



# International Journal of Dermatology, Venereology and Leprosy Sciences

E-ISSN: 2664-942X

P-ISSN: 2664-9411

[www.dermatologypaper.com](http://www.dermatologypaper.com)

Derma 2023; 6(1): 111-114

Received: 10-04-2023

Accepted: 20-05-2023

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## Cutaneous manifestations of psoriatic arthritis and its dermoscopic findings

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DOI: <https://doi.org/10.33545/26649411.2023.v6.i1b.140>

### Abstract

A quick, inexpensive, non-invasive bolstering technique termed dermoscopy is being utilised to diagnose a number of inflammatory dermatoses and to evaluate nail fold vascular anomalies in a number of rheumatologic illnesses. Lesions with the most supporting evidence in this respect are psoriatic skin lesions since the combination of regularly distributed dotted vessels and widespread white scaling are a precise diagnostic findings. Furthermore, early nail psoriasis identification by dermoscopy, which is strongly connected to psoriatic arthritis, is advantageous as it makes certain dermoscopic manifestations, such as splinter haemorrhage, pitting, nail plate thickening and crumbling, distal onycholysis, leukonychia, oil spot sign, dilated hyponychial capillaries, and the pseudo-fiber sign, more visible. Thus, this review aims to emphasise the value of dermoscopy in the diagnosis of psoriasis and psoriatic arthritis (psA) in order to better discriminate PsA from other seronegative arthritis.

**Keywords:** Psoriatic arthritis, dermoscopy, psoriasis, nail fold dermoscopy

### Introduction

Patients with either visible or latent psoriasis (Ps) are susceptible to psoriatic arthritis (PsA), a diverse, inflammatory, and seronegative musculoskeletal illness <sup>[1, 2]</sup> PsA is characterized by involvement of different domains including psoriasis of the skin, nails, axial and peripheral joints, enthesitis, and dactylitis <sup>[3]</sup>. PsA is also linked to a number of co-morbid conditions, such as anxiety, depression, uveitis, metabolic syndrome, obesity, and diabetes <sup>[4]</sup>. PsA manifestations impose a significant patient burden that affects Contentment with one's life and capacity for function as in rheumatoid arthritis with an additional burden of accelerated mortality <sup>[5, 6]</sup>. However, PsA identification and management are not optimal. Delay in diagnoses has been shown to affect long-term joint damage and functional disability <sup>[6-7]</sup>.

### Cutaneous manifestations of psoriatic arthritis

The prevalence of papules and plaques over the surface of the skin with varying form, location, and intensity is a hallmark of psoriasis, an immune-mediated inflammatory disease with uncertain etiology. The psoriasis lesions are traditionally characterized by an extremely well confined, circular, red papules or plaques with a grey or silvery-white, dry scale separating them from other skin similarities <sup>[8-9]</sup>. Psoriasis can manifest itself in a number of different ways, including <sup>[9]</sup>:

1. Plaque psoriasis, which is distinguished by dry, scaly areas
2. Pustular psoriasis (white blood cells mostly penetrate pus-like fluid)
3. Erythrodermic psoriasis (characterised by itching and discomfort while fine, scaly skin exfoliates)
4. Guttate psoriasis (marked by spots that resemble drops of water)
5. Inverse psoriasis, which causes smooth, inflammatory lesions on the flexure surfaces.
6. Regional psoriasis as scalp and nail psoriasis.

The most typical form is plaque psoriasis that is phenotypically distinguished by well-defined, red, scaly, silvery-white, dry plaques that predominately develop on the elbows, knees, scalp, and lumbar region. Patients frequently describe the erythematous, frequently symmetrical plaques as itching terribly<sup>[10]</sup>.

Nearly 80% of psoriasis sufferers ultimately develop scalp psoriasis, which is frequently the disease's earliest presentation<sup>[11]</sup>. Scalp lesions can range in severity from mild erythema and scaling to severe thick, well-defined plaques with silvery scale and an erythematous border. Classic scalp lesions can impact the forehead, ear, and neck alongside to being clearly discernible, coated in silvery-white or grey scale, and asymmetric<sup>[12]</sup>.

80–90% of people with plaque psoriasis and even more people with psoriatic arthritis have nail involvement. Given the anatomy involved in the nail apparatus, nail psoriasis may be represented by different manifestation. Pitting, leukonychia (White patches inside the nail plate), red spots on the lunula, transverse grooves (Beau's lines), and crumbling of the nail plate are all signs that psoriasis is present in the nail-forming unit (the nail matrix). Oil-drop discoloration, splinter haemorrhages affecting the distal part of the nail plate, subungual hyperkeratosis, and/or nail plate detachment from the nail bed (onycholysis) are all signs of psoriasis of the nail bed. Psoriatic paronychia is an undesirable consequence of psoriasis that can impact the periungual area<sup>[13]</sup>.

#### Dermoscopic findings in psoriatic arthritis

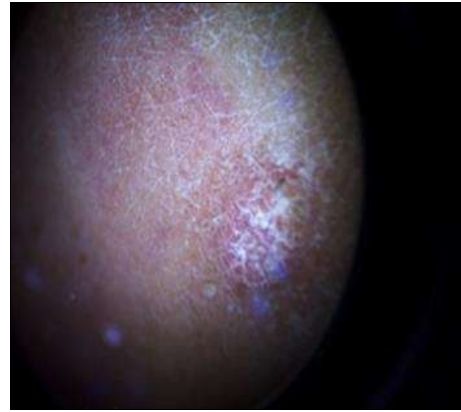
Dermoscopy is a non-invasive in-office procedure that makes it possible to diagnose numerous dermatoses and lessens the need for biopsies<sup>[14]</sup>. In fact, using such a method can give a dermatologist fresh knowledge at the submacroscopic level that may assist them discriminate between two or more disorders that are difficult to tell apart visually<sup>[15]</sup>.

Dermoscopic results must, of course, be evaluated within the patient's overall clinical context because the combination of these data may substantially enhance the diagnosis accuracy of general dermatological illnesses. However, several skin conditions have been demonstrated to exhibit "specific" dermoscopic criteria<sup>[16]</sup>.

Furthermore, dermoscopy of the proximal nail fold capillaries in collagen diseases is helpful in figuring out vascular impairment and evaluating therapy outcomes. Dermoscopy can identify particular nail fold video capillaroscopy findings in the majority of connective tissue illnesses<sup>[17, 18]</sup>.

Dermoscopy of skin psoriasis often displays a distinctive pattern made up of symmetrically and consistently spaced-apart dotted vessels on a pale or dull red base and scattered white scales. Scale removal may be beneficial to highlight the vascular pattern stated above as well as potential microscopic red blood drops (dermoscopic "Auspitz sign") when the presence of prominent hyperkeratosis obscures the view of underlying characteristics. Another less prevalent (but distinct) vascular pattern observed in psoriasis lesions is the "red globular ring" pattern<sup>[14, 16]</sup>.

The data that is currently available regarding the vascular changes of normal-appearing skin in psoriatic people delineates a vascular pattern made up of widely spread red, dotted vessels (Figure1)<sup>[19]</sup>.



**Fig 1:** Skin dermoscopy of a clinically apparent skin lesion at elbow showing white scales against reddish background at lesion and reddish background of normally apparent skin.

Red spots and red globules, as well as (with less precision) signet ring vessels, red loops, white scales and punctate haemorrhages are the most telling dermoscopic signs of scalp psoriasis. Other vascular structures, pigmentations (Perifollicular pigmentation, honeycomb pigment pattern, and brown dots), and white/yellow dots are other (but unspecific) signs. Actually, the thick hyperkeratotic plaque surface on the scalp prevents visualisation of the underlying vascular systems, which are become more obvious when the scales are taken away<sup>[20]</sup>.

For nail psoriasis, pitting, onycholysis, and splinter haemorrhages are common dermoscopic signs<sup>[14]</sup>. The most frequent onychoscopic characteristic suggesting nail matrix involvement is coarse pitting, whereas the most frequent sign showing nail bed involvement is splinter haemorrhages. Another research described the pseudo-fiber sign as a unique dermoscopic characteristic of nail psoriasis<sup>[21]</sup>.

Additionally described as dermoscopy findings were subungual hyperkeratosis, salmon spot/oil spot, leukonychia, transverse nail plate grooves, thickness, and cracking of the nail plate<sup>[14]</sup>. Psoriatic nails have hyponychium capillaries that have been described as dilated, convoluted, elongated, and unevenly distributed. Additionally, dotted vessels in the nail folds of individuals with PsA without psoriasis have been reported<sup>[15, 12]</sup>.

Dermoscopy can also be used to advert nail involvement before any obvious clinical signs. Furthermore, it has been noted that there are links between dermoscopic symptoms and disease severity<sup>[21, 23]</sup>.



**Fig 2:** Nail dermoscopy showing subungual hyperkeratosis, distal onycholysis and splinter hemorrhage.

## Role of dermoscopy in other rheumatologic disease

### Systemic Lupus Erythematosus (SLE)

#### A. Skin and scalp

The dermoscopic characteristics of SLE skin differ based on the illness stage. Thus, there are red spots, white scaling, follicular keratotic plugs, pink erythematous patches, and white perifollicular halo in recent lesions. Late lesions have hyperpigmented patches (honeycomb network, perifollicular pigmentation, radial pigment streaks, or pigmentation placed in an arbitrary manner), white, structureless areas, and muddled linear branching arteries. Dilated follicles, yellowish scales, and hyperkeratosis have all been described in cases with hypertrophic discoid lupus erythematosus [24].

SLE frequently strikes the hair with a wide clinical spectrum from non-scarring alopecia including the diffuse and patchy types, and the well-known lupus hair and the scarring alopecias (Discoid lupus erythematoses, DLE) [25].

Follicular keratotic plugs with the appearance of big yellow-white spots and thick arborizing arteries are the dermoscopic evidence for DLE. Other signs have been discussed in the literature, including red spots, blue-gray dots, scattered brown discoloration, and fine interfollicular scaling. DLE vessels are small, arborizing vessels that surround the follicular plugs in late scalp lesions. Older DLE lesions include pink and white colours, a vascular pattern that is characterised by branching, and a lack of follicular orifices [24, 26].

Sparse to abundant interfollicular telangiectasia, widespread thinning can be seen on dermoscopy in diffuse non-scarring alopecia. In contrast, patchy non-scarring alopecia shows hypopigmentation and hair shaft thinning along with polymorphous telangiectasia in interfollicular region. Hair shaft thinning, hypopigmentation and scalp erythema are dermoscopic characteristics of lupus hair [25, 27].

#### B. Nail

Nail fold dermoscopic findings in SLE patients have a lower specificity, and they are characterized by disorganized capillary architecture with dilated capillaries [18].

### Dermatomyositis

#### A. Skin and scalp

Dermoscopy of Gottron's sign are vague in form of irregular venules and scales over a red base [28].

Patients with dermatomyositis (DM) frequently experience scalp involvement with increased capillaries, peripilar casts and tufting, and interfollicular scales as trichoscopy findings. Regardless of the clinical signs of scalp involvement, most DM patients have enlarged capillaries on trichoscopy. They might resemble the bushy growth found in the nail fold [29, 30]. Even though the alopecia is non-scarring, DM frequently demonstrates this characteristic. Tufts of two or three hairs that emerge together may also be observed as in alopecias with scarring [30].

#### B. Nail

When DM is present, nail fold dermoscopy can show capillary architecture that is disorganized and has bushy capillaries, or less commonly, capillary haemorrhages that have gigantic capillaries. [18].

### Systemic sclerosis

#### A. Skin and scalp

An indication of capillary dysfunction in systemic sclerosis

(SSc) is a disorder termed cutaneous telangiectasias (CT). Dilated dermal capillaries can be seen on the CT in SSc patients, and they are most commonly found on the face, neck, palms, dorsum of the hands, forearms, and sometimes the belly, breast, shoulders, and thighs. Spot and reticular dermoscopic patterns have been used for clarifying the results of CT for people with SSc. Furthermore, the quantity, scope, and dermoscopic characteristics of CT allow for the identification of individuals with a more severe vascular phenotype and could be used as an early clinical indicator for severe vascular disease [31].

The presence of polymorphic vessels especially in forehead area and presence of teleangiectasias have been reported as a characteristic for systemic sclerosis. The described vessels include arborizing vessels, spider vessels and capillary loops are localized between avascular areas [32].

#### B. Nail fold dermoscopy

Is a recognized technique for the early detection and monitoring of Raynaud's phenomenon and collagen vascular disorders, as well as for evaluating the circulation in individuals with these conditions [33]. Early signs of scleroderma include irregularly expanded capillaries, some of which are gigantic, haemorrhages, and preserved capillary architecture. Giant capillaries and haemorrhages are common in active scleroderma with disorganised architecture and slight loss. In advanced or late scleroderma, ramified capillaries, avascular regions with disorganised capillary architecture, and significant capillary loss are all observed [33].

### Conclusion

Various skin, scalp and nail manifestation of psoriasis that may be obvious with naked eye or can be detected by dermoscopy are common in psoriatic arthritis patients. Dermoscopic examination provide a non-intrusive magnifying device that can aid in the identification of non-obvious skin manifestation in psoriatic arthritis patients.

**Authors' contributions:** All authors contributed to the implementation of the research, read, reviewed, and approved the writing of the manuscript. The El Attar YA performed dermatological and dermoscopic examinations.

**Conflict of interest:** None.

**No funding was received**

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**How to Cite This Article**

Mohamed DH, El Gazzar NM, Khalaf HA, Hussein MI, El Attar YA, Elkhoully RM. Cutaneous manifestations of psoriatic arthritis and its dermoscopic findings. *International Journal of Dermatology, Venereology and Leprosy Sciences.* 2023; 6(1): 111-114.

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