

Case Report

Stellar Neuroretinitis Revealing a Lyme Disease: Case Report

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Received: November 26, 2022; Accepted: January 10, 2023; Published: January 16, 2023

Abstract

Lyme disease is a zoonosis, caused by a spirochete of the Borrelia family (*Borrelia burgdorferi*), often underdiagnosed. Because of its severity, Lyme disease must hold the attention of all doctors and especially ophthalmologists in front of any ocular manifestation. All tunics of the eye can be affected, the sometimes confusing clinical picture makes it difficult to establish the diagnosis of this fact borreliosis must be systematically evoked and its research must be an integral part of a standard uveitis assessment. Ophthalmological damage assimilated to neuro Lyme disease will be treated as such, early treatment with antibiotic therapy makes it possible to cut short its chronic course and avoid irreversible complications.

We report the case of a patient in whom the diagnosis of neuroretinitis secondary to lyme disease was evoked and treated early allowing a significant visual recovery.

Keywords: case report uveitis; Lyme disease; *Borrelia burgdorferi*; Neuroborreliosis

Introduction

Lyme disease is a zoonosis caused by a spirochete of the Borrelia family (*Borrelia burgdorferi*). This disease, of worldwide distribution, is transmitted by ticks which are hematophagous at all stages of their development. First described for its acute dermatological manifestations [1] and then neurological manifestations [2], Lyme disease remains under-diagnosed, especially when the picture is not classical [3]. The establishment of the diagnosis is based on a combination of several arguments: the positivity of the serology (Elisa confirmed by Western-Blot), the description of the clinic and the absence of another etiology that could explain the symptoms and the favorable evolution under antibiotic therapy [4]. We report our diagnostic and therapeutic approach in a case allowing an early and adapted treatment to avoid sometimes irreversible complications.

Patient et observation

Patient information: The patient was 56 years old and had a history of arterial hypertension under ARB2 and well-balanced diabetes under insulin. She presented with a rapidly progressive decrease in visual acuity in her right eye for 15 days. The patient also reported close contact with dogs. In addition, questioning revealed the appearance of erythema migrans one month ago.

Clinical findings: On ophthalmologic examination, visual acuity was "finger count" on the right and 10/10 on the left.

Anterior segment examination revealed an incipient cataract without inflammatory signs. The right fundus revealed a cellular vitreous Tyndall with 1 cross, a stage 1 papilledema associated with inter-papillomacular and macular exudates arranged in a stellate pattern, and the appearance of a small macular serous detachment bulla with no chorioretinal focus or sign of associated vasculitis (**Figure 1**). The left fundus examination was unremarkable, in particular with no signs of diabetic or hypertensive retinopathy.

Diagnostic assessment: Fluorescein angiography shows papillary hyperfluorescence on the right without evidence of vasculitis (**Figure 2**). OCT showed a macular retinal serous detachment (**Figure 3**). A first-line workup for uveitis was ordered, supplemented by Bartonella henselae serology. *Borrelia burgdorferi* serology came back positive in ELISA, a confirmation in Western-Blot was carried out. Based on all these clinical and paraclinical arguments, we retained the diagnosis of neuroretinitis secondary to Lyme disease.

Therapeutic intervention: The patient received antibiotic therapy based on intravenous ceftriaxone for 3 weeks associated with oral corticosteroid therapy 0.5 mg/kg/d, with rapid regression.

Follow up and outcomes: The evolution was favorable with almost complete recovery of visual acuity of 8/10 in the right eye, regression of papilledema and disappearance of exudates

on the fundus (**Figure 4**) and complete resorption of the retinal serous detachment (**Figure 5**). Regular follow-up over a period of 14 months did not reveal any recurrence or contralateral or extraocular involvement.



Figure 1: Right fundus image: papilledema (black arrow), fine stellate exudates in the inter-papillomacular area (white arrow) and macular serous detachment (red arrow).



Figure 2: Fluorescein angiography: papillary hyperfluorescence.

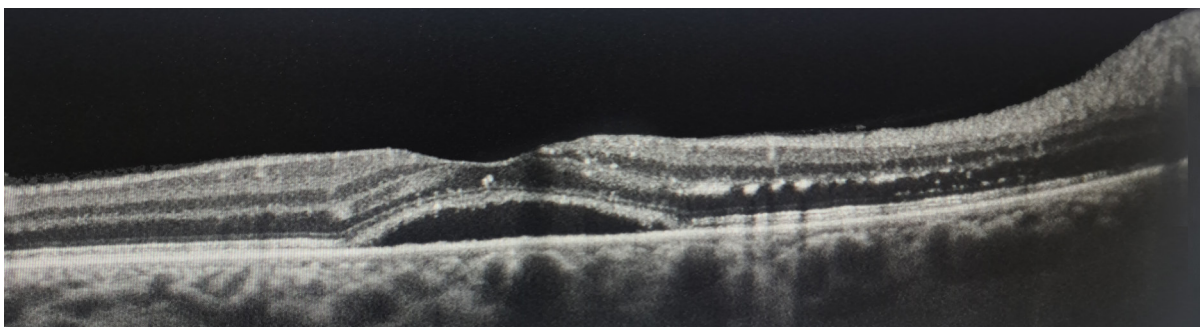


Figure 3: Macular OCT of the right eye : macular serous detachment.



Figure 4: Retinophotography showing a normal aspect of the fundus after treatment.

Discussion

Neuro-ophthalmologic involvement in Lyme disease is uncommon. It classically occurs during the early phase of the disease, probably in connection with a privileged passage of the blood-brain barrier by the spirochete [5]. In Europe, the notion of a bite is found in only about 1 out of 2 patients, and the most

evocative manifestation is erythema migrans, which, although typical, is not found in 1 out of 3 cases [4]. Thus, the diagnosis of Lyme disease is essentially based on epidemiological and clinical data, with serological data being used only to confirm the disease. However, the importance of these tests appears primordial in atypical forms. [4]. The diagnosis is serological, based on the ELISA technique and supported by the Western blot to avoid false positives and cross-reactions. [6]

In typical forms with erythema migrans, short courses of oral antibiotics usually prevent the development of extracutaneous complications [6,7]. However, experts have not been able to establish consensus recommendations for ophthalmologic involvement, which is considered neuro Lyme and should be treated as such. Treatment with ceftriaxone 2 g/d IV for 2 to 4 weeks is recommended [6].

Conclusion

Lyme disease is a multisystemic infection caused by the spirochete *Borrelia burgdorferi* which is usually transmitted by the Ixodes tick. For any unexplained ocular symptom, even in children, Lyme disease should be considered, especially in endemic areas. The diagnosis of neuroretinitis is based on the association of papilledema and a macular star. Its clinical diagnosis is easy but the multiplicity of causes makes the etiological investigation delicate. Treatment and prophylaxis is based on doxycycline.

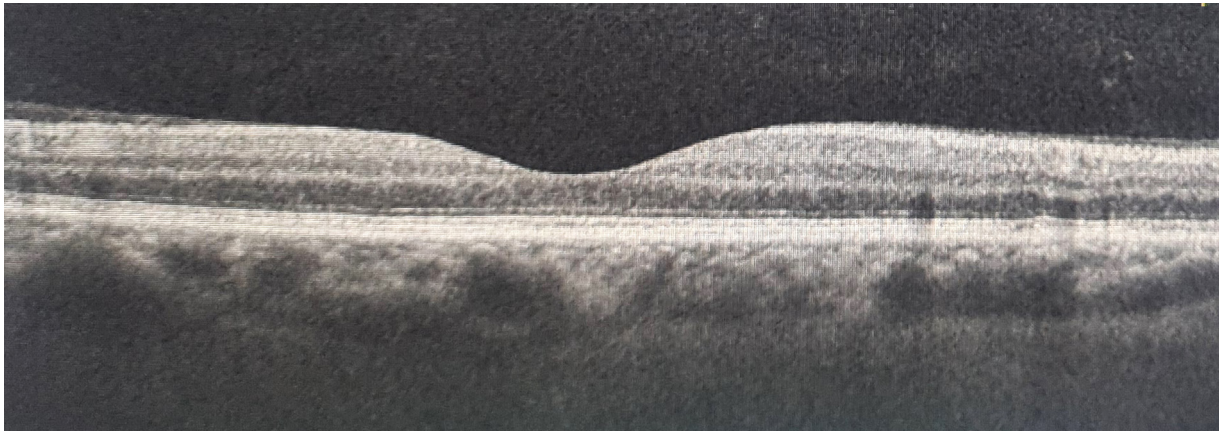


Figure 5

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