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Dermatology

Dermoscopy of An Acquired Perforating Dermatosis: A Case-Report

Ennaciri Mohamed Amine[1*], Damiri Amal[2], Khalidi Meryem[1], Hanafi Tarik[1], Zemmez Youssef[1], El Amraoui Mohamed[1], Frikh Rachid[1], Hjira Naoufal[1]

[1]Department of Dermatology, Mohammed V Military Teaching Hospital, Mohammed V University, Rabat, Morocco
[2]Department of Pathology, Mohammed V Military Teaching Hospital, Mohammed V University, Rabat, Morocco

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***Corresponding author:** Ennaciri Mohamed Amine
Department of Dermatology, Mohammed V Military Teaching Hospital, Mohammed V University, Rabat, Morocco

Abstract **Case Report**

Primary perforating dermatoses are a group of skin disorders characterized by transepidermal elimination of dermal material and include reactive perforating collagenosis, elastosis perforans serpiginosa, perforating folliculitis, and acquired perforating dermatosis. Acquired perforating dermatosis is most common in elderly patients with diabetes mellitus or chronic renal failure. Diagnosis is traditionally made on the basis of clinical and histological findings, but dermocopy can also make a valuable diagnostic contribution. Indeed, the pattern seen in acquired perforating dermatosis consists of a central keratotic plug surrounded by a variable number of concentric structures: a whitish area also known as the "white collar sign" and a pinkish area, both of which may contain a vascular pattern, and peripheral pigmentation. The dermoscopic appearance may also change over the course of the disease, with the vascular pattern being progressively replaced by a reddish-dark area, and finally with the central crust falling away and the lesion taking on a scarred appearance. We report here a case of acquired perforating dermatosis in an unbalanced diabetic patient, 73 years old, whose dermoscopic appearance revealed 4 concentric zones and whose histology showed transepidermal elimination of collagen fibers.

Keywords: Acquired perforating dermatosis – Dermoscopy– Histopathology.

INTRODUCTION

Perforating dermatoses are a rare group of skin disorders in which dermal material is eliminated transepidermally. The diagnosis is suspected clinically by umbilicated erythematous papules with firmly adherent crusts and confirmed histologically by transepidermal elimination of dermal material. Dermoscopy may be useful as a noninvasive diagnostic tool. There are few cases in the literature describing the dermoscopic appearance of acquired perforating dermatosis, agreeing that there is a central crust surrounded with concentric zones. In this case report, we describe the clinical and dermoscopic appearance of an acquired perforating dermatosis in a patient with diabetes mellitus.

CASE REPORT

A 73-year-old diabetic man presented with highly pruritic umbilicated papules and small plaques with central crusting on the extensor surfaces of the limbs and buttocks which had been evolving for 2 months (Figures 1, 2, 3).

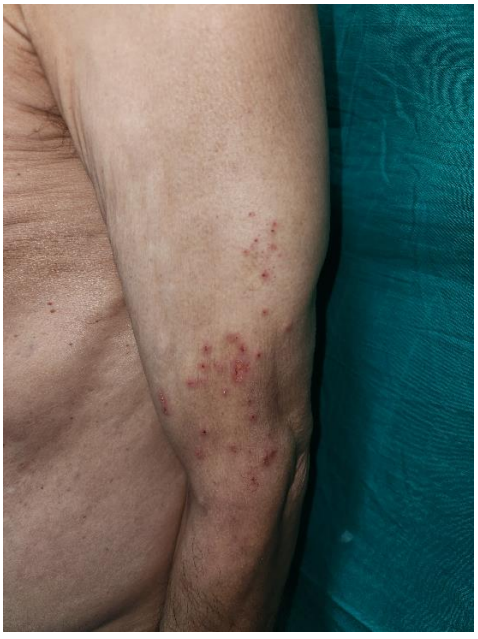

Figure 1: Clinical picture showing pruritic umbilicated papules and small plaques with central crusting on the lateral and extensor surface of the arm

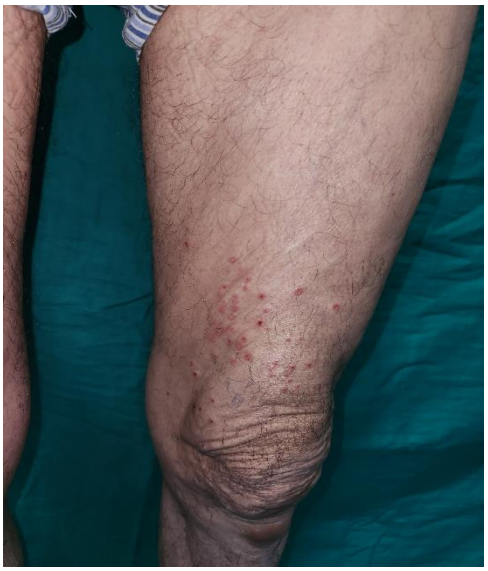

Figure 2: Clinical picture showing pruritic umbilicated papules and small plaques with central crusting on the extensor surface of the thigh

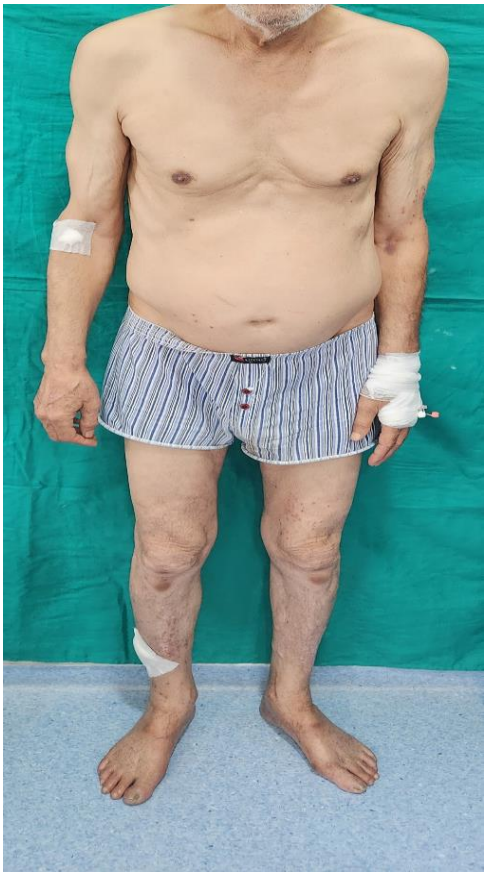

Figure 3: Clinical picture showing pruritic umbilicated papules and small plaques with central crusting on the extensor surfaces of the limbs

Dermoscopy revealed 4 concentric zones: a yellowish central crust surrounded by keratotic scale, a structureless whitish area, a pink area containing dotted and looped vessels, and a structureless brown area (Figure 4).

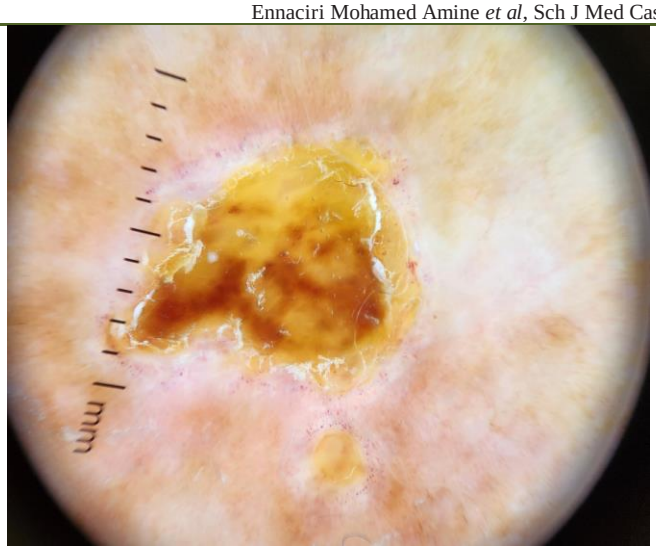

Figure 4: Dermoscopy image showing 4 concentric zones: a yellowish central crust surrounded by keratotic scale, a structureless whitish area, a pink area containing dotted and looped vessels, and a structureless brown area (Dermlite DL4 polarized mode)

Skin biopsy revealed a depressed, ulcerated area filled on the surface by a keratinous plug mixed with necrotic debris. Trichrome analysis revealed transepidermal loss of collagen fibers. The dermis was fibrous with a mild mononuclear inflammatory infiltrate and no histologic evidence of malignancy, consistent with reactive perforating dermatosis (Figures 5, 6, 7, 8).

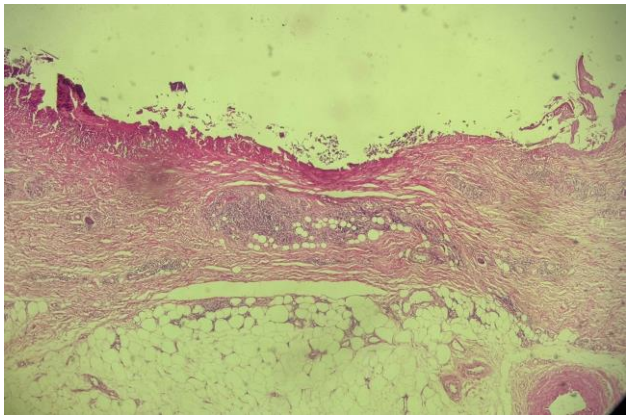

Figure 5: Histopathology revealing a depressed, ulcerated area filled on the surface by a keratinous plug mixed with necrotic debris. The dermis is fibrous with a mild mononuclear inflammatory infiltrate (Hematoxylin eosin under low magnification)

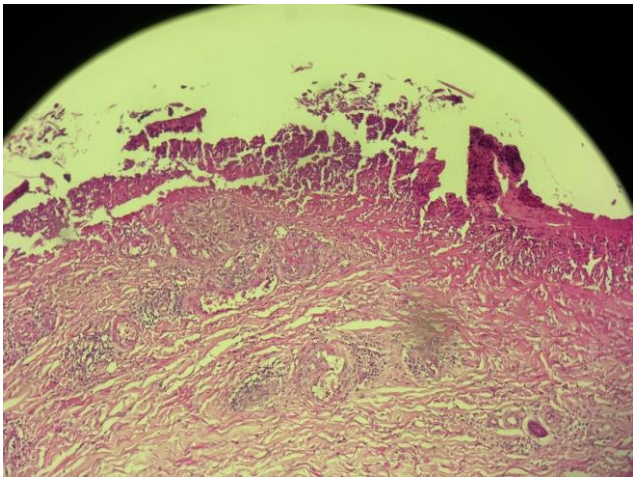

Figure 6: Histopathology revealing a depressed, ulcerated area filled on the surface by a keratinous plug mixed with necrotic debris. The dermis is fibrous with a mild mononuclear inflammatory infiltrate (Hematoxylin eosin under high magnification)

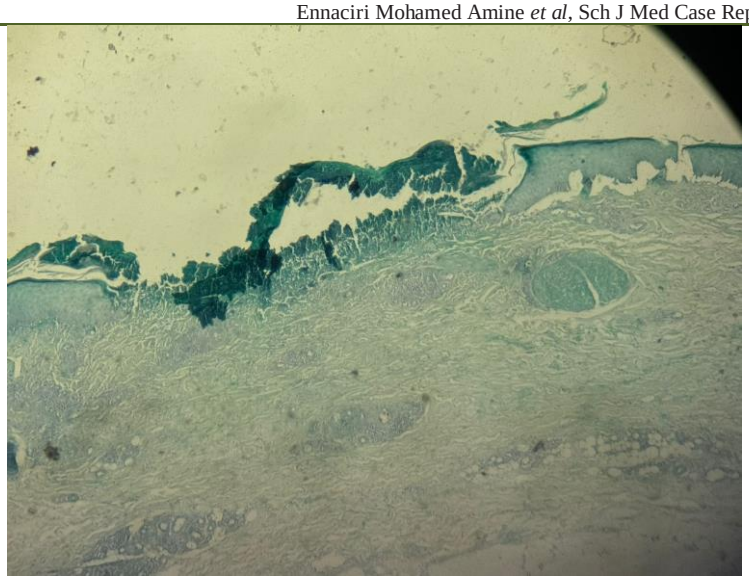

Figure 7: Histopathology revealing the transepidermal elimination of collagen fibers (Masson's Trichrome stain under low magnification)

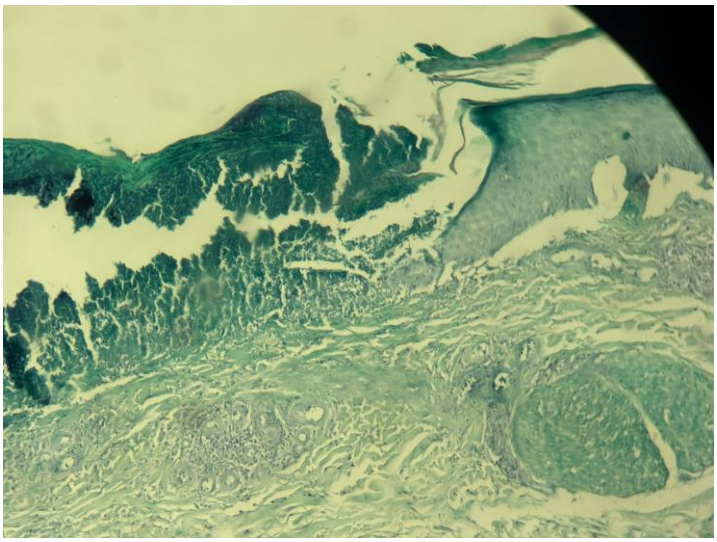

Figure 8: Histopathology revealing the transepidermal elimination of collagen fibers (Masson's Trichrome stain under high magnification)

The patient was treated with UVB phototherapy and keratolytics with good response before being referred to endocrinology for diabetes control.

DISCUSSION

Perforating dermatoses are a group of papulonodular skin disorders characterized by keratotic plugs or crusts through which dermal connective tissue is eliminated through the epidermis.

They are divided into primary perforating dermatoses, which include reactive perforating collagenosis, elastosis perforans serpiginosa, acquired perforating dermatoses, and perforating folliculitis; and secondary perforating dermatoses, which are dermatoses in which the excretion of the substance is secondary to a primary dermatosis, which may be infectious, granulomatous, tumorous, or other.

For some authors, Kyrle's disease is an interchangeable term with acquired perforating dermatosis, and for others it is a terminal form of perforating folliculitis. It manifests as ulcerated hyperkeratotic nodules or papules with central keratotic plugs on the extensor surfaces of the upper and lower limbs and trunk. It may be associated with renal failure, uremic patients on dialysis, diabetes mellitus, neoplasia (Eigentler *et al*., 2005; Yazdi *et al*., 2010), infections including tuberculosis, HIV, disseminated histoplasmosis (Choudhary et al., 2013), scabies (Kassardjian *et al*., 2013), dermatomyositis (Kikuchi *et al*., 2013) and Behçet's disease (Ozbagcivan *et al*., 2020).

For some authors, Kyrle's disease presents dermoscopically as a pattern of 3 concentric zones with shiny brownish-white crusts in the center, surrounded by a structureless grayish-white area, and finally a peripheral brown pigmentation (Russo *et al*., 2016). For

other authors, it consists of 4 concentric zones with a central crust surrounded by keratotic scales, followed by a structureless grayish-white area, a structureless pink area with dotted vessels, and finally a brown area without structure with peripheral scale (Ozbagcivan *et al*., 2020).

According to a study (Behera *et al*., 2021), acquired perforating dermatoses present dermoscopically as the presence of 3 concentric zones: a central keratotic plug, an intermediate white area and external hyperpigmentation; or as 2 concentric zones. The central follicular plug may vary in shape, from round to angular, and in color, from yellow and brown to black. The intermediate whitish area is called the "white-collar sign" and surrounds the central plug like a collar. Homogeneous peripheral pigmentation may range from gray to brown. Vascular structures may consist of red or purple dots or globules, or peripheral hairpin or looped vessels. Follicular abnormalities may be observed, such as fine or broken hairs on keratotic follicular papules.

The presence of hair shaft abnormalities, scale, peripheral pigmented network, dots or red globules is associated with a duration of disease of more than 3 months.

According to one study, the dermoscopic appearance of acquired perforating dermatoses varies according to the stage. Thus, in the developing stage, it manifests as a solid central crust surrounded by a vascular pattern of loop, hairpin vessels, branched or dotted vessels. During the recovery stage, the peripheral vessels decrease and are replaced by reddish-brown pigmented patches. In the final stage, the central crust falls off and is replaced by a central radial atrophic scar, white scales and peripheral hyperpigmentation (Gao *et al*., 2023).

Our patient clearly presented with perforating dermatosis lesions acquired during the constitutive phase, as he had a yellowish central crust surrounded by a loop and dotted vascular pattern.

CONCLUSION

The dermoscopic aspects of acquired perforating dermatoses vary in the literature between 2, 3, or 4 concentric zones. There is a central keratotic plug surrounded by a white collar that may contain loop, hairpin, branched or dotted vessels. These structures may be surrounded by a pink area that can contain vessels; that is itself surround by hyperpigmentation

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