating the presence of PsA were referred to a rheumatologist, who diagnosed PsA based on their assessment.

The severity of psoriasis was calculated for each patient using the modified palmoplantar psoriasis area and severity index (m-PPPASI) score [15]. Nail psoriasis severity was graded using the Nail Psoriasis Severity Index (NAPSI) score [16]. The m-PPPASI is a tool used to determine the severity and extent of palmoplantar psoriasis, which measures the sum of scores given for each sign, including erythema, infiltration (for NPPP), or pustules (for PPP), and desquamation of palms and soles [15]. A videodermoscope was used to evaluate the nail unit. The 20-fold magnification power was preferred. During the examination, ultrasound gel was used as an interface medium. The following dermoscopic features were investigated in all patients: longitudinal erythema of the nail bed (LE), fuzzy lunula (FL), mottled lunula (ML), red spots in the lunula (RSL), nail bed red spots (NBSs), white patchy areas, splinter hemorrhages (SHs), dilated nail bed capillaries (DBCs), dilated hyponychial capillaries (DHCs), salmon patches (SPs), distal onycholysis (DO), subungual hyperkeratosis (SUH), nail bed pustules, pitting, multiple white dots, nail plate scaling, longitudinal ridging, leukonychia, Beau's lines, thickened white–yellow nail plates (TYPs), nail plate crumbling (NPC), and nail plate loss.

Statistical Analysis

Statistical analysis was conducted using the SPSS software (version 20; SPSS Inc., Chicago, Illinois). Data normality was determined using the Kolmogorov–Smirnov test. Categorical variables were analyzed using numbers and percentages. Continuous variables with a normal distribution are presented as mean ± standard deviation values, whereas those without a normal distribution are presented as median and interquartile range (IQR). The chi-square test or Fisher's exact test was used for categorical variables, whereas the Student's t-test or the Mann–Whitney U test was used for continuous variables. The Spearman's correlation test was used to determine the relationship between variables. A p-value <0.05 was considered statistically significant.

Results

The demographic and clinical characteristics of the study group are shown in Table 1. The dermoscopic features of the study group are shown in Table 2. Figures 1-6 illustrate dermoscopic features observed in the study group.

Analysis of the Relationship Between Dermoscopic Features

Several significant correlations existed between dermoscopic findings in patients with NPPP and PPP. Table 3 shows significant associations. According to these findings, SUH in patients with NPPP as well as pustules and DHCs in patients with PPP had the highest number of significant associations. In the NPPP group, all 13 patients with SUH had TYPs. Furthermore, patients who had SUH had a higher incidence of pitting (84.6% vs. 15.4%, P = 0.022), DO (92.3% vs. 7.7%, P = 0.001), and DBCs (76.9% vs. 23.1, P = 0.004). Patients with pustules had a higher incidence of SPs (80% vs. 20%, P = 0.004), pitting (86.7% vs. 13.3%, P = 0.014), RSL (73.3% vs. 26.7%, P = 0.008), and DHCs (80% vs. 20%, P = 0.031). Similarly, patients with DHCs were more likely to have pustules (92.3% vs. 7.7%, P = 0.031), DBCs (92.3% vs. 7.7%, P = 0.031), DO (92.3% vs. 7.7%, P = 0.031), and NPC (76.9% vs. 23.1%, P = 0.017). Among the 13 patients with DHCs (n = 13), 76.9% (n = 10) had a combination of pustules, DBCs, and DO (Table 3).

Analysis of the Relationship Between Dermoscopic Features and Clinical Variables of Patients

Patients with NPPP

The number of affected fingernails was higher in patients with the following dermoscopic findings: TYPs, DHCs, DBCs, SUH, pitting, and DO. Patients with these dermoscopic characteristics and NPC were more likely to develop

Table 1. Demographic and Clinical Characteristics of the Study Group.

	NPPP Group (n = 35)	PPP Group (n = 20)
Age (years), M ± SD (range)	46.71 ± 12.12 (26–68)	43.95 ± 17.9 (18-78)
Sex, n (%) Female/ Male	 10 (28.6) / 25 (71.4)	 15 (75) / 5 (25)
Family history of psoriasis, n (%)	10 (28.6)	3 (15)
Psoriasis duration (months), Md (IQR)	48 (24-240)	10 (6-102)
Pts with PsA, n (%)	7 (20)	9 (45)
Follow-up / newly diagnosed pts, n (%)	31 (88.6) / 4 (11.4)	15 (75) / 5 (25)
Pts with extrapalmoplantar lesions, n (%)	17 (48.6)	5 (25)
Affected extrapalmoplantar BSA, %, M ± SD (range)	1.23 ± 1.63 (0-5)	0.55 ± 1.05 (0-3)
Previous treatments, n (%)※ Only topical treatment Phototherapy Acitretin Methotrexate Tetracycline Colchicine Biologics	 12 (34.3) 8 (22.9) 16 (45.7) 4 (11.4) - - 5 (14.3)	 2 (10) 1 (5) 6 (30) 8 (40) 2 (10) 5 (25) 3 (15)
Pts with palmar and/or plantar involvement, n (%) Palms and soles Only palms Only soles	 30 (85.7) 3 (8.6) 2 (5.7)	 18 (90) 1 (5) 1 (5)
m-PPPASI, Md (IQR)*, M ± SD (range)‡	8.4 (4.2-17.6)*	12.02 ± 7.3 (1.2-27)‡
Pts with fingernail/ toenail involvement, n (%)	35 (100) / 19 (54.3)	20 (100) / 11 (55)
Affected fingernails/ toenails, Md (IQR)	6 (3-10) / 1 (0-6)	4 (3-7) / 2 (0-4)
Affected total nails, Md (IQR)	8 (3-14)	6.5 (3-11)
NAPSI, Md (IQR)*, M ± SD (range)‡	22 (10-38)*	32.15 ± 21.13 (6-79)‡

※: reflects relative percentages rather than absolute. Abbreviations: NPPP: nonpustular palmoplantar psoriasis; PPP: palmoplantar pustulosis; M: mean; SD: standard deviation; Md: median; IQR: interquartile range; Pts: patients; PsA: psoriatic arthritis; BSA: body surface area; m-PPPASI: modified palmoplantar psoriasis area and severity index; NAPSI: nail psoriasis severity index.

Table 2. Dermoscopic Features of the Study Group.

Dermoscopic findings, n (%)	NPPP Group (n = 35)	PPP Group (n = 20)
LE	32 (91.4)	19 (95)
SHs	31 (88.6)	17 (85)
FL	26 (74.3)	14 (70)
DO	20 (57.1)	15 (75)
DBCs	16 (45.7)	15 (75)
DHCs	14 (40)	13 (65)
ML	20 (57.1)	10 (50)
SPs	3 (8.6)	12 (60)
SUH	13 (37.1)	5 (25)
NPC	12 (34.3)	11 (55)
Pitting	21 (60)	14 (70)
Pustules	-	15 (75)
NPL	-	7 (35)
TYPs	15 (42.9)	10 (50)
MWD	11 (31.4)	2 (10)
Scaling	26 (74.3)	14 (70)
Ridging	22 (62.9)	9 (45)
Leukonychia	11 (31.4)	4 (20)
Beau's lines	57.1 (20)	9 (45)
RSL	6 (17.1)	11 (55)
NBSs	3 (8.6)	5 (25)
White patchy areas	1 (2.9)	-

Abbreviations: NPPP: nonpustular palmoplantar psoriasis; PPP: palmoplantar pustulosis; LE: longitudinal erythema of the nail bed; SHs: splinter hemorrhages; FL: fuzzy lunula; DO: distal onycholysis; DBCs: dilated nail bed capillaries; DHCs: dilated hyponychial capillaries; ML: mottled lunula; SPs: salmon patches; SUH: subungual hyperkeratosis; NPC: nail plate crumbling; NPL: nail plate loss; TYPs: thickened white-yellow nail plates; MWD: multiple white dots; RSL: red spots in the lunula; NBSs: nail bed red spots.

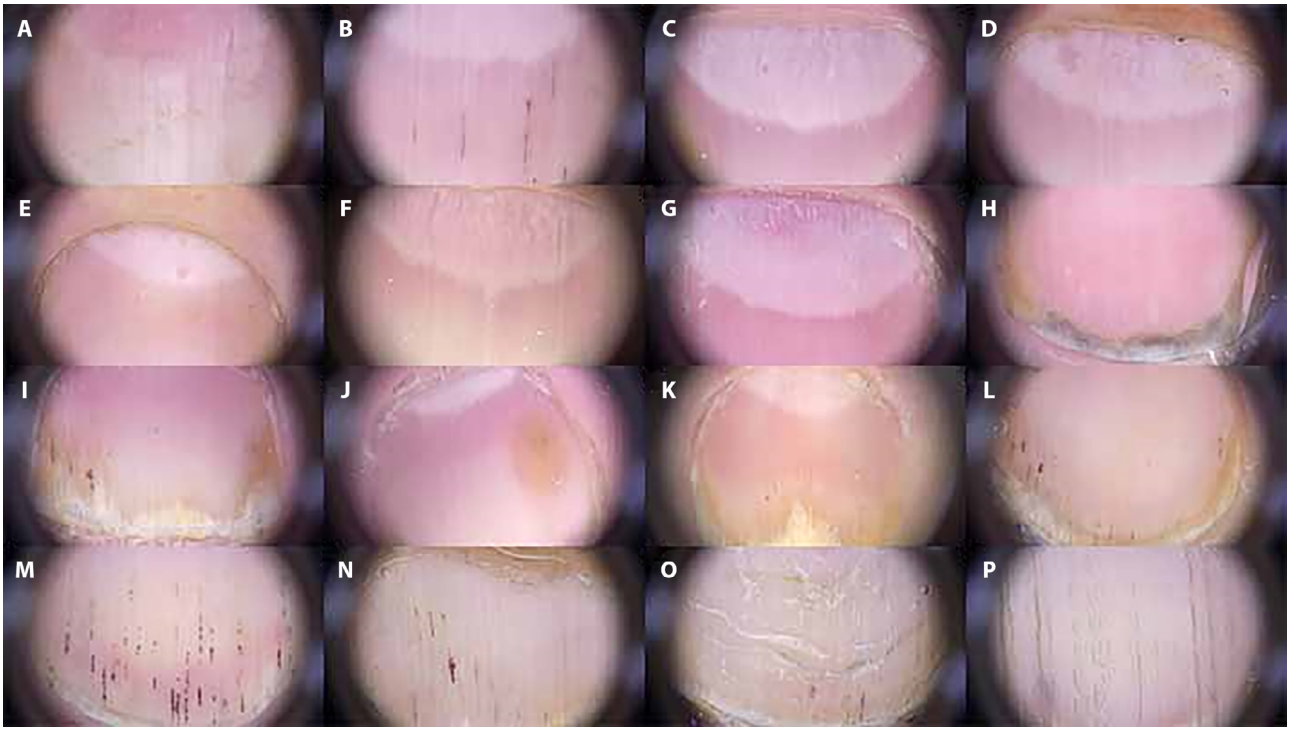

Figure 1. Nail bed-related and matrix-related findings. Note white patchy areas in H, which is a very rare finding of nail psoriasis.

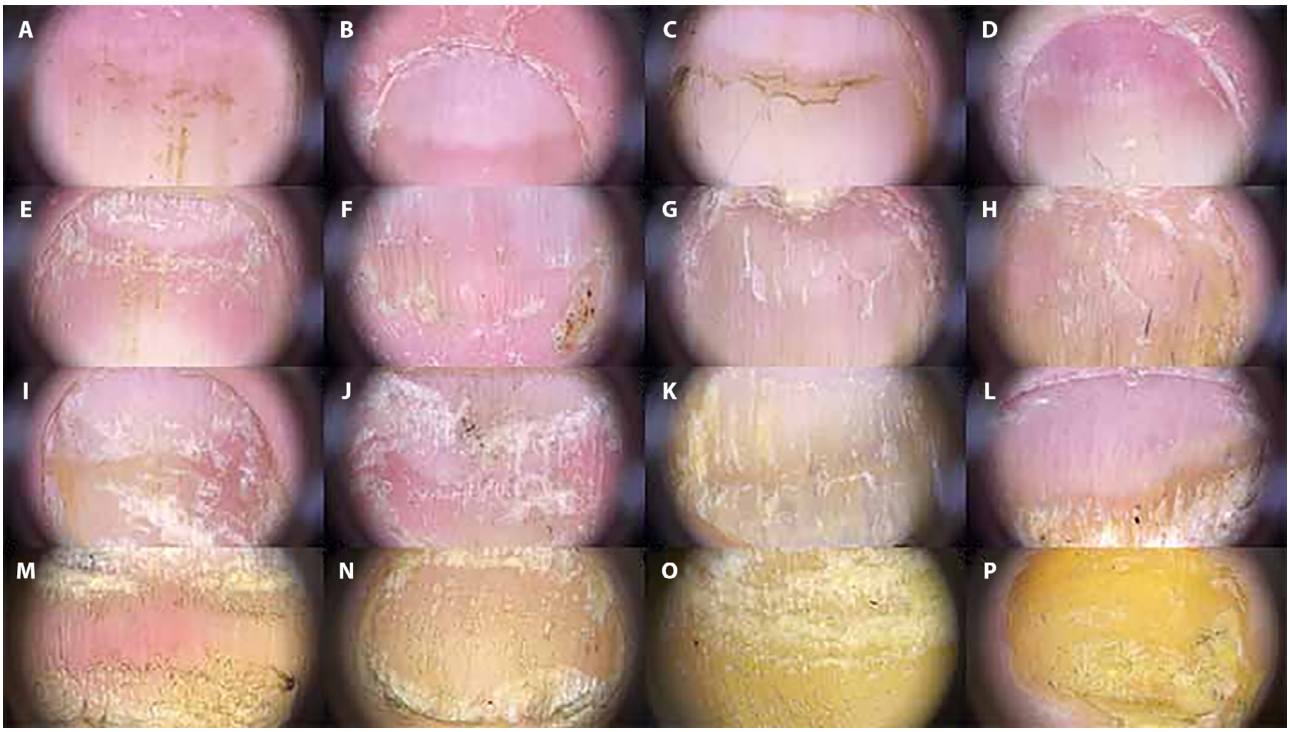

Figure 2. Trachyonychia.

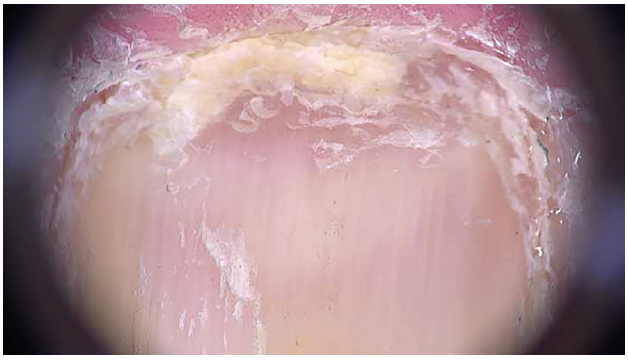

Figure 3. Longitudinal erythema of the nail bed, ridging, severe cuticle hyperkeratosis, periungual dotted vessels.

severe nail psoriasis (Table 4). All fingernails were affected in all patients with SPs (n = 3) and NBSs (n = 3). Furthermore, all patients (n = 10) with 10 fingernail involvement had pitting (p = 0.002). Patients with toenail involvement were more likely to have ridging (84.2% vs. 15.8%, p = 0.004), Beau's lines (73.7% vs. 26.3%, p = 0.031), TYPs (68.4% vs. 31.6%, p = 0.001), and SUH (63.2% vs. 36.8%, p = 0.001) when compared with patients without toenail involvement.

Patients with PPP

Patients with SPs, pitting, DHCs, pustules, and SUH were more likely to develop severe palmoplantar psoriasis. Similarly, patients with SPs, pitting, DHCs, pustules, SHs, and NPC were more likely to develop severe nail psoriasis. The number of affected fingernails was higher in patients with the following dermoscopic findings: SPs, pitting, RSL, TYPs, and DHCs. The presence of pustules was significantly associated with palmoplantar psoriasis and nail psoriasis severity (Table 4) and the presence of PsA (P = 0.038). All patients with PsA had pustules (n = 9), and 60% of those with pustules had PsA (n = 9). All the patients with SUH (n = 5) had toenail involvement (P = 0.038).

Analysis of Patient Clinical Profiles and Their Significance

Patients with NPPP

Spearman's correlation revealed a significant positive relationship between palmoplantar psoriasis and nail psoriasis severity in patients with NPPP (P = 0.003, r = 0.490). The correlation was stronger for the patients with PsA (P = 0.003, r = 0.927) but not significant for patients without PsA (P = 0.058). The total number of affected fingernails correlated positively with palmoplantar psoriasis severity (P = 0.000, r = 0.565) and strongly with nail psoriasis severity (P = 0.000, r = 0.818). Toenail involvement significantly correlated with palmoplantar psoriasis (P = 0.019) and nail psoriasis severity (P= 0.001). The median m-PPPASI and NAPSI scores of the patients with and without toenail involvement were 14 (IQR, 5.7–31) versus 4.95 (IQR, 3–14.15) and 35 (IQR, 20–51) versus 14 (IQR, 6–22).

Patients with PPP

The severity of palmoplantar psoriasis was significantly associated with the presence of PsA (P = 0.001) and toenail

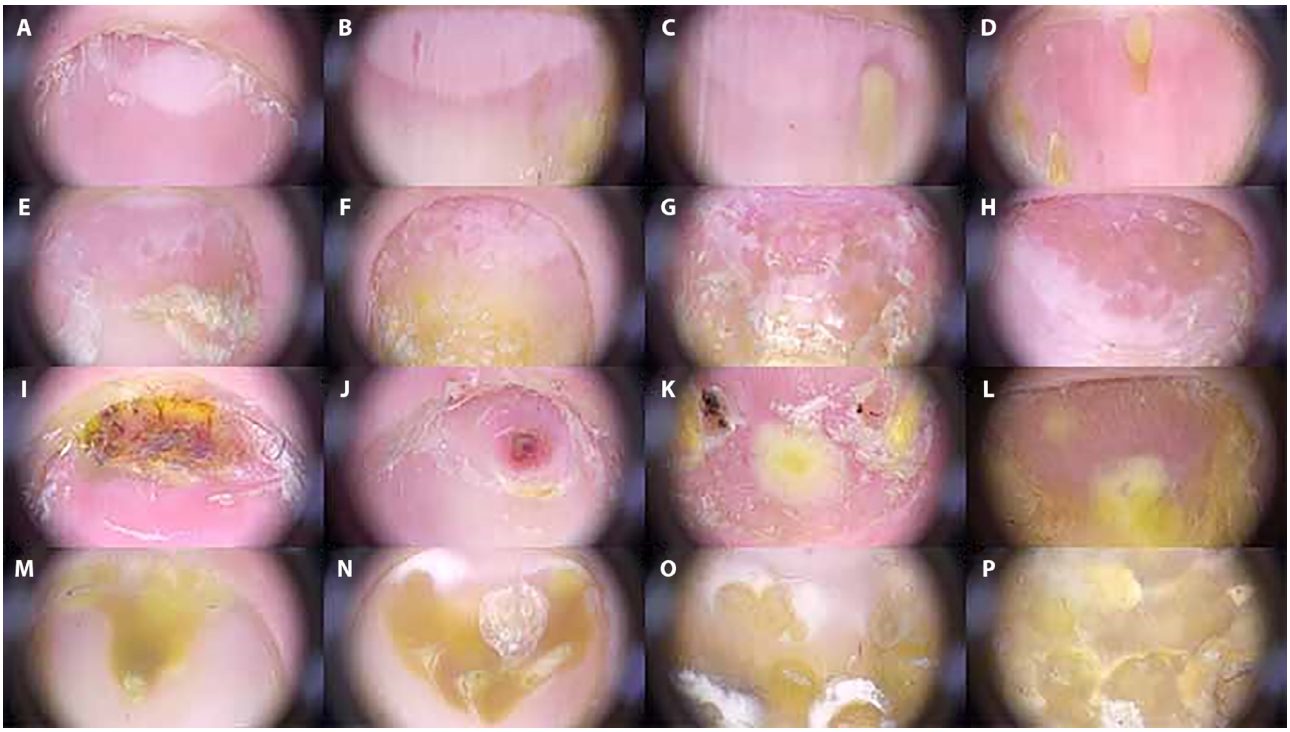

Figure 4. Pustules. Note teardrop-shaped erythema around the pustule in D, peripheral white halos around red spots in the lunula in E, peripheral erythema around the lunular pustules in F.

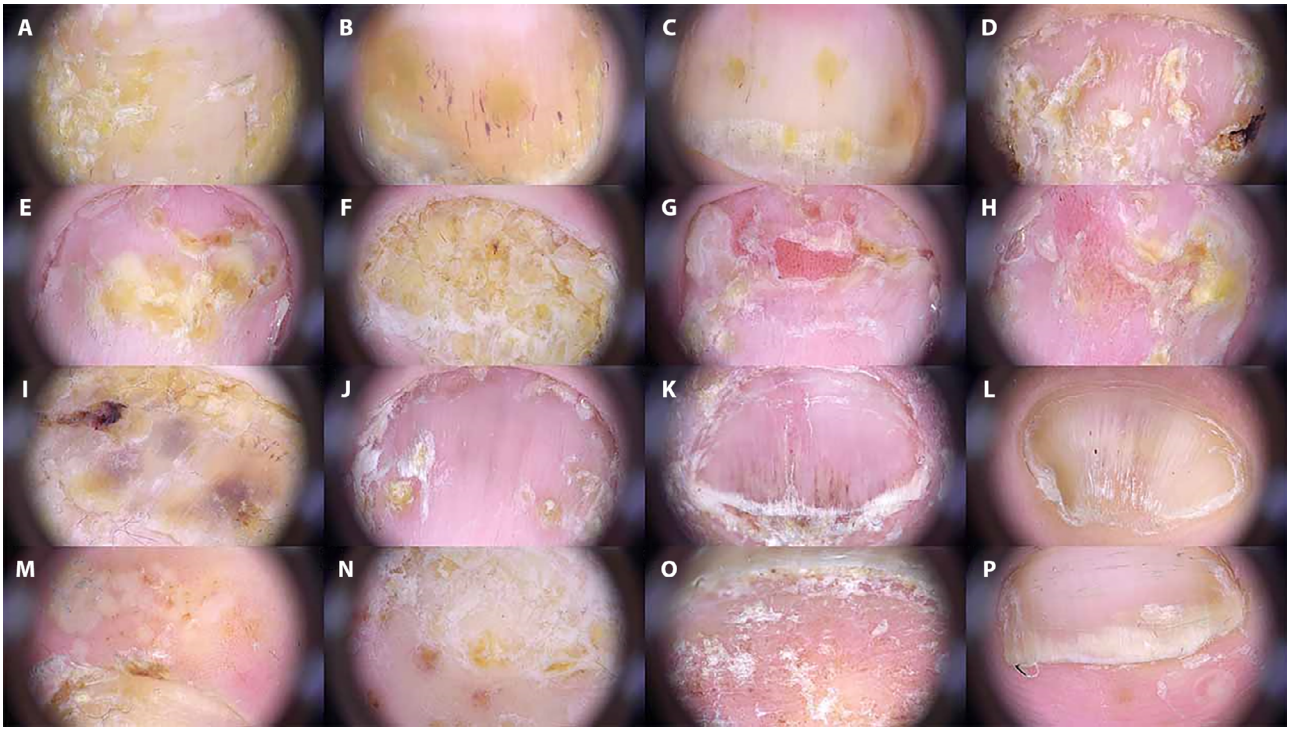

Figure 5. Pustules. Note prominent nail bed capillaries in G and H, late-stage pustules in D and J, pulpitis in O, periungual pustules in M, and hyponychial pustules in P.

involvement ($P = 0.029$) in PPP patients. The mean m-PPPASI value in patients with PsA was 17.40 compared with 7.62 in patients without PsA and 15.06 in patients with toenail involvement versus 8.3 in those without toenail involvement. Furthermore, Spearman's correlation revealed a significant positive association between palmoplantar psoriasis severity and the number of affected fingernails ($P = 0.000$, $r = 0.777$) as well as a moderate positive association between palmoplantar psoriasis severity and nail psoriasis severity ($P = 0.002$, $r = 0.648$). Nail psoriasis severity was associated with the presence of PsA ($P = 0.008$). Patients with PsA had a mean NAPSI score of 45.56 compared with 21.18 in

those without PsA. Spearman's correlation showed a significant positive relationship between the number of affected fingernails and nail psoriasis severity ($P < 0.001$, r = 0.857). Furthermore, the median number of affected fingernails in PsA patients was six (IQR, 4.5–10) compared with three (IQR, 3–4) in nonPsA patients ($P = 0.007$).

Discussion

Palmoplantar psoriasis is a chronic, recalcitrant dermatosis that only or primarily affects the palms and/or soles. Palmoplantar psoriasis manifests as either NPPP, PPP, or an overlapping of both. [1,2] NPPP and PPP are distinct from psoriasis vulgaris, although all conditions share similar phenotypic expressions. [1-8,17] Unlike psoriasis vulgaris, palmoplantar psoriasis is a rare condition. [17,18] It is estimated that the prevalence of PPP is 0.005 to 0.12% [19,20], whereas the prevalence of NPPP is 0.12% to 0.36% [17]. Nail involvement has been reported to occur in up to 76% of the patients with PPP [19,21,22], whereas it was reported to occur in 64.7% of the patients with NPPP [17]. In their study, which aimed to evaluate nail lesions in patients with PPP, Kim et al. [21] found that the most common features were DO, pitting, NPC, and leukonychia. In another rare study of nail lesions in patients with PPP, Hiraiwa et al. [22] demonstrated that nail lesions were not significantly associated with the presence of PsA, which appears to be a contradictory finding, given that nail psoriasis is well known to be strongly associated with PsA, even regarded as a predictive factor for the PsA development [23].

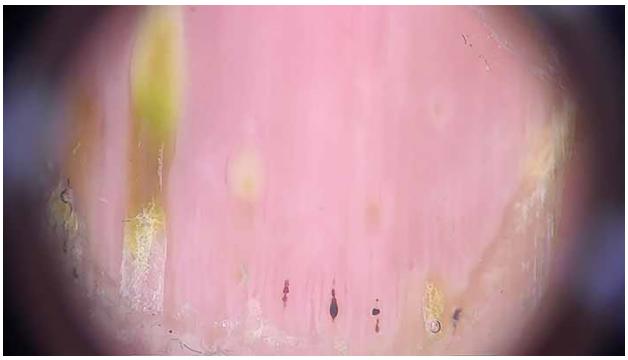

Figure 6. Pustules, dilated nailbed capillaries, splinter hemorrhages, distal onycholysis, and nail bed red spots with peripheral white halo. Note yellow, green, and brown colors of the pustule, which represent different stages of evolution.

We found a male predominance in the NPPP group and a female predominance in the PPP group, which is consistent with the literature [3,6,17,19]. Nearly half of the patients with NPPP and one-quarter with PPP had psoriasis lesions elsewhere on the body (Table 1). Other studies have questioned the presence and prevalence of co-occurring psoriasis in palmoplantar psoriasis patients. While some authors debate whether extra palmoplantar lesions are psoriasis or not [6,24], Brunasso et al. [17] found no significant differences in the co-occurrence of psoriasis lesions in patients with NPPP and PPP. Andersen et. al. [20] showed that the prevalence

Table 3. Significant Associations between Dermoscopic Findings within the Study Group.

NPPP Group							
	ML	**DO**	**TYPs**	**DHCs**	**SUH**	**NPC**	**NBSs**
SHs		$P = 0.026$					
Pitting			$P = 0.005$	$P = 0.011$	$P = 0.022$		
DO			$P = 0.005$		$P = 0.001$		
FL	$P = 0.022$						
DBCs		$P = 0.001$			$P = 0.004$		
TYPs				$P = 0.036$	$P = 0.000$	$P = 0.006$	
SUH				$P = 0.046$			$P = 0.044$*
NPC		$P = 0.034$					
PPP Group							
	SPs	**Pitting**	**RSL**	**DHCs**	**Scaling**		
Pustules	$P = 0.004$	$P = 0.014$	$P = 0.008$	$P = 0.031$			
DBCs				$P = 0.031$			
DO				$P = 0.031$			
SPs		$P = 0.018$					
Pitting			$P = 0.05$				
NPC				$P = 0.017$	$P = 0.05$		

*Inverse correlation: Patients with SUH were less likely to exhibit NBSs. Abbreviations: SHs: splinter hemorrhages; DO: distal onycholysis; FL: fuzzy lunula; DBCs: dilated nail bed capillaries; TYPs: thickened white-yellow nail plates; SUH: subungual hyperkeratosis; NPC: nail Plate crumbling; ML: mottled lunula; DHCs: dilated hyponychial capillaries; NBSs: nail bed red spots; SPs: salmon patches; RSL: red spots in the lunula.

Table 4. Associations of Dermoscopic Features with Clinical Variables of the Patients.

			m-PPPASI		NAPSI		Affected fingernails	
			M	p-value	Md (IQR)	p-value	Md (IQR)	p-value
NPPP Group	TYPs	P a	-	-	40 (26-55) 14 (6-18.25)	< 0.000	10 (6-10) 3.5 (3-6)	< 0.001
	DHCs	P a	-	-	37.5 (26-52) 14 (6-23)	0.001	10 (6.75-10) 4 (3-6)	< 0.001
	DBCs	P a	-	-	36 (23–49.75) 14 (6-20)	< 0.000	9 (5.25-10) 3 (3-7)	0.002
	SUH	P a	-	-	40 (27-56) 14 (6-20.75)	< 0.001	10 (6.5-10) 4 (3-6.25)	0.001
	Pitting	P a	-	-	28 (18-45.5) 12 (6-19.75)	0.002	9 (5-10) 3 (3-4.5)	< 0.001
	DO	P a	-	-	29 (19.75-44.5) 7 (6-20)	0.001	7.5 (4.25-10) 3 (3-7)	0.001
	NPC	P a	-	-	31.5 (17.75-44.5) 16 (6-30)	0.033	-	-
			m-PPPASI		**NAPSI**		**Affected fingernails**	
			M	**p-value**	**Md (IQR)/M⁂**	**p-value**	**Md (IQR)**	**p-value**
PPP Group	SPs	P a	15.875 6.237	0.001	42.42 16.75	0.002	6 (4-9.5) 3 (3-3)	0.001
	Pitting	P a	14.25 6.816	0.01	37.86 18.83	0.035	6 (3-8.5) 3 (3-4.25)	0.049
	RSL	P a	-	-	-	-	6 (4-10) 3 (3-3.5)	0.005
	TYPs	P a	-	-	-	-	6 (3.75-8.5) 3 (3-4.5)	0.05
	DHCs	P a	14.9 6.671	0.003	42 13.86	0.001	6 (3.5-9) 3 (3-5)	0.04
	Pustules	P a	14.327 5.1	0.01	38.6⁂ 12.8⁂	0.003	-	-
	SUH	P a	21.04 9.013	0.02	-	-	-	-
	SHs	P a	-	-	36.06 10	0.002	-	-
	NPC	P a	-	-	42.6419.33	0.008	-	-

[P]: Present, [a]: Absent; ⁂: Mean. Abbreviations: NPPP: nonpustular palmoplantar psoriasis; PPP: palmoplantar pustulosis; m-PPPASI: modified palmoplantar psoriasis area and severity index; NAPSI: nail psoriasis severity index; M: mean; Md: median; IQR: interquartile range; TYPs: thickened white-yellow nail plates; DHCs: dilated hyponychial capillaries; DBCs: dilated nail bed capillaries; SUH: subungual hyperkeratosis; DO: distal onycholysis; NPC: nail plate crumbling; SPs: salmon patches; RSL: red spots in the lunula; SHs: splinter hemorrhages.

of co-occurring psoriasis in patients with PPP varied dramatically in their three population-based cohorts and that patients with PPP with co-occurring psoriasis have a higher prevalence of PsA and use of antipsoriatic drugs [20]. In this study, involvement of other body regions was not found to have significant relationships with palmoplantar psoriasis, nail psoriasis severity, or the presence of PsA in patients with NPPP and PPP.

With this study, we present several important findings about patients with palmoplantar psoriasis. For example, in PPP patients, the presence of PsA was significantly associated with palmoplantar psoriasis and nail psoriasis severity and the total number of affected fingernails. Furthermore, compared with the NPPP group, we found a higher frequency of PsA and higher palmoplantar psoriasis and nail psoriasis severity scores in PPP patients (Table 1), indicating that PPP is a more severe condition than NPPP. The cardinal finding is nail bed pustules, which influence the specific presentation of nail psoriasis and define the disease characteristics in PPP. Our study found that patients with pustules were more likely to have severe palmoplantar psoriasis and nail psoriasis and higher frequencies of PsA (Table 4). Furthermore, all patients with PsA had pustules.

Aside from pustules, we observed several dermoscopic features, some of which previously described in patients with classical nail psoriasis such as LE, FL, ML, NBSs, RSL, and DBCs [9,10]. We also observed matrix-related findings, many of which are nonspecific features for nail psoriasis, including Beau's lines, ridging, scaling, leukonychia, and TYPs. It has been suggested that lunular findings, including FL, ML, and RSL, and other nail bed-related findings, including LE, NBSs, and DBCs, are interconnected features related to increased nail bed dermal vascularity seen with psoriatic angiogenesis [9,10]. It seems that inflammatory angiogenesis, microvascular dilation, and plasma extravasation seen in psoriasis [25,26] are the primary and common underlying pathophysiological mechanisms in developing nail lesions in patients with palmoplantar psoriasis. However, the dermoscopic patterns observed in this study differed not only between the study groups but also from the typical patterns seen in classical nail psoriasis. A typical presentation of classical nail psoriasis comprises nail bed-related features, typically SHs, SPs, and DO, accompanied by pitting [9,10]. Here, we observed that in patients with NPPP, trachyonychia and patterns composed of subtle nail bed-related features were the most common, whereas in patients with PPP, along with pustules, more intensified nail bed features shaped the overall presentations. In many patients, pitting was detected as localized lesions, contrary to classical nail psoriasis, in which it is mostly seen diffusely.

One explanation could be the differences in the biological and immunological pathways observed in the development of plaque psoriasis versus pustular psoriasis. Psoriasis is a complex inflammatory disease whose pathogenesis is determined by a balance between adaptive and innate immune responses. While T-cell-dependent autoimmune responses are linked to the development of chronic plaque psoriasis, neutrophil-mediated autoinflammatory responses in which IL-36 cytokines play a significant role are associated with the pathogenesis of pustular forms of psoriasis. [5,27-29] Wand et al. investigated the inflammatory circuits of psoriasis vulgaris, NPPP, and PPP. T helper cell 1-mediated inflammation was more prominent in NPPP than psoriasis vulgaris and palmoplantar pustular psoriasis, and neutrophil-associated activity was stronger in palmoplantar pustular psoriasis than in NPPP and psoriasis vulgaris. Wand et al. found more neutrophils in palmoplantar pustular psoriasis lesional skin than in NPPP lesional skin [30]. However, Tanaka et al. revealed contradictory findings in the only study to examine microscopic findings in PPP patients' nails. They found serous lakes, bacteria, blood, and parakeratosis but not neutrophils in the nail clippings of the patients with PPP, implying that PPP has less onychodystrophy and less intense histopathological findings than classical nail psoriasis [31].

Trachyonychia is a common feature in patients with classical nail psoriasis [32]. Our study found that opaque trachyonychia was common in patients with NPPP. It had a typical rough appearance, longitudinal ridges, and severe cuticle hyperkeratosis but fewer other nail psoriasis-specific features. These findings suggest that NPPP is a condition that primarily affects the nail matrix rather than the nail bed because trachyonychia is an inflammatory disease of the matrix. [32] By performing a thorough dermoscopic examination, we can determine the structures of the nail unit that are affected by psoriatic inflammation. Furthermore, predicting the severity and duration of inflammation in these structures is possible. Dermoscopy can reveal information about the overall course and prognosis of nail psoriasis. But have we gotten to the point where we can make assumptions about the underlying pathophysiological pathways involved in forming various types of nail psoriasis based on dermoscopy? Can we rely on dermoscopy to determine treatment options for different types of nail psoriasis? These and many more questions remain unanswered.

Limitations

The limitations of the study include a single-center design, a small sample size, and a lack of sequential dermoscopic imaging. The study's strength is that it is the first to examine dermoscopic features of nail lesions in patients with palmoplantar psoriasis. More multicenter studies with larger sample sizes, including patient follow-up image data, are needed.

Conclusions

Palmoplantar psoriasis is an orphan disease whose epidemiology and characteristics are rarely studied [20]. The current literature on PPP primarily focuses on discussions about PPP nosology [3-6], whereas literature on NPPP is limited [1,2,17,18,20]. In this study, we aimed to highlight some important demographic and clinical data about palmoplantar psoriasis and demonstrate several dermoscopic findings of nail lesions in patients with palmoplantar psoriasis. One of our study's most significant findings was identifying the relationship between pustules and the presence of PsA. We believe that detecting pustules in patients with palmoplantar psoriasis necessitates further investigation if no PsA diagnosis has been made because it is closely related to PsA, which requires systemic treatment.

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