

Spot the Diagnosis

Erythematous plaque with concentric rings

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A 23-year-old male presented to our dermatology outpatient department (OPD) with a history of reddish-colored rash over the left lateral aspect of the neck involving the shoulder for two weeks. It was gradually progressive and associated with mild itching and a burning sensation. On further inquiry, the patient gives a history of an insect bite around 10 days before the eruption of the rash. The patient also developed a fever associated with body aches concomitantly with the eruption of rash.

On examination, there was an erythematous plaque with two concentric rings measuring 15 × 12 cm and extending from the left lateral aspect of the neck 2 cm below the posterior hairline extending up to the nape of the neck, upper back, and left shoulder. There is a central clearing of 2 cm diameter within the inner ring and another 2 cm space of clearing between the inner and outer ring [Figure 1a]. Erythema was more prominent along the outer margin. There was the presence of bilateral cervical and left post-auricular lymphadenopathy.



Figure 1: (a) An erythematous plaque with two concentric rings showing central clearing having centrifugal expansion. (b) Significant reduction in erythema and resolution of the lesion with hyperpigmentation after the patient is started on doxycycline therapy.

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What is the diagnosis?

Answer: Erythema migrans.

The diagnosis in our case was confirmed by performing a C6 EIA test for borrelia, which was positive. The patient was given oral doxycycline 100 mg twice daily for two weeks. The patient followed up after six days of treatment with a significant reduction in erythema and partial resolution of lesion [Figure 1b].

DISCUSSION

Lyme borreliosis is caused by *Borrelia burgdorferi* and is transmitted by a tick named Ixodes.^[1] It clinically presents in three stages: Early localized disease, early disseminated disease, and chronic disease.^[2] Erythema migrans is a common feature of early localized disease and presents in around 80% of patients within one to three weeks commonly involving the lower extremities and upper trunk.^[3] The characteristic lesion starts at the site of the tick bite in the form of an erythematous patch, which expands centrifugally with central clearing giving rise to a target-like lesion.^[1] It is usually associated with constitutional symptoms such as malaise, fever, headache, and myalgia.^[3] Atypical lesions may present in the form of vesicles, erythematous papules, and purpura.^[1] Other cutaneous manifestations of borrelia infection include acrodermatitis chronica atrophicans and borrelial lymphocytoma. Some other conditions, which are thought to be associated with borrelia include lichen sclerosus et atrophicus, morphea, sclerodermatous lesions, and cutaneous B-cell lymphoma among many others.^[3] Secondary dissemination may present with multiple erythema migrans lesions, arthralgia, and neurological manifestations in the form of meningitis and neuropathy whereas the tertiary stage is characterized by acrodermatitis chronica atrophicans, radiculopathy, and cognitive defects.^[3]

The common differentials to this condition are arthropod bite reaction, non-pigmented fixed drug eruption, tinea imbricata, erythema annulare centrifugum, and allergic contact dermatitis.^[1] The close differentials were ruled out by clinical history and examination. The absence of scaling and severe itching ruled out tinea infection; however, KOH mount was not performed. There was no history of drug intake before the eruption thus ruling out non-pigmented fixed drug eruption. Erythema annulare centrifugum is usually asymptomatic, progresses gradually, and has a trailing scale inside the advancing edge, unlike the way our patient presented in the OPD. Arthropod bite reaction usually presents with erythema and edema, but the presence of concentric rings and history of progression of outer margin centrifugally supported the clinical diagnosis of erythema

migrans. However, a dermoscopic examination was not performed in our case, which would have provided clues supporting the clinical diagnosis.

Erythema migrans is a clinical diagnosis, which can be confirmed by performing the serological test for borrelia such as C6 enzyme immunoassay (EIA) and immunoblot test for immunoglobulin G and immunoglobulin M antibody.^[2] A dermoscopic examination of the early lesion will reveal collarette-shaped white scales encircling the punctum of the tick bite with three distinct zones toward the periphery in the background: Skin-colored, bluish-red, and bright red.^[4] Red purpuric dots and clods may be randomly distributed in the background gradually increasing toward the periphery.^[4] For treatment, doxycycline (4 mg/kg/day) to a maximum dose of 100 mg twice daily for a period of two weeks has been used successfully. Apart from doxycycline, amoxicillin, and cefuroxime are other alternative agents.^[2] Disseminated disease is usually treated with intravenous ceftriaxone, cefotaxime, or benzylpenicillin.^[5]

Ethical approval

Institutional Review Board approval is not required.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent.

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Conflicts of interest

There are no conflicts of interest.

Use of artificial intelligence (AI)-assisted technology for manuscript preparation

The authors confirm that there was no use of artificial intelligence (AI)-assisted technology for assisting in the writing or editing of the manuscript and no images were manipulated using AI.

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