Medicina Clínica Práctica 8 (2025) 100480

MEDICINA CLINICA PRÁCTICA

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Images in medicine

Lyme disease: An ultrastructural analysis

Enfermedad de Lyme: Un análisis ultraestructural

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A 55-year-old female came to our clinic due to the abrupt appearance of a painful, elevated lesion on the back of the left forearm, associated with surrounding redness that was increasing progressively within 24 h. The patient had no fever or any other systemic effects. She had a history of visiting a forest 1 day ago. Physical examination showed an erythematous annular plaque measuring 7 × 6 cm in size on the back of the left forearm (Fig. 1A). Induration and inflammation were present over the lesion, and local lymphadenopathy was noted. Serology for *Borrelia burgdorferi* Ospc antigen reported IgM at 6.3 U/ml (normal <0.90), whereas IgG was normal. The histopathological study showed a moderate perivascular lymphocytic infiltrate with spongiosis. The sample taken by biopsy was also cultured and analyzed by electron microscopy, which detected the cross-section of a flagellum of the bacteria inside a macrophage in the papillary dermis (Fig. 1B). A control was carried out through ultrastructural analysis in a *B. burgdorferi* culture, and the flagella of this bacterium were detected in longitudinal and transverse sections (Fig. 1C). The diagnosis was Lyme disease. The patient was treated with doxycycline for 3 weeks, and the resolution of the lesion was observed.

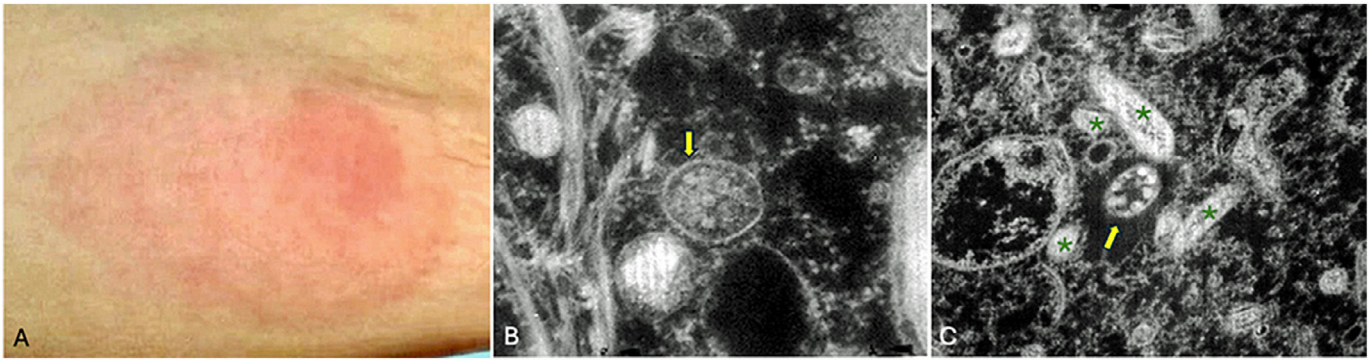

Fig. 1. (A) General appearance of the lesion. (B) Transmission electron micrograph of the cytoplasm of a macrophage in the papillary dermis, where the cross section of a *Borrelia flagellum* is observed (yellow arrow, 50 000×). (C) Transmission electron micrograph of a culture of *Borrelia burgdorferi*, where we observed the ultrastructural characteristics of the cross-section of flagella of these bacteria, including a typical microtubular arrangement surrounded by a membrane (yellow arrow) and the longitudinal sections of those flagella (green asterisks, 20 000×).

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https://doi.org/10.1016/j.mcpsp.2024.100480
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Ethical consideration

Patient written informed consent was obtained.

Ethical committee

Comité de Investigación de la UDEM.

Registry number

18092024-DER-CI.

Declaration of competing interest

None.

There was no funding or financial support in the creation of this clinical image.