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Celebrating Diversity: Unveiling the Characteristics of Nail Psoriasis and Nail Lichen Planus in 30 Patients With Skin of Color

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ABSTRACT

Introduction: Dermatological conditions affecting the nails can manifest differently in individuals with distinct skin tones. This often leads to difficulty in the recognition of nail diseases, especially in people with skin of color (SoC), who are not well represented in the literature.

Objectives: Our aim was to provide dermatologists with useful clues for prompt recognition and diagnosis of nail psoriasis (NPso) and nail lichen planus (NLP) in people with SoC.

Methods: We described the ungual manifestations of NPso and NLP in a population of 30 patients with SoC. Diagnosis was primarily based on clinical examination; in cases of diagnostic uncertainty, a biopsy of the nail matrix was performed to obtain histological conclusive evidence.

Results: Of the 30 people with SoC in the analysis, 24 patients had NPso with a median Fitzpatrick phototype of 4.77, and six patients had NLP with a median Fitzpatrick phototype of 5. Regarding the 24 patients with NPso, 10 presented with trachyonychia, nine displayed nail pitting, eight showed onycholysis, and 12 had subungual hyperkeratosis, while splinter hemorrhages were visible in two patients, and activation melanonychia was discernible on the nail plates of eight patients. Of the

six patients diagnosed with NLP, all had post-inflammatory pigmentation on the proximal nail, with three patients exhibiting trachyonychia and three others having longitudinal fissures; subungual hyperkeratosis was found in five patients, while three patients displayed activated melanonychia.

Conclusion: People with SoC exhibit a peculiar clinical presentation of both NPso and NLP, and a better understanding is essential to providing timely and effective care.

Introduction

In recent years, there has been a growing recognition of the importance of understanding how dermatological conditions affect individuals with skin of color (SoC). The spectrum of skin tones within this population is marked by variations in melanin content, which plays a pivotal role in determining the color and reactivity of the skin and its appendages, such as hair and nails [1,2].

Among the wide range of nail disorders, nail psoriasis (NPso) and nail lichen planus (NLP) are relatively lesser-known conditions when it comes to people with SoC. Regarding NPso in the general population, nail involvement is highly prevalent in psoriasis, with reported rates varying between 47.4% and 78.3% in different studies. Nail bed and nail matrix psoriasis can manifest in various ways, including the presence of pitting, onycholysis, subungual hyperkeratosis, and changes in the color of the nail plate. Severe NPso, which can lead to functional impairment, exerts a substantial impact on the quality of life of those affected. This underscores the crucial importance of timely diagnosis and intervention [3,4].

On the other hand, NLP is a relatively rare condition, with a global prevalence estimated at 0.5% to 1.0%. Approximately 10% to 15% of patients with lichen planus have nail manifestations. NLP primarily affects fingernails, with some involvement in toenails. It is more common in adults, with only a small percentage of cases occurring in children [5]. The clinical features of NLP can vary, but common symptoms include longitudinal ridging, nail plate thinning, lamina fragmentation, red or mottled lunula, and pterygium. Nail bed involvement can lead to onycholysis, subungual hyperkeratosis, and splinter hemorrhages. Dorsal pterygium, a V-shaped scarring of the proximal nailfold, is a specific sign of NLP but represents late-stage disease. Diagnosis is challenging due to the lack of specificity in symptoms, which can lead to delays in diagnosis and ultimately result in functional impairment [6].

Both conditions have been significantly underrepresented in the field of dermatology, as our understanding is primarily based on small case reports found in the literature [7–9].

Objectives

Our case series analysis aimed to shed light on the presentation and characteristics of NPso and NLP in 30 patients with SoC. This study emphasizes the significance of recognizing the distinct clinical patterns and manifestations of these conditions in this specific patient population.

Methods

In this case series, we identified a total of 30 patients with SoC who had been diagnosed with NPso or NLP. We collected clinical data, including demographic information, clinical presentation, and nail-specific characteristics such as nail pitting, oil-drop patches, longitudinal melanonychia, and other nail plate abnormalities. Diagnosis of NPso and NLP was primarily based on clinical examination. In cases of diagnostic uncertainty, we performed a 3 mm punch biopsy of the nail matrix to obtain conclusive evidence.

Results

Our study encompassed a cohort of 24 patients diagnosed with NPso (M = 21; F = 5). The median age within this group was 37.25 years, with a corresponding median Fitzpatrick phototype of 4.77. Among these patients, our observations revealed that four exhibited post-inflammatory pigmentation at the proximal nailfold, 10 presented with trachyonychia, nine displayed nail pitting, and three manifested onychorrhexis. Regarding nail bed manifestations, onycholysis was noted in eight patients, subungual hyperkeratosis was identified in 12 patients, and splinter hemorrhages were visible in two patients. Furthermore, activation melanonychia was visually discernible on the nail plates of eight patients. Results are fully displayed in (Table 1).

In a separate cohort of six male patients diagnosed with NLP, the median age was 38.8 years. Their median Fitzpatrick phototype was 5.0. In all six cases, post-inflammatory pigmentation was observed at the proximal nail. Regarding the nail matrix signs, three patients exhibited trachyonychia, while the other three displayed longitudinal fissures. Five patients showed subungual hyperkeratosis,

Table 1. Data Gathered on Patients with Skin of Color Affected by Nail Psoriasis.

Patient N°	Age	Fitzpatrick Phototype	Sex	Pnf	Nail Matrix Sign	Nail Bed Signs	Nail Plate Signs	Digit Hands	Digit Feet
1	45	VI	M	/	Longitudinal fissures	Subungual hyperkeratosis	/	III L	/
2	34	V	M	Post-inflammatory pigmentation	Pitting	Subungual hyperkeratosis	Activation melanonychya	ALL R	I, II, V R + I, V L
3	29	IV	M	/	Trachyonychia	Subungual hyperkeratosis		ALL	/
4	39	V	M	Post-inflammatory pigmentation	Pitting	Subungual hyperkeratosis	Activation melanonychya	I, II, IV, V R	/
5	43	IV	M	/	Trachyonychia	/	Activation melanonychya	ALL	ALL
6	24	IV	M	/	/	Onycholysis	/	ALL	I R, I L
7	35	V	M	/	Trachyonychia	Onycholysis	/	III R	/
8	27	V	M	/	Longitudinal fissures	/	/	III L	I, II R + I L
9	29	IV	M	/	Pitting + Trachyonychia	Subungual hyperkeratosis	/	ALL	/
10	29	V	M	/	Pitting	Subungual hyperkeratosis	Activation melanonychya	I, II, V L	I R, I, III L
11	33	V	M	/	/	Onycholysis		ALL	ALL
12	40	IV	M	/	Longitudinal fissures	/	Activation melanonychya	I L	/
13	55	IV	M	/	Trachyonychia	Subungual hyperkeratosis	/	I, II R	/
14	41	VI	M	Post-inflammatory pigmentation	Pitting + Trachyonychia	Subungual hyperkeratosis	/	I, II R	I, II, III R + I, II, III L
15	29	V	M	/	Pitting + Trachyonychia	/	/	ALL	/
16	32	IV	M	/	Trachyonychia	Subungual hyperkeratosis	Activation melanonychya	I, II, IV R	ALL
17	43	VI	M	/	Trachyonychia	/	/	ALL	ALL
18	49	VI	/	Post-inflammatory pigmentation	Trachyonychia	Onycholysis	/	I, II, III L	/
19	33	V	/	/	/	Subungual hyperkeratosis + onycholysis	/	IV R	/
20	77	IV	/	/	Pitting	Onycholysis + splinter hemorrhages	Activation melanonychya	ALL L	/
21	10	V	/	/	Pitting	Subungual hyperkeratosis	Activation melanonychya	/	I L
22	48	V	/	/	/	Onycholysis	/	ALL L	/
23	32	V	/	/	/	Onycholysis + splinter hemorrhages	/	II, IV L	/
24	38	IV	/	/	Pitting	Onycholysis	/	IV, V L	I R + I L

Abbreviations: PFN: pterygium; L: left; R: right.

Table 2. Data Gathered on Patients with Skin of Color Affected by Nail Lichen Planus.

Patient N°	Age	Fitzpatrick Phototype	Sex	Pnf	Nail Matrix Sign	Nail Bed Signs	Nail Plate Signs	Digit Hands	Digit Feet
1	33	IV	M	Post-inflammatory pigmentation	Longitudinal fissures	Subungual hyperkeratosis	Activation melanonychya	I, III L + I, II, III, IV R	/
2	44	VI	M	Post-inflammatory pigmentation	Trachyonychia	Subungual hyperkeratosis	Activation melanonychya	ALL	I, II R + I, II L
3	45	V	M	Post-inflammatory pigmentation	Trachyonychia	Subungual hyperkeratosis	/	I, II L + I, II R	/
4	34	V	M	Post-inflammatory pigmentation	Trachyonychia	Subungual hyperkeratosis	Activation melanonychya	ALL	/
5	47	IV	M	/	Longitudinal fissures	Subungual hyperkeratosis	/	I L + I, II, III R	/
6	30	VI	M	Post-inflammatory pigmentation	Longitudinal fissures	Onycholysis	/	ALL	I, II R + I, II L

Abbreviations: PFN: pterygium; L: left; R: right.

and three patients presented with activation melanonychia as a distinctive nail plate sign. Results are fully displayed in Table 2.

Discussion

NPso may display unique characteristics in individuals with skin of color. Nail pitting is a common sign, ranging from small pits to large irregular furrows on the nail plate. In our case series, nine patients had nail pitting. Oil-drop patches, a specific diagnostic sign, may not always be visible in this population, as shown in our results. Extended disease activity can lead to nail plate crumbling and thickening, often resulting from total nail matrix destruction, which corresponds to ten of our cases who developed trachyonychia (Figures 1 and 2). Differential diagnosis is essential to exclude fungal infections, especially when NPso presents without evident skin involvement. Chang and colleagues conducted a retrospective examination of NPso cases at Weill Cornell Medicine [8]. They discovered that among the 87 NPso patients included in their analysis, 82% fell into skin types I–III, while 18% were classified as skin types IV–VI. The patients with skin types IV–VI experienced a longer period before receiving a diagnosis (59 months compared to 24 months) and exhibited higher average NAPSI scores, indicating greater disease severity when compared to individuals with skin types I–III. The study's authors emphasized the presence of disparities in NPso diagnosis, particularly concerning patients with SoC, who tended to be diagnosed almost three years later and presented with more severe cases of the condition. This delay in

Figure 1. Global photography of a patient affected by nail psoriasis (Fitzpatrick phototype V) with subungual hyperkeratosis, longitudinal melanonychia and overall nail dystrophy.

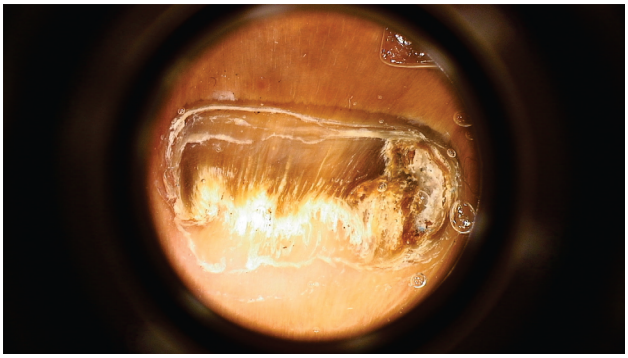

Figure 2. Onychoscopy image of nail alterations due to nail psoriasis: it reveals subungual hyperkeratosis, longitudinal melanonychia, and irregular pitting.

diagnosis among SoC patients might be attributed to factors such as limited access to health care and the challenges associated with identifying NPso on darker skin, which can obscure clinical signs [8]. Case series like ours play a crucial role in expanding our collective understanding of this subject and working towards reducing dermatological disparities across different ethnicities.

As for NLP, it may present differently in individuals with SoC. Kluger presented a case of NLP affecting a young man [9]; his patient displayed a darkened area on the upper part of the nailfold, along with nail ridges, swelling, and scarring, indicating that the nail matrix was affected. There was also excessive subungual hyperkeratosis, onycholysis, and a "pup tent" appearance. In our cases, three patients showed longitudinal activation melanonychia, and five displayed periungual pigmentation. Notably, post-inflammatory hyperpigmentation of the proximal nailfold and longitudinal activation melanonychia are more common in individuals with darker skin tones due to melanocytic activation. Indeed, concerning melanonychia, in individuals with dark skin, the nail matrix contains a relatively higher density of melanocytes compared to those with lighter skin. The number of melanocytes in the nail matrix can range from 208 to 576 cells/mm^2. This high melanocyte density contributes to the pigmentation of the nail plate. Furthermore, melanocytes are most prominent in the distal matrix, particularly in the active component of the distal matrix, while the proximal matrix contains melanocytes that are largely dormant. This distribution pattern contributes to the formation of longitudinal melanonychia in individuals with dark skin [10]. Regarding nail matrix involvement in NLP, it can result in various nail plate abnormalities, not different from those seen in people with lighter skin tones, including longitudinal ridging, nail plate thinning, longitudinal fissuring, trachyonychia, and erythema of the lunula, as partially seen in our cases (Figures 3 and 4). Additionally, it is known that nail bed involvement may lead to onycholysis and subungual hyperkeratosis; five of our patients showed subungual hyperkeratosis, mirroring the clinical features of NLP in lighter Fitzpatrick phototypes [6].

Figure 3. Global photography of a patient affected by nail lichen planus (Fitzpatrick phototype VI) with visible trachyonychia and longitudinal fissures.

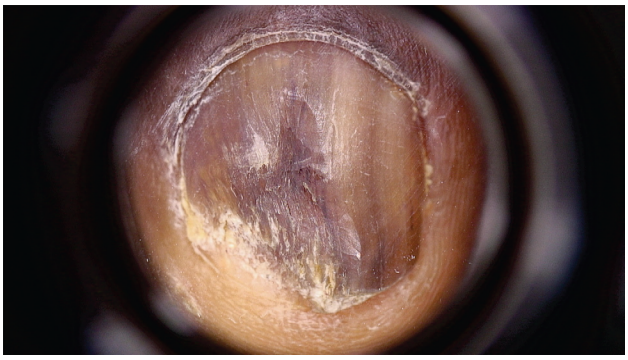

Figure 4. Onychoscopy image of trachyonychia due to nail lichen planus: nail crumbling and longitudinal fissures are visible.

Finally, we emphasize that patients affected by NPso typically presented with more severe manifestations compared to those with NLP. This discrepancy may stem from the greater challenge in diagnosing NPso compared to NLP as well as to delayed dermatological consultations among the former group.

Limitations

There are some limitations to our study, such as the relatively small sample size, the retrospective nature of the study conducted at two medical institutions, and the subjective nature of skin type and nail lesions assessment. To confirm the validity of our findings, it is essential to conduct a broader multicenter study involving a larger number of patients with diverse skin tones.

Conclusion

Our case series highlights the unique manifestations of NPso and NLP in patients with SoC. Recognizing these distinct clinical presentations, including post-inflammatory hyperpigmentation and absence of oil spots for instances, is crucial to providing timely and effective care. While variations exist, the diagnostic and treatment approaches remain largely consistent across different skin tones, emphasizing the importance of tailored care for each patient.

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