Noninfectious Granulomatous Disorders

5

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5.1 Sarcoidosis

5.1.1 Introduction

Sarcoidosis is a multisystem granulomatous disease which is characterized by noncaseating epithelioid granulomas with few surrounding lymphocytes ("naked" granulomas) on histology [1, 2]. Although it may affect almost any organ system, lungs, skin, eyes, and lymph nodes are the most commonly involved sites [1, 2]. African Americans and Northern Europeans are the two groups reported to be affected most frequently, with a tendency to involve people between 20 and 40 years of age and females more than males [1, 2].

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5.1.2 Clinical Presentation

Skin involvement in sarcoidosis may significantly vary from a clinical point of view, with two groups of manifestations being recognized, including nonspecific/reactive (e.g., erythema nodosum) and specific (typified by "naked" granulomas from a histological point of view) lesions [1, 2]. Regarding the latter, they are typically asymptomatic and display variable morphologies, such as papules, nodules, patches, and/or plaques (Figs. 5.1a, 5.2, 5.3 and 5.4a); lesions surface may be smooth, atrophic, scaly, hyperkeratotic, or ulcerated [1, 2]. Face, neck, upper back, and extremities are the most common involved sites, yet it may affect other anatomical areas [1, 2]. Color of the lesions may differ based on the phototype, with a red-violaceous and violaceous-brown/yellow-brown being more common in fair- and dark-skinned patients (Figs. 5.1a, 5.2, 5.3 and 5.4a) [1, 2]. Finally, several less frequent clinical subtypes do exist, including subcutaneous sarcoidosis, ichthyosis-like sarcoidosis, lichenoid sarcoidosis, scar sarcoidosis, lupus pernio and hypopigmented sarcoidosis, with the last two variants being more commonly encountered in darker phototypes [1, 2].

5.1.3 Dermoscopy

The main dermoscopic clue of all clinical variants of cutaneous sarcoidosis is represented by the presence of either focal or diffuse orange structureless areas histologically related to a

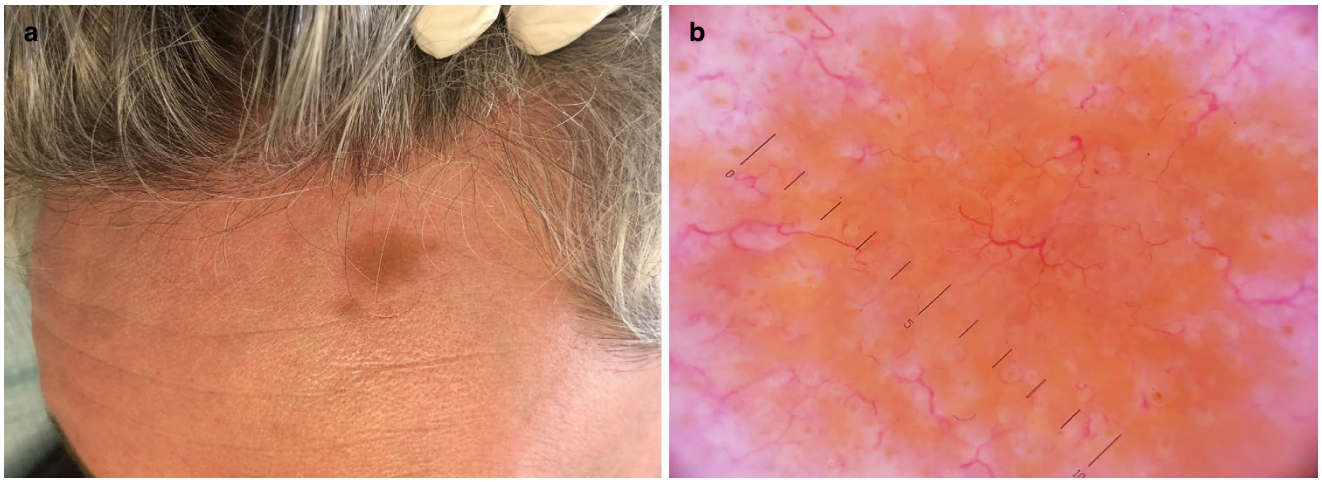

Fig. 5.1 Plaque-type sarcoidosis of the face in a Caucasian man (**a**). Dermoscopy shows a diffuse structureless orange areas (background) along with focused linear vessels with branches (**b**)

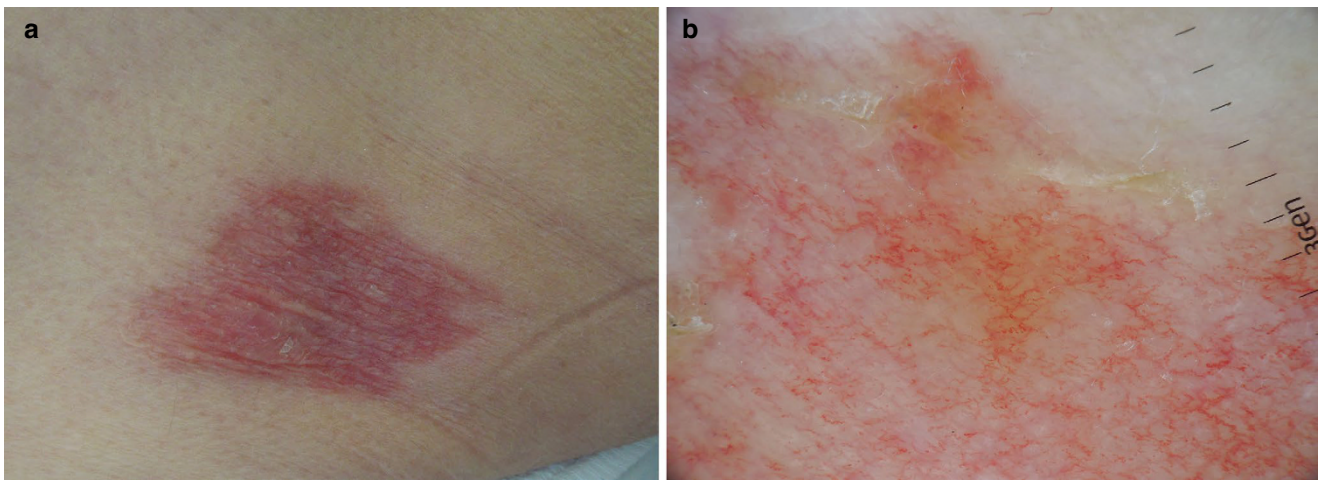

Fig. 5.2 Plaque-type sarcoidosis of the abdomen in a Caucasian woman (**a**). Focal structureless orange areas and several focused linear-curved vessels are evident on dermoscopic examination (**b**)

dense and compact granulomatous infiltrate in the dermis ("mass effect") [1–7]. Importantly, while such areas are well-visible in fair-skinned patients (Figs. 5.1b and 5.2b), they are often more subtle and feature a yellowish shade in skin of color as a result of the darker background (Figs. 5.3b and 5.4b) [2, 6]. Applying a slight pressure on the skin may, however, enhance their visualization, thanks to the reduction of erythema [1–6]. Another typical dermoscopic feature of sarcoidosis includes vascular structures (most commonly showing a linear-branching morphology) which usually appear sharply demarcated as granulomas displace the dermal vessels upward (closer to the skin surface), thus looking more focused [1–6]. Of note, albeit vessels may sometimes be seen in darker phototype (Figs. 5.3b and 5.4b), they are by far more common in fair skin (Figs. 5.1b and 5.2b) [1–6]. Finally, further less specific dermoscopic findings include white scales, focal white structureless areas, follicular plugs, white globules or lines, and focal brown network or structureless areas, with these last features being more frequent in skin of color (Figs. 5.3b and 5.4b) [2, 6].

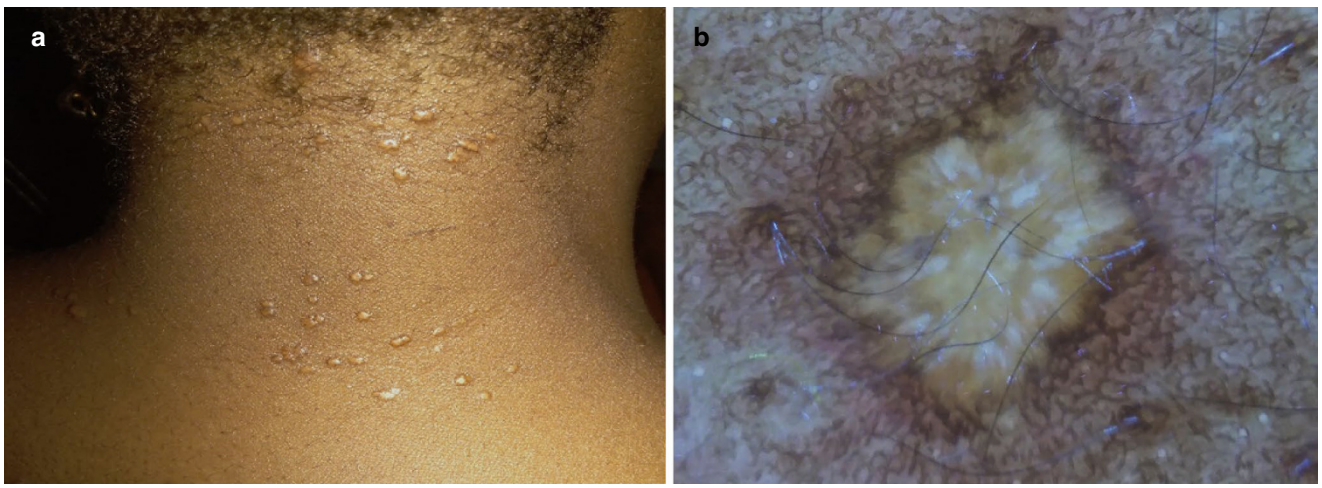

Fig. 5.3 Papular-type sarcoidosis of the neck in an African woman (**a**). Dermoscopic assessment displays diffuse structureless yellow areas (background) as well as multiple bright white structureless areas and peripheral brown network (**b**). (*Courtesy of Nkechi A. Enechukwu, MD – Awka, Nigeria*)

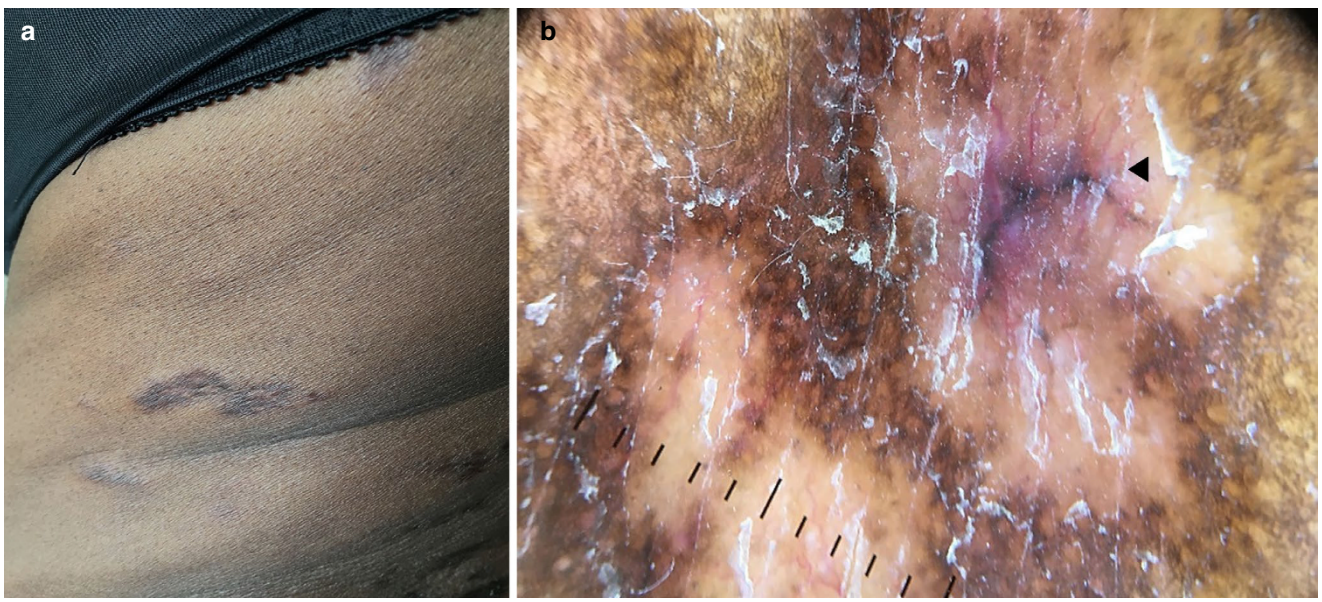

Fig. 5.4 Plaque-type sarcoidosis of the thigh in an African woman (**a**). Dermoscopy shows multiple yellow structureless areas, white scales, few focused linear vessels (arrowhead), and peripheral brown network-like structures (**b**). (*Courtesy of Nkechi A. Enechukwu, MD – Awka, Nigeria*)

5.2 Necrobiosis Lipoidica

5.2.1 Introduction

Necrobiosis lipoidica (NL) is a chronic idiopathic granulomatous disorder histologically typified by necrobiotic degeneration of dermal collagen which most commonly involves young and middle-aged adults with a higher prevalence in the female gender [1, 2]. Diabetes and thyroid dysfunction have been reported as possible systemic associations but only in a minority of instances [1, 2]. NL is typically more common in Caucasians compared to people with skin of color [1, 2].

5.2.2 Clinical Presentation

Clinically, NL initially manifests with asymptomatic reddish (fair skin) or brown (dark skin) firm papules that gradually increase in size to form plaques showing red/brown margins and a waxy yellow-brown atrophic center often showing prominent telangiectasias (especially in skin of color) and/or ulcerations (Figs. 5.5a and 5.6a); altered sensations and partial alopecia may be seen in lesional areas [1, 2]. Pretibial areas (with a unilateral or bilateral distribution pattern) are the most commonly affected sites, yet other areas may also be involved, such as scalp, upper extremities, and face [1, 2].

5.2.3 Dermoscopy

The main dermoscopic clues of NL in both fair and dark skin are usually visible in the center of the lesions and include structureless yellowish-orangish areas, histologically related to dermal granulomas and lipid deposits (responsible for the yellow color, which is typically absent in other granulomatous dermatoses), along with vessels featuring a variable morphology based on lesions stage (Figs. 5.5b and 5.6b) [1–7]. In particular, dotted, globular, comma-shaped, and glomerular vessels are the most frequent shapes in early phases, while reticular, linear, and hairpin-like vessels are more commonly seen in mature lesions and branching-serpentine vessels (showing a diameter that decreases from the center to the periphery of the lesion) in advanced stages (Figs. 5.5b and 5.6b) [1–7]. Importantly, vascular structures in NL are usually in-focus due to the epidermal atrophy that makes the vessels closer to the skin surface, thus appearing sharper (Figs. 5.5b and 5.6b) [1–7]. Notably, whereas vessels in well-established lesions are generally visible also in skin of color, they may be difficult to be seen in early phases [1–7]. Another relevant difference according to skin color background is that darker phototypes more commonly display brown structureless or reticular areas in the center and/or at the periphery of the lesions (Fig. 5.6b) [1–7]. Finally, further less common findings visible regardless skin type include ulcerations, crusting, white scaling, and fibrotic white structureless areas (particularly in long-standing lesions) [1–7].

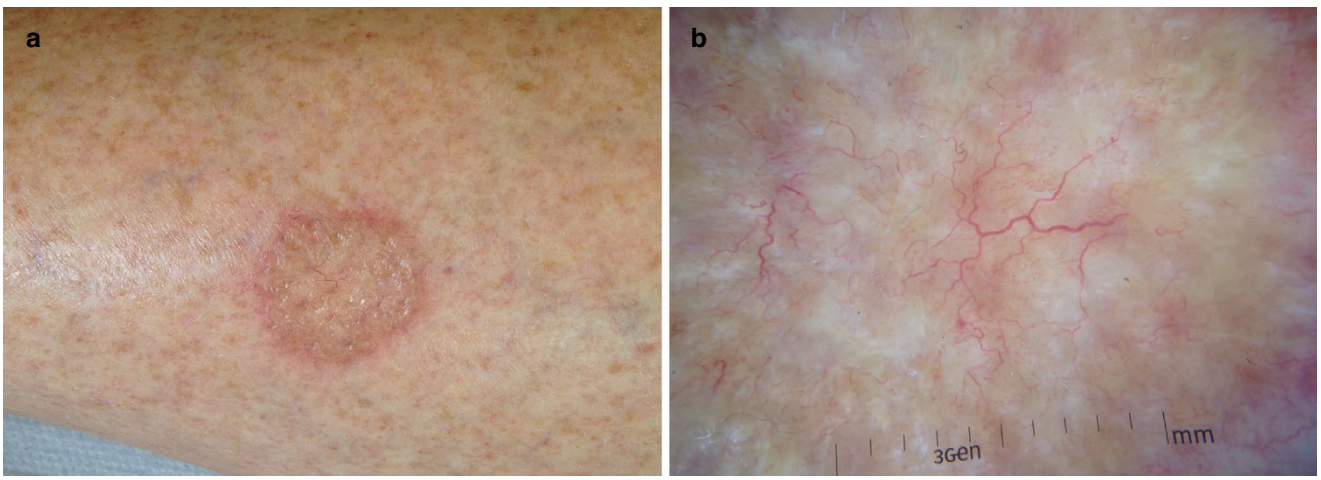

Fig. 5.5 Necrobiosis lipoidica in a Caucasian woman (**a**). Dermoscopic examination displays multiple focal structureless yellow and white areas along with focused linear-serpiginous vessels whose diameter decreases toward the periphery of the lesion (**b**)

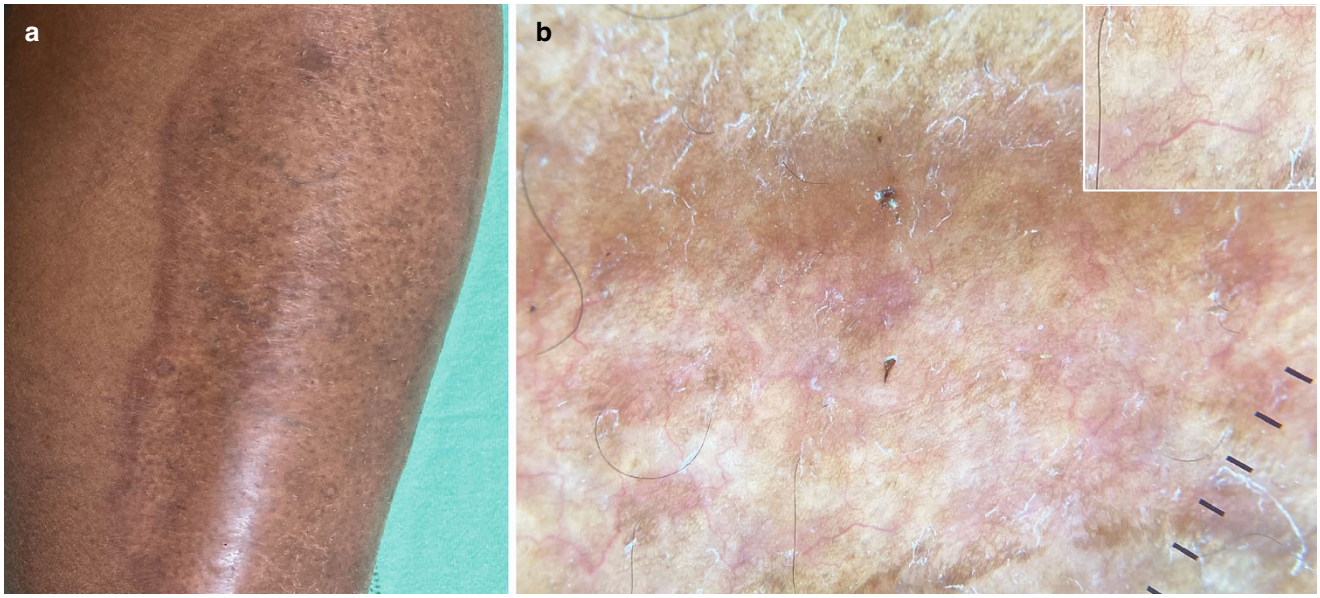

Fig. 5.6 Necrobiosis lipoidica of the leg in an Indian woman (**a**). Dermoscopy: focused branching serpiginous vessels whose diameter reduces toward the periphery (better seen in the inset) and brown areas; faint structureless yellowish areas are also present (**b**). (*Adapted from "Dermoscopy in General Dermatology for Skin of Color", Errichetti E, Lallas A, eds. CRC Press 2021*)

5.3 Granuloma Annulare

5.3.1 Introduction

Granuloma annulare (GA) is thought to be a clinicopathological reactive condition resulting from a hypersensitivity reaction to a dermal component triggered by several factors, such as skin infections, infestations, or trauma, yet no clear triggers may be identified in most cases [1, 2]. Four main histological subtypes are recognized, including "interstitial," "palisading granuloma," sarcoidosis-like, and mixed, with the first two variants being the most frequent [1, 2].

5.3.2 Clinical Presentation

GA usually presents as localized or generalized, asymptomatic, non-scaly papules/nodules that are sparse or confluent to form annular or roundish plaques (Figs. 5.7a, 5.8, 5.9 and 5.10a) [1, 2]. Lesions shade is usually pinkish, red, or violaceous in fair skin and violaceous or light to dark brown in dark skin (Figs. 5.7a, 5.8, 5.9 and 5.10a) [1, 2]. Several less frequent clinicopathological forms do exist, such as subcutaneous, perforating, and patch-type subtype [1, 2].

5.3.3 Dermoscopy

Focal/diffuse orange structureless areas, focal/diffuse white structureless areas, erythema, and sparse dotted or linear/linear curved vessels are the most frequent dermoscopic features of GA (Figs. 5.7b, 5.9 and 5.10b) [1–8]. Notably, orange areas are usually evident only in "palisading granuloma" histological subtype as they result from the presence of a compact granulomatous infiltrate in the dermis (Fig. 5.7b), while the other dermoscopic findings are independent from the histological variant [1, 8]. Importantly, unlike sarcoidosis, vessels in GA are typically unfocused and subtle (Figs. 5.7b and 5.8b), thus being quite difficult to see in skin of color (Figs. 5.9b and 5.10b) [1, 2, 6]. Additionally, orange areas in darker phototypes often show a yellowish hue due to the brown background and are more easily detected in the skin creases where skin is thinner (Fig. 5.9b); brown structureless and/or network-like areas and/or network may also be seen in these patients (Figs. 5.9b and 5.10b) [1, 2, 6].

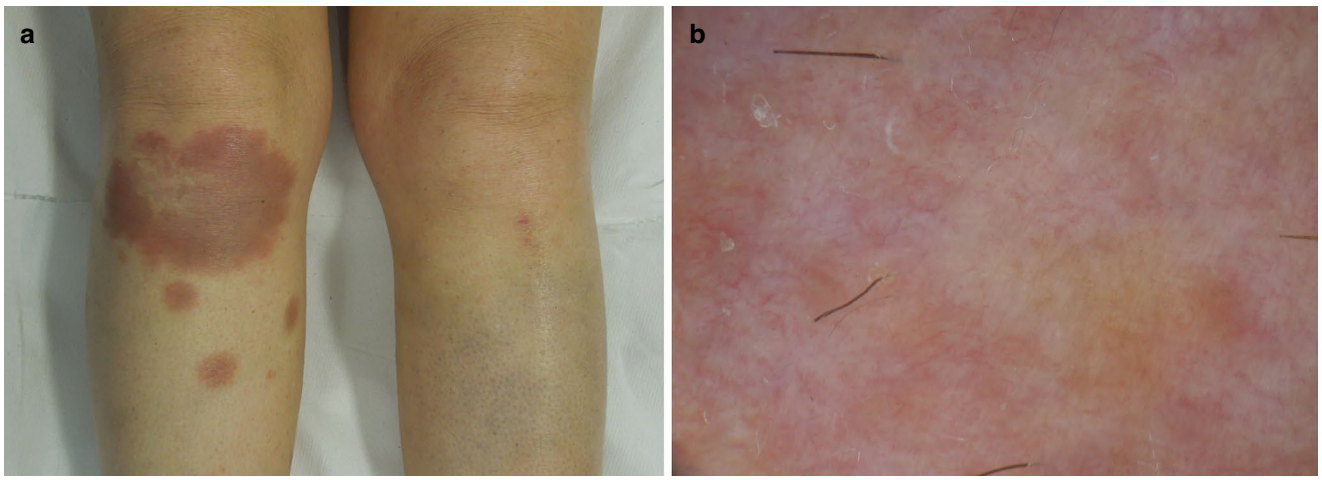

Fig. 5.7 Granuloma annulare (palisading histological variant) in a Caucasian woman (**a**). Dermoscopy reveals multiple focal structureless white and orange areas as well as unfocused vessels of variable morphology, including dotted, linear, and linear with short branches (**b**)

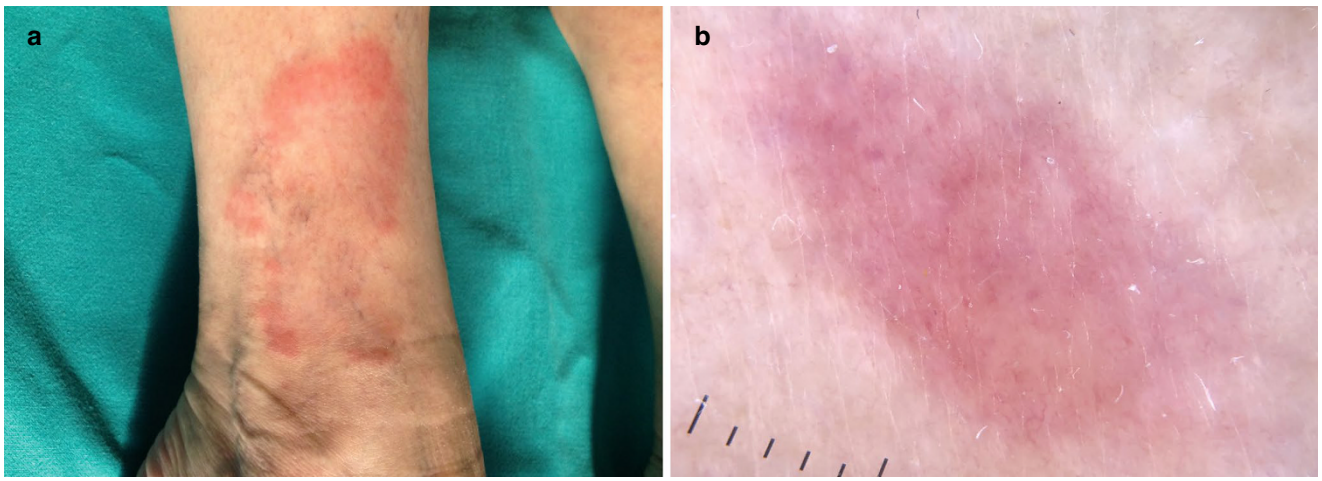

Fig. 5.8 Granuloma annulare (interstitial histological variant) in a Caucasian woman (**a**). A reddish background with several focal white structureless areas and some unfocused vessels of mixed shapes are seen on dermoscopy (b)

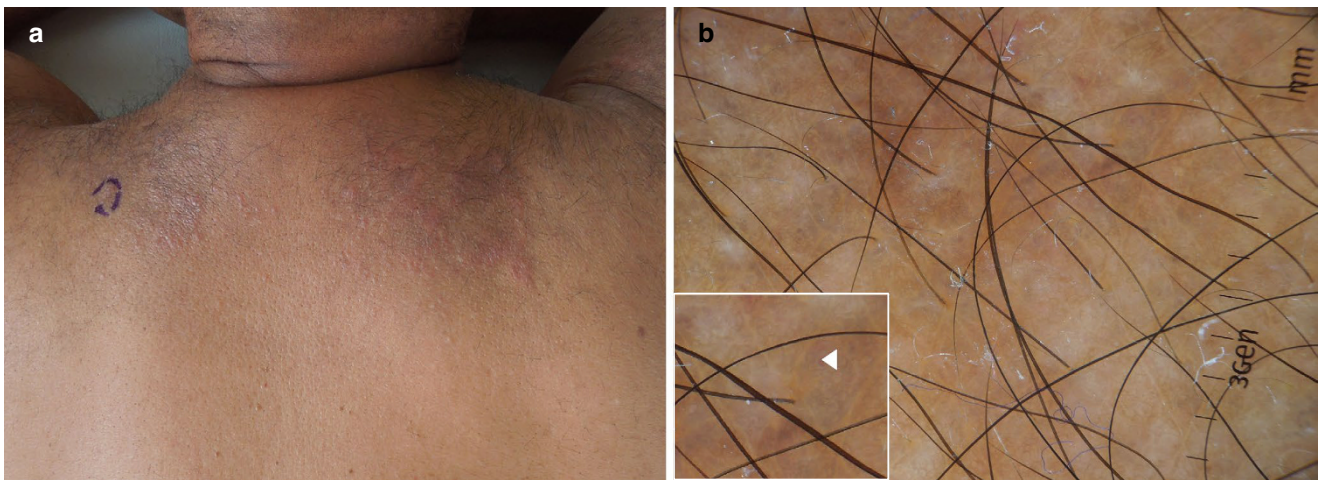

Fig. 5.9 Granuloma annulare (palisading histological variant) in a North African man (**a**). The main dermoscopic clues are multifocal structureless white areas and yellow areas that are better seen in the skin creases (magnification in the inset—arrowhead); brown pigmentary structures are also evident (**b**)

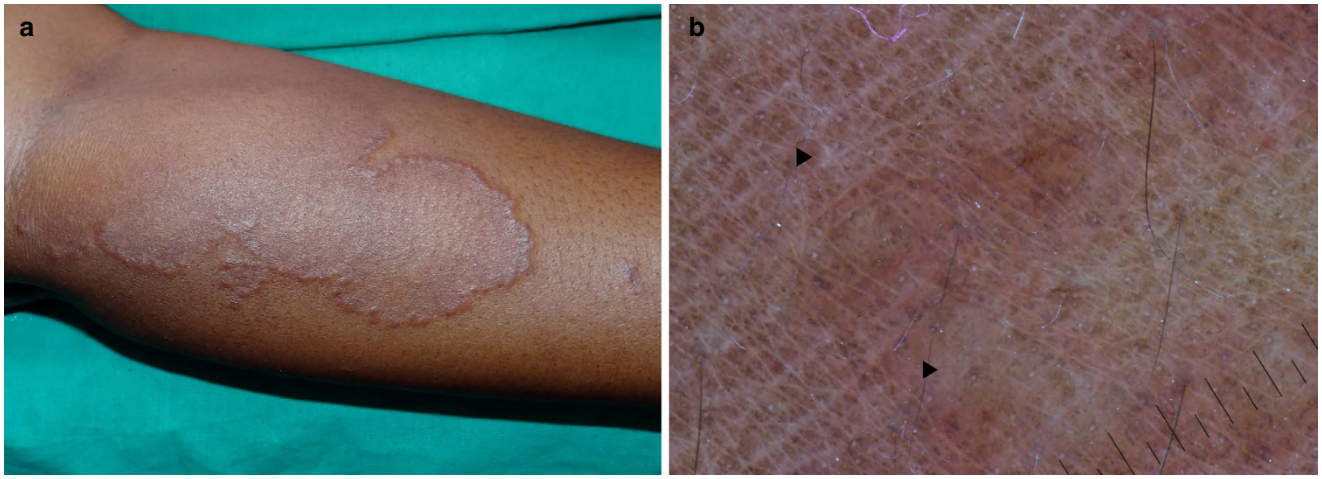

Fig. 5.10 Granuloma annulare (interstitial histological variant) in an Indian man (**a**). Dermoscopy displays multifocal structureless white areas (arrowheads) along with multiple brown structureless areas (**b**)

5.4 Annular Elastolytic Giant Cell Granuloma

5.4.1 Introduction

Annular elastolytic giant cell granuloma (AEGCG) is an uncommon granulomatous dermatosis histologically typified by loss of elastic fibers and elastophagocytosis by multinucleated giant cells [1, 2, 9]. Ultraviolet rays, heat, or other unknown factors are thought to trigger a cellular immune response toward elastic fibers [1, 2, 9].

5.4.2 Clinical Presentation

From a clinical point of view, AEGCG manifests as small reddish (especially in fair skin) or brownish (especially in dark skin) papules progressing to annular/serpiginous plaques having with raised borders and, often, an hypopigmented or atrophic center (Figs. 5.11a and 5.12a) [1, 2, 9]. Sun-exposed areas are the most frequently involved sites, yet it may also affect sun-protected areas [1, 2, 9].

5.4.3 Dermoscopy

Dermoscopic examination of AEGCG in fair skin typically reveals an orange structureless area along with white-gray scaling over the active margin, whereas homogeneous, reticular, sharp vessels on a pale pinkish background are commonly seen in the center of the lesion (Fig. 5.11b) [1–3, 9, 10]. From a dermoscopic-pathological correlation point of view, orange areas, scaling, and reticular vessels are related to dermal granulomas, hyperkeratosis, and subpapillary vascular plexus dilatation associated with epidermal atrophy (which makes vessels closer to skin surface, thus appearing sharp) [1–3, 9, 10]. Of note, although orange areas and reticular vessels have also been reported in skin of color, they are usually more subtle and difficult to appreciate (Fig. 5.12b) [10]. Additionally, in darker phototypes, it is also possible to see white as well as brown structureless areas (Fig. 5.12b) [10].

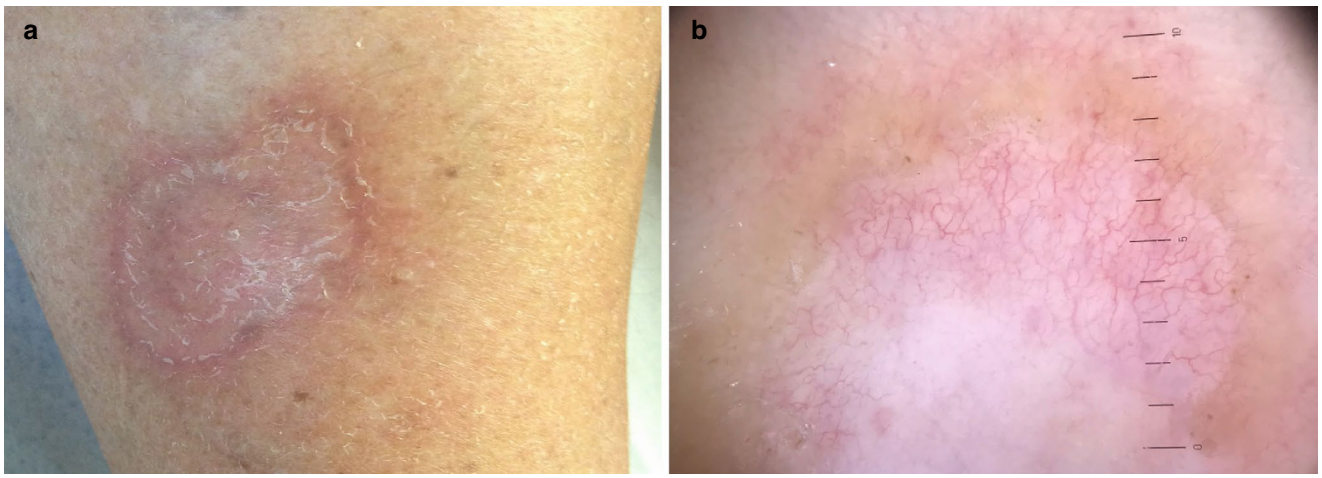

Fig. 5.11 Annular elastolytic giant cell granuloma in a Caucasian woman (**a**). Dermoscopy shows peripheral orange structureless areas with central focused reticular vessels (**b**)

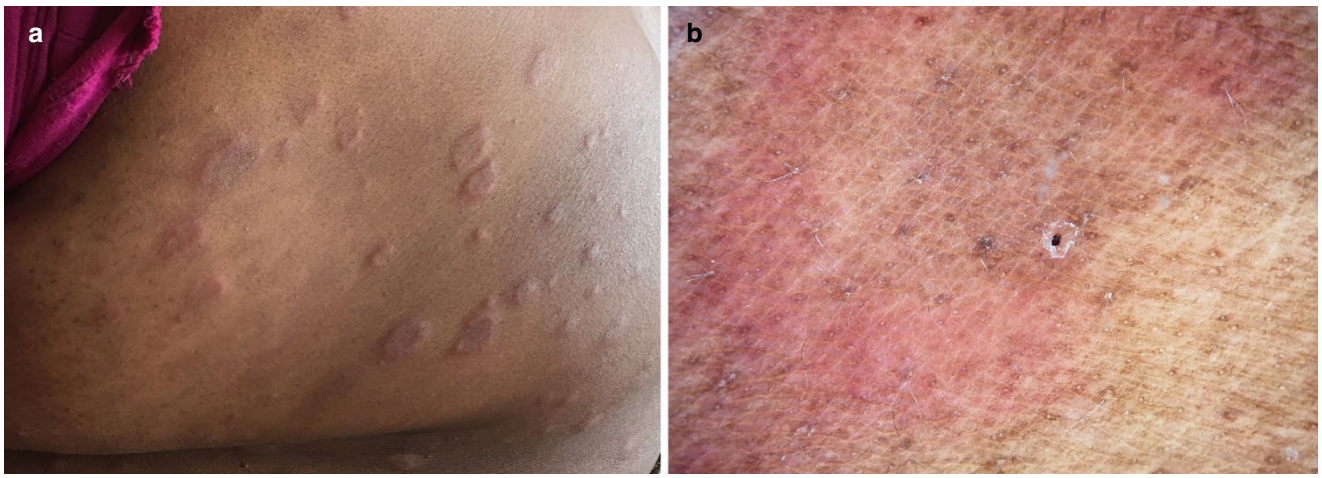

Fig. 5.12 Annular elastolytic giant cell granuloma in an Indian woman (**a**). In dark-skinned patients, dermoscopic examination may be quite unspecific with no orange peripheral structures and central reticular vessels; in this case, only peripheral erythema and central brown areas are seen (**b**)

5.5 Foreign Body Granuloma

5.5.1 Introduction

Foreign body granuloma (FBG) is a form of chronic inflammatory response to various agents histologically typified by granulomas with a necrotic center surrounded by macrophages, epithelioid cells, and fibrous tissue [11].

5.5.2 Clinical Presentation

From a clinical point of view, FBG usually manifests as a solitary or multiple infiltrated papules or nodules, whose shade vary from pink-reddish in light phototypes to reddish in skin of color (authors' personal experience) (Figs. 5.13a and 5.14a) [11].

5.5.3 Dermoscopy

FBG may display a heterogeneous dermoscopic presentation, with main features being reddish or bluish structureless areas and white fibrotic areas; other findings include rainbow pattern, orange areas, polymorphic vessels (either blurred or in-focus), erosions, scales, and hyperkeratosis (authors' personal experience) (Figs. 5.13b and 5.14b) [11]. Although dermoscopic pattern of FBG is generally independent from phototype, fibrotic white areas and hyperkeratosis tend to be more marked in skin of color (authors' personal experience) (Figs. 5.14b) [11].

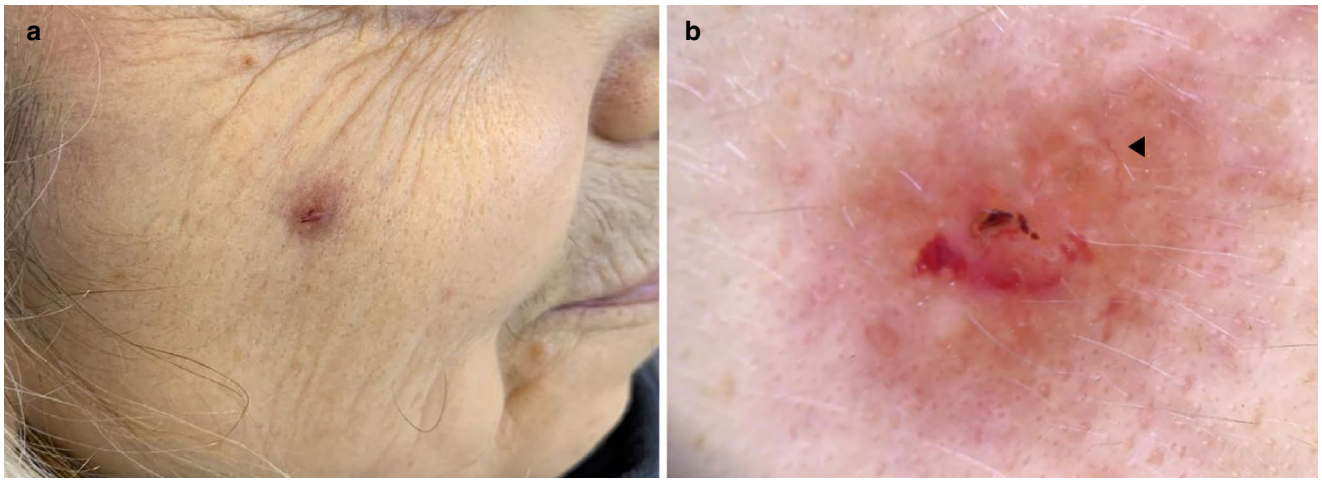

Fig. 5.13 Foreign body granuloma of the face in a Caucasian woman (**a**). Dermoscopic assessment reveals multiple structureless orange and white areas along with linear vessels (arrowhead), crusting, and hemorrhagic areas (**b**). (*Courtesy of Arturo Galvan, MD – Verona, Italy*)

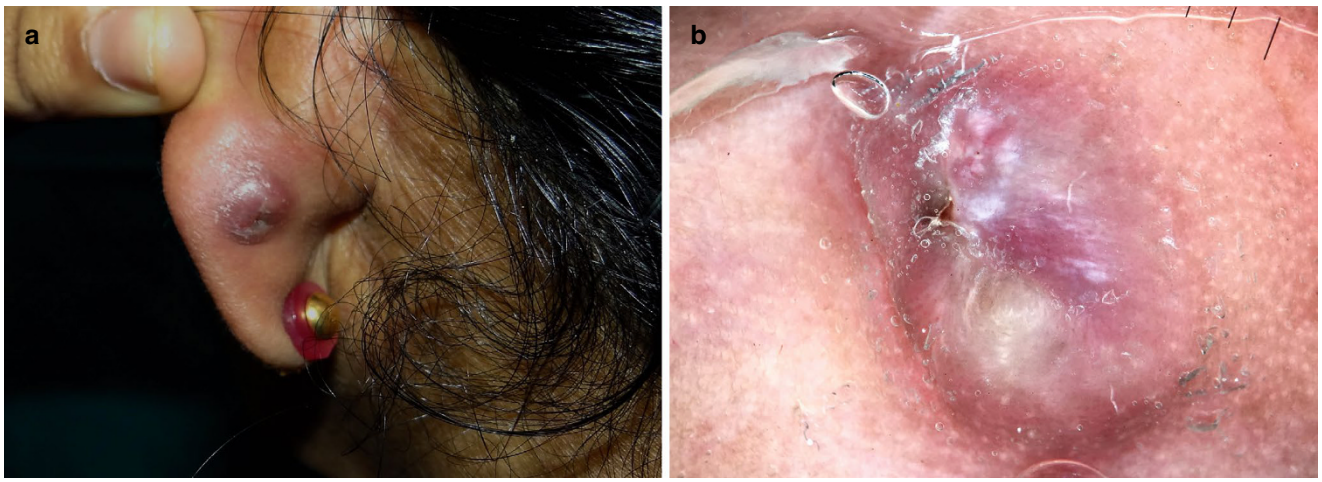

Fig. 5.14 Foreign body granuloma of the ear in an Indian woman (**a**). Multiple bright white areas and peripheral brown pigmentation are the main dermoscopic clues (**b**). (*Courtesy of Balachandra S. Ankad, MD – Bagalkot, India*)

5.6 Lupus Miliaris Disseminatus Faciei

5.6.1 Introduction

Lupus miliaris disseminatus faciei (LMDF), also referred to as acne agminata, is a relatively uncommon granulomatous condition thought to be related to an inflammatory reaction to destroyed hair follicles [1–3, 10].

5.6.2 Clinical Presentation

LMDF manifests as red-brown (fair skin) or yellowish-red to brown (dark skin) papules that tend to aggregate in groups and involve the central areas of the face, such as periocular areas, cheeks, and nose (Figs. 5.15a and 5.16a) [1–3, 10]. Lesions tend to heal over a period of 1–2 years, sometimes leaving scars, especially in darker phototypes [1–3, 10].

5.6.3 Dermoscopy

Dermoscopy of LMDF shows orange (fair skin) or orange-yellow (dark skin) structureless areas characteristically distributed around follicular keratotic plugs which histologically reflect dermal granulomas around follicles filled with keratotic material (follicular hyperkeratosis) (Figs. 5.15b and 5.16b) [1–3, 10]. Additionally, diffuse scales, erythema, and vessels may also be present, with the last two findings being more common in lighter phototypes [1–3, 10].

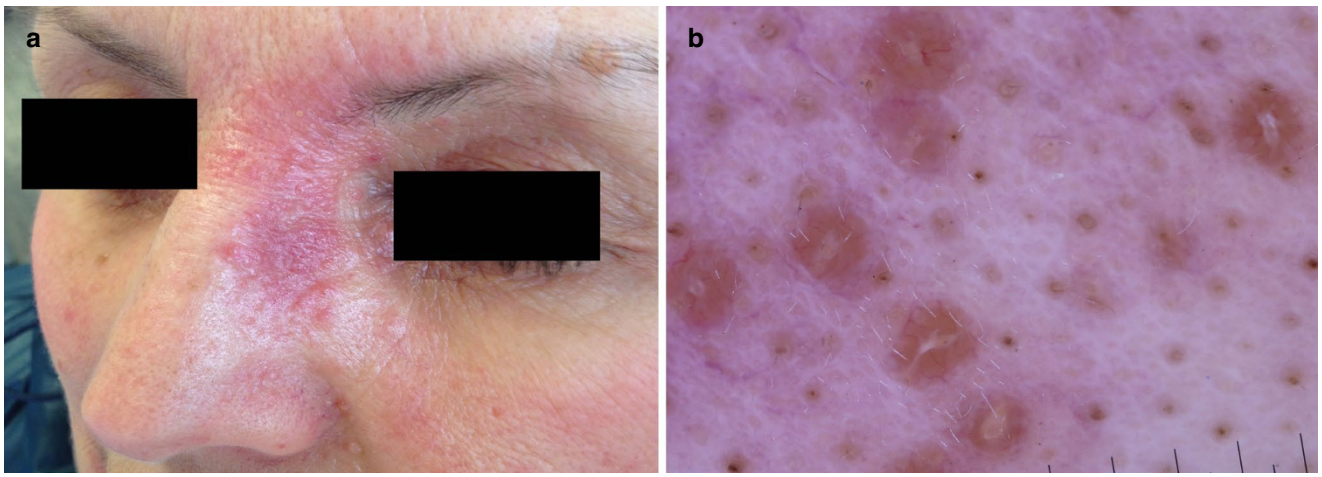

Fig. 5.15 Lupus miliaris disseminatus faciei in a Caucasian woman (**a**). Dermoscopy displays follicular white plugs surrounded by orange areas; some linear and dotted vessels are also evident at the periphery (**b**)

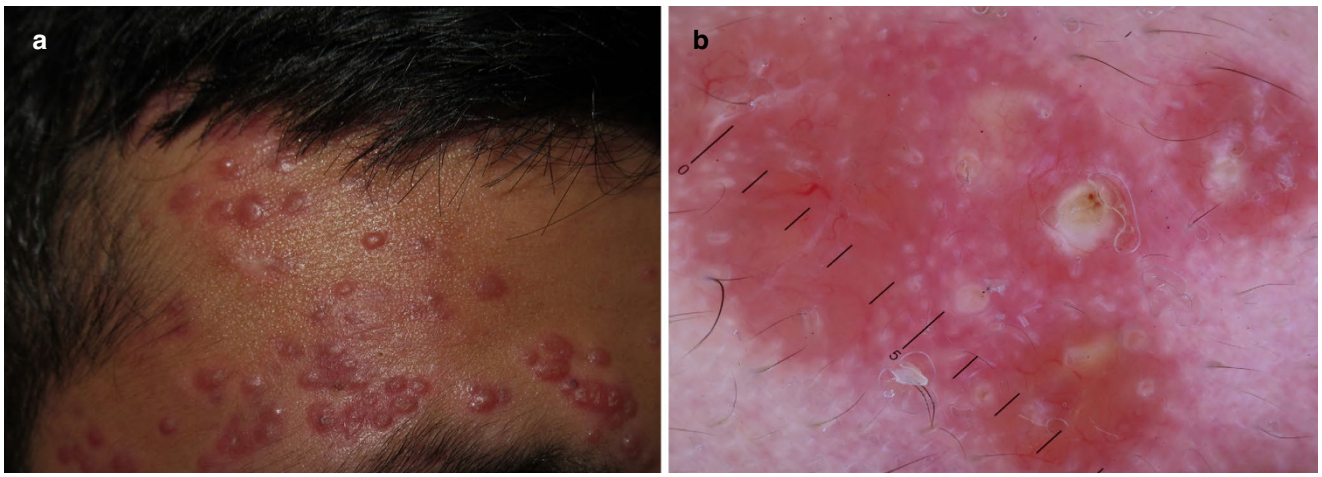

Fig. 5.16 Lupus miliaris disseminatus faciei in an Indian male (**a**). Dermoscopy reveals focal, yellowish-orange, structureless areas around follicles with diffuse erythema and vessels; keratotic plugs and scales are also seen (**b**). (*Courtesy of Biswanath Behera, MD – Bhubaneswar, India*)

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