Dermatoscopic Features of Early Erythema Chronicum Migrans

Dear Editors,

A 37-year-old man from a Lyme disease-endemic area presented with a one-week old rapidly expanding rash on his right calf. He lacked other comorbidities or symptoms such as fever, weakness, lack of appetite, or joint pain, but recalled removing a tick from the same region three weeks earlier. Inspection revealed a round, bluish-red erythematous patch with a central clearing (Figure 1). The patient experienced no discomfort, but the rash was warm and faded easily when palpated.

Dermatoscopic inspection revealed collarette-shaped white scales encircling the punctum of the tick bite in the center (Figure 2, left inset). There were three distinct background zones towards the periphery: skin-colored, bluish-red, and bright red. The transitions between the zones were not fully discernable. Red purpuric dots and clods were randomly distributed over these backgrounds, gradually increasing towards the periphery (Figure 2). The rash was diagnosed as erythema chronicum migrans (ECM), and the patient was started on doxycycline 100 mg BID. The expansion of the rash was stopped, while the speed of central clearing was increased. Half of the rash had healed by the third day (Figure 1, left inset), and it had completely disappeared by the seventh (Figure 1, right inset). Anti-Borrelia burgdorferi antibodies were initially negative for IgM and positive for IgG, but both tested positive two weeks later.

ECM is the hallmark of early-stage lyme disease, but it is not always present. In addition to the classically described bull's eye appearance, ECM may appear as homogenous erythematous patches, interrupted annular patches, or patches with hemorrhagic or purpuric components (1). It can manifest anywhere except in the palmoplantar region, but it is more common around large joints. Despite the morphological variations of ECM, the clinical presentation is often clear and distinct enough for dermatologists to correctly diagnose more than 90% of patients (1).

Diagnostic procedures such as ELISA or Western blot are employed in cases when the ECM is absent or atypical. However, their reliability is low due to the

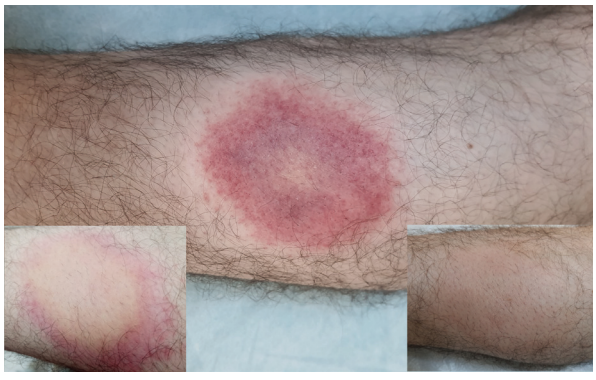

Figure 1. A rapidly expanding patch with a central clearing on the right calf. The overlying hairs were shaved before the photo was taken. On the third day of the therapy, the lesion had spread somewhat beyond the shaved zone, but the central clearing was covering the majority of the lesion (left inset). By the seventh day of treatment, the lesion had completely disappeared (right inset).

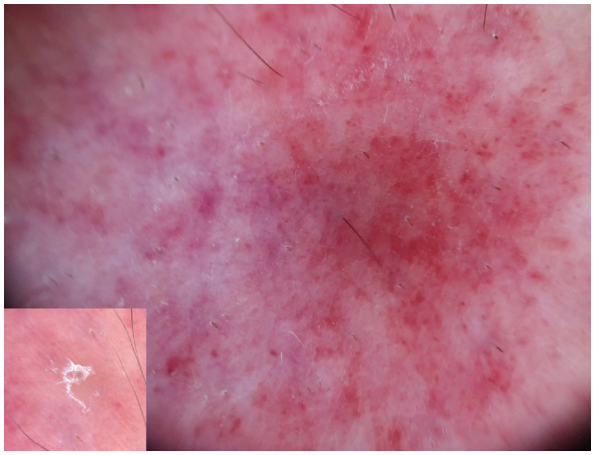

Figure 2. Dermatoscopic examination using a no-contact plate (×10 magnification). A collarette-shaped scale (left inset) is present in the center, as well as bluish-red and bright red erythema towards the periphery. Also, there are randomly distributed pinkish-red purpuric dots and clods over the erythematous background.

lack of standardization, limited coverage of *Borrelia spp*., and significant false-positive and false-negative rates (1). Seropositivity owing to previous asymptomatic infection in individuals residing in endemic areas may result in incidental positive findings. Alternative methods, including isolating the pathogen or PCR testing from biopsy samples have similar drawbacks (1).

Histopathological investigations are another practical method that yields supportive findings. ECM exhibits diffuse perivascular and interstitial inflammation, including lymphocytes, eosinophils, and plasma cells (2), which corresponds to background erythema in dermatoscopy. As the inflammation develops, the newly-developed regions are superficial and brilliant red, but the surface inflammation fades over time, leaving bluish erythema, which correlates to deeper inflammation (2,3) dermoscopy is gaining appreciation in assisting the diagnosis of nonneoplastic diseases, especially inflammatory dermatoses (inflammoscopy). Extravasated erythrocytes combined with perivascular inflammation (2) generate purpuric pinkish-red dots and clods.

Given the greater efficacy of early treatment and the ambiguity surrounding diagnostic methods, clinical findings should be deemed adequate to commence therapy, particularly in endemic regions (1). Dermatoscopic examination of ECM offers a quick and low-cost alternative approach for supporting the diagnosis. However, as emphasized by Errichetti, dermatoscopic examination in non-neoplastic diseases should be regarded as the second step of a "2-step procedure", with differential diagnoses established first by history and clinical examination (3). A systematic investigation of early and late, typical and atypical lesions would improve the reliability and utility of this method.

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