INTRODUCTION

We present a case of necrobiosis lipoidica in a 55-year-old lady. Histopathological examination is used to confirm the diagnosis of NL. Dermoscopy may be used as an alternative tool for confirmation of the diagnosis. In this case report, we present the dermoscopic findings of the condition and review of existing literature.

Necrobiosis lipoidica (NL) is a rare idiopathic, chronic granulomatous skin condition that usually presents as an asymptomatic erythematous papule on the legs progressing to waxy plaque that may develop atrophy and ulcer. It may present as a complication of diabetes mellitus (DM) in about 0.3% of the patients. Dermoscopy may be a useful noninvasive tool to differentiate NL from other granulomatous skin conditions like lupus vulgaris (LV), cutaneous leishmaniasis (CL), granuloma annular (GA), and cutaneous sarcoidosis (CS). However, little is known about the characteristic findings of NL on dermoscopy. We present a case of NL with its dermoscopic features and a review of the literature.

CASE REPORT

A 55-year-old lady presented with a 3-year history of two asymptomatic erythematous pinhead-sized papules, one on each shin. There was no history of any trauma, DM, or thyroid disorders prior to the appearance of these lesions. The papule on the right leg gradually increased in size over 3 years forming a 5 by 4 cm waxy erythematous irregularly shaped plaque (Figure 1A) with erythematous margin. The center of the plaque comprised telangiectatic vessels with yellow-hued areas of atrophy. There was no local rise in temperature or tenderness. The papule on the left shin increased in size over the same period forming a similar waxy erythematous round to oval 5 by 2 cm plaque (Figure 1B). On examination at presentation, another plaque with a diameter of about 1.5 cm was found 2 cm medial to the initial lesion on her left shin. Dermoscopic examination (DermLite DL4 with non-polarizing filter) revealed linear vessels with branches distributed uniformly on the background of yellow structureless areas. White linear streaks were also visible (Figure 2).

Based on the clinical and dermoscopic examination, a provisional diagnosis of NL was made. Blood investigation showed fasting blood sugar of 210 mg/dL, postprandial blood sugar of 300 mg/dL, and HbA1c of 7.3, and thyroid function test was normal. HPE revealed epidermis with basket weave hyperkeratosis and irregular acanthosis. There were multiple areas in dermis with degeneration of collagen surrounded by inflammatory infiltrates. The inflammatory infiltrate comprised of epithelioid histiocytes, lymphocytes, plasma cells, and Langerhans-type giant cell. Stain for acid-fast bacilli was
negative. The clinical and histological findings confirmed the diagnosis of NL (Figure 3).

The patient was treated with potent topical steroids to apply once daily to the lesions and referred to the internal medicine team for the management of newly diagnosed DM.

3 | DISCUSSION

Necrobiosis lipoidica is associated with DM, sarcoidosis, thyroid disorders, inflammatory bowel disorder, and healthy individuals. The association of NL with DM varies from 11% to 87%. Various theories regarding the pathogenesis of the condition have been suggested. For example, in DM, microangiopathy due to the deposition of glycosylated protein may be the cause of the NL. Others have considered hypoxia as the cause of the NL.

Necrobiosis lipoidica presents as painless well-defined discrete erythematous papules or small plaques or nodules usually on the leg that later coalesce forming a larger waxy, erythematous to yellowish plaque. The center of the plaque may show the areas of atrophy and telangiectasia. Later, the lesion may develop ulceration in around 30% of cases and squamous cell carcinoma in rare cases.

Histopathological Examination (HPE) done in our case showed degeneration of collagen throughout the dermis with palisading granulomas comprising predominantly of lymphocytes and histiocytes that confirmed the diagnosis. The absence of dermal mucin deposition differentiates it from GA.

Histopathology is must for the diagnosis of NL. Dermoscopy can also be used as a noninvasive tool to confirm the diagnosis. A few case series and reports highlighted diagnosing and differentiating NL dermoscopically from other granulomatous skin conditions as highlighted in Tables 1 and 2.

Hence, from this report, we would like to highlight that progression of vessel morphology from linear curved (comma-shaped) to linear serpentine to linear with branches (arborizing vessels) with the progression of the disease, that are distributed uniformly on the structureless yellow-white background, is an important clue on dermoscopy for diagnosing NL. In the classical arborizing pattern of BCC, the vessels ramify into the finest capillaries. The arborizing vessels in NL are almost equal in diameters without ramification into

FIGURE 1 A and B. Showing the waxy erythematous plaques on bilateral shin of the patient

FIGURE 2 Showing the dermoscopic appearance of the lesion (arrow showing linear vessels with branches distributed uniformly, * white linear streaks, ** yellow structureless area)
**FIGURE 3** Showing the granulomatous inflammatory infiltrate throughout the dermis surrounding the degenerated collagen. The inflammatory infiltrate comprised of epithelioid histiocytes, lymphocytes, plasma cell, and Langerhans-type giant cell (shown in inlet within the figure).

**TABLE 1** Dermoscopy findings of NL<sup>8,9,10</sup>

| Characters         | Findings                                                                 | Possible explanation                                                                 |
|--------------------|--------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| Morphology of vessel | Linear curved vessels (comma-shaped) initially, progresses to become linear serpentine and later linear with branches (arborizing vessel). | In the earlier lesion since there is no epidermal changes the comma shaped vessel is due to the dilated vessels of papillary dermis. As the lesion progresses, there will be epidermal atrophy due to which the dilated vessels in deep dermis will be visible that appears as linear serpentine and later linear with branched morphology. |
| Vessel distribution | Vessels are distributed uniformly.                                        | Yellow structureless areas represent dermal granuloma whereas white linear streaks represent fibrosis. |
| Background         | Vessels are present on the background of uniformly distributed yellow structureless areas and white linear streaks. |                                                                                         |
| Pigment network    | Brown pigmented networks may be visible in advanced lesions              | This change is due to the stimulation of melanocytes at the dermo epidermal junction. This finding is nonspecific and is common to many inflammatory skin lesions. |

**TABLE 2** Differentiating dermoscopy findings of NL from other granulomatous conditions<sup>11,12,13</sup>

| Dermoscopic findings | NL                                      | GA                                      | CS                                      | CL                                      | LV                                      | BCC                                      |
|----------------------|-----------------------------------------|-----------------------------------------|-----------------------------------------|-----------------------------------------|-----------------------------------------|-----------------------------------------|
| Morphology of vessel | Linear vessels with branches.            | No prominent vessel                     | Linear vessels that are shorter and less branched than NL | Same as CS                              | Same as CS                              | Classical arborizing pattern The vessels ramify into fine capillaries. |
| White linear streaks | Present                                 | Absent                                  | White reticular lines                   | White reticular lines                   | White reticular lines                   | Absent                                  |
| Background           | Structureless yellow white              | Orange red to homogenous white red structureless area at the peripheral margin | Orange globules                         | Structureless yellow white              | Yellow to golden globules               | None                                    |
| Other                | Milia cyst                              | Milia cyst                              | Milia cyst                              | Milia cyst                              | Blue and brown pigment structures      |                                         |
the finest capillaries and the presence of multiple anastomosing ramifications.

CONFLICT OF INTEREST
None.

AUTHOR CONTRIBUTIONS
SS: designed the study, involved in record collection, and wrote the manuscript. NS: edited the manuscript and provided guidance. SM: conceptualized the study, designed the study, edited the manuscript, provided guidance, and approved the final version of the manuscript.

ETHICAL APPROVAL
Written consent was taken from the patient for the publication of the case report and the images.

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