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Dermatology

When the Skin Speaks First: Pediatric Necrobiosis Lipoidica Unveiling Type 1 Diabetes

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Abstract | **Case Report**

Necrobiosis lipoidica (NL) is a rare granulomatous skin disease, affecting 0.3–1.2% of diabetic patients and only 0.06% of diabetic children, predominantly females. This article reports two pediatric cases where NL appeared years before type 1 diabetes was diagnosed. In both cases, young girls presented with chronic, atrophic plaques on their legs; histology confirmed NL. Diabetes was identified after systemic symptoms were assessed. Dermoscopy revealed characteristic serpiginous arborizing vessels on a yellowish background. The article emphasizes the importance of dermatological and dermoscopic evaluation in early diagnosis, especially since NL can precede diabetes by years.

Keywords: Necrobiosis lipoidica (NL), Pediatric diabetes, Granulomatous skin disease, Dermoscopy, Early diagnosis.

INTRODUCTION

Necrobiosis lipoidica (NL) is a rare granulomatous dermatosis, occurring in approximately 0.3 to 1.2% of diabetic patients, most commonly affecting the lower legs. Occurrence in the pediatric population is very rare, reported in 0.06% of diabetic children, with a female predominance [1].

We report two pediatric cases of necrobiosis lipoidica occurring years before the onset of type 1 diabetes.

CASE REPORTS

Case 1:

A 10-year-old girl with no notable medical history presented with multiple well-demarcated, atrophic, yellowish violaceous plaques on both legs the largest measuring 2×2 cm on the left plaque and 7×5 cm on the right **(figure 1).** The lesions had been evolving over a period of four years. Histology showed palisading granulomas surrounding degenerated collagen and epidermal atrophy **(figure 2).**

Clinical examination and histological analysis were consistent with necrobiosis lipoidica. A thorough history revealed chronic fatigue, irritability, and staturo-ponderal delay, which had been progressively developing over the past few years. Laboratory investigations revealed the presence of type 1 diabetes. Initial treatment included topical corticosteroids, local care and glycemic control. Given the lack of improvement, doxycycline was introduced for three months, resulting in complete resolution of the lesions with residual post-inflammatory hyperpigmentation.

Case 2:

An 11-year-old girl, also previously healthy, presented with erythemato-atrophic plaques on the right leg, evolving over six years. She was admitted to the emergency department for diabetic ketoacidosis, revealing previously undiagnosed type 1 diabetes. Dermatological examination revealed shiny erythematotelangiectatic plaques measuring 7 cm and 3 cm in greatest diameter on the right leg **(Figure 3).** A more detailed anamnesis revealed the presence of nocturnal polyuria and secondary enuresis, which had been occurring long before the acute episode. A skin biopsy confirmed the diagnosis of necrobiosis lipoidica. The lesions showed significant improvement with glycemic control and appropriate dermatological management.

The dermoscopy showed in both patients serpiginous arborizing vessels on a yellowish background. **(Figure 4, 5)**

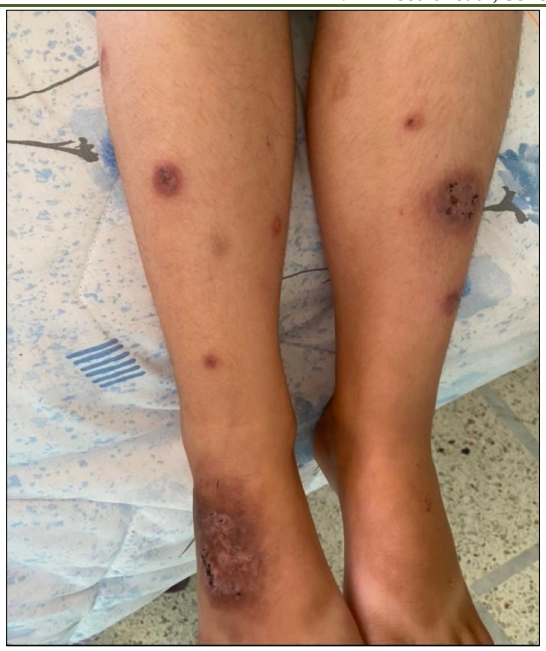

Figure 1: Multiple yellowish violaceous plaques on both legs

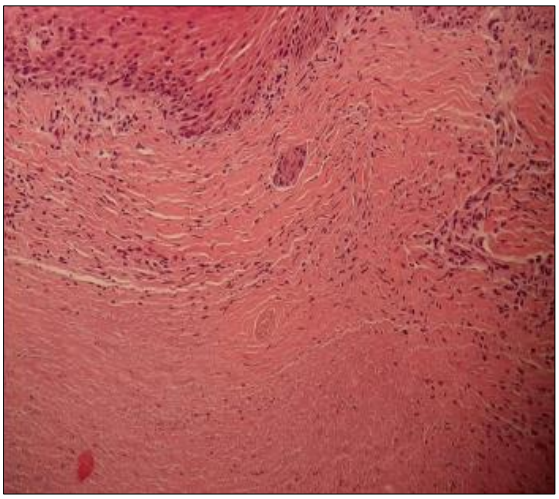

Figure 2: Histological slide showing features of necrobiosis lipoidica

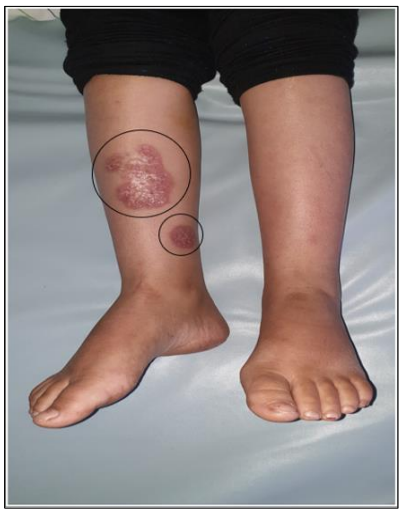

Figure 3 : erythematotelangestasic plaques on the right leg

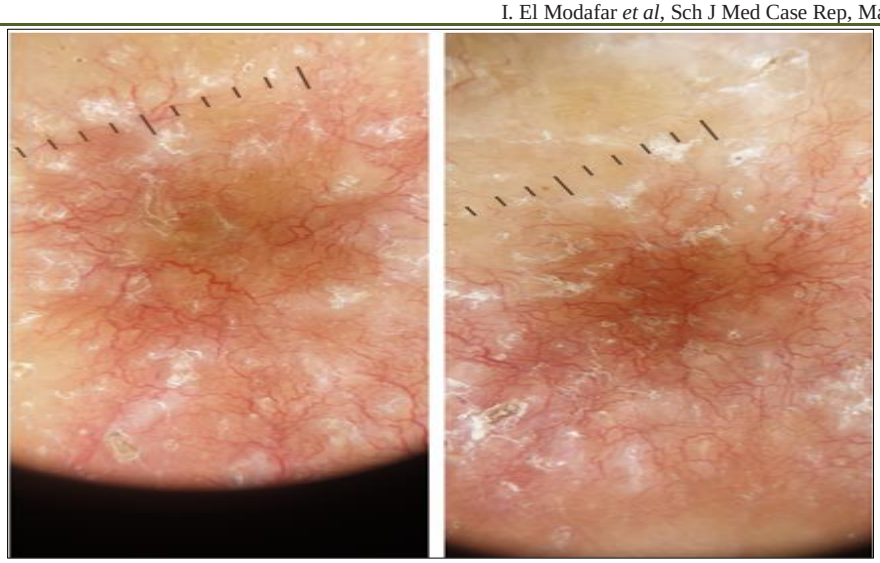

Figure 4 and 5: Dermoscopy showing serpiginous arborizing vessels on a yellowish background

DISCUSSION

Necrobiosis lipoidica (NL) is a chronic idiopathic non-infectious granulomatous disease of the dermis. Due to its increased prevalence in diabetic patients, particularly type 1 diabetics, etiological theories mainly refer to microangiopathy. However, the association with poor glycemic control remains controversial.

NL lesions are generally single and localized to the lower limbs, often bilateral, often on the tibial margin and the instep, of variable size. These lesions are often difficult to treat, leaving often significant scars. The course is most often chronic, even if spontaneous regression is observed in 20% of cases, and can be complicated by ulceration in 35% of cases [2].

Local treatment is similar to that of any chronic wound. It mainly uses hydrocolloid dressings or hydro-cellular dressings. Otherwise, treatment is based on topical and intralesional corticosteroids. Certainly, the use of corticosteroids in diabetic patients must be monitored for its glycemic effects. Other treatments include chloroquine, immunosuppressant agents, clofazimine, phototherapy, biologic agents, JAK inhibitors and surgery [3].

In our case, dermoscopic examination revealed serpiginous arborizing vessels on a yellowish background, a finding consistent with previously described dermoscopic patterns of necrobiosis lipoidica in the literature. These features align with the typical vascular morphology such as arborizing or linear serpentine vessels overlying a yellow to orange structureless area, reflecting underlying lipid deposition and granulomatous inflammation. This correlation supports the diagnostic value of dermoscopy in identifying necrobiosis lipoidica, even in atypical or early presentations [4].

To our knowledge, this is the second reported case in the literature, following a Lebanese publication in 2012 in the *Annales de Dermatologie et de Vénérologie* [5].

The early onset of skin lesions, occurring several years before the diagnosis of type 1 diabetes, underscores the importance of a thorough dermatological examination in any suggestive context.

These observations highlight the diagnostic value of dermoscopy, which enables prompt orientation toward a diagnosis of necrobiosis lipoidica.

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