

## Case report

### **Anterior and posterior uveitis revealing Lyme disease**

#### **ABSTRACT :**

Lyme disease, a tick-borne spirochetal infection, often begins with a characteristic skin lesion, erythema chronicum migrans, which may be followed by neurologic, cardiac, ocular or joint abnormalities, ocular manifestations remain rare in Lyme disease. We report an original case of a 20-year-old female patient presenting with bilateral anterior and posterior uveitis with bilateral stage two papilledema associated with inflammatory arthralgias, in whom the etiological assessment revealed Lyme disease that responded well to treatment. This observation highlights the importance of investigating Lyme disease in cases of unexplained ocular involvement to initiate antibiotic treatment in order to prevent severe and late manifestations of the disease

#### **Keywords :**

Uveitis, Lyme disease, papillary edema, optic disc edema

#### **Introduction:**

Lyme disease is an infectious disease caused by the spirochete *Borrelia burgdorferi* sensu lato, transmitted by a tick bite, initially manifests as a skin rash (erythema migrans) centered around the tick bite. If left untreated, it can progress through three long-lasting stages, characterized by a great diversity affecting several systems and organs. It can present in joint, neurological, ocular, and cardiac forms, either acutely or chronically. Ocular involvement is rare, presenting as uveitis, primarily anterior and posterior uveitis. We report the case of a young patient with bilateral anterior and posterior uveitis with bilateral stage two papilledema revealing Lyme disease.

Case presentation :

#### **Observation:**

This is a 20-year-old young lady without significant medical history, who reports chronic inflammatory arthralgias affecting the knees and elbows, evolving since the age of 10, treated with non-steroidal anti-inflammatory drugs.

The patient was admitted for a progressive decrease in visual acuity associated with headaches, the acuity was 8/10 in the right eye and 1/10 in the left eye. The ophthalmological examination with a slit lamp showed the presence of a Tyndall sign with 3 crosses bilaterally in the anterior segment, **intraocular pressure was normal bilaterally 14 mmHg in the left eye and 13 mmHg in the right eye, the vitreous humor appeared normal** and in the fundus, there was bilateral optic disc edema stage two.

The clinical examination at admission was normal, and infectious workup returned negative (serologies for HIV, Hepatitis B, Hepatitis C, Syphilis, herpes simplex virus, cytomegalovirus, and Epstein-Barr virus). The brain and spinal MRI was normal, and the analysis of the cerebrospinal fluid showed the presence of transudate of serum immunoglobulins G related to chronic inflammation. In terms of therapy, the patient received four boluses of methylprednisolone at 1 mg/kg/day spaced one month apart, followed by oral corticosteroid therapy and azathioprine at 100 mg with good improvement.

The follow-up ophthalmological examinations showed the disappearance of the Tyndall sign and resolution of the optic disc edema, but one month after the last bolus, the patient experienced an ocular relapse. The ophthalmological examinations showed a visual acuity of 1/10 in the right eye and counting fingers in the left eye, with the presence of a Tyndall sign with 2 crosses bilaterally in the anterior segment and optic disc edema stage 1 in the fundus. An anterior chamber sample was taken, showing the presence of gram-positive cocci and *Borrelia burgdorferi*. Immunoglobulin M was positive, and the Enzyme-Linked Immunoassay and Western blot tests were positive with two bands indicating *Borrelia burgdorferi*.

Given the chronic joint involvement and positive serology for borreliosis, the diagnosis of Lyme disease was retained. In terms of therapy, the patient was placed on oral corticosteroids at 1 mg/kg/day with doxycycline at 200 mg for 14 days, resulting in a good improvement in visual acuity and regression of the Tyndall sign and optic disc edema.



**Fig 1 : optic disc edema stage 2**



**Fig 2 : optic disc edema stage 2**

### **Discussion:**

The clinical picture of Lyme disease is highly polymorphic, with ocular involvement being rare (1). The spectrum and variability of ocular manifestations observed in Lyme disease have been incompletely defined until now. Unfortunately, our understanding of the ocular manifestations of the disease has not progressed as rapidly as for other systemic manifestations of this infection (2). The frequency of ocular disease is very likely underestimated, (3) due to difficulties

in serological analysis, but also to a poor understanding of the clinical symptomatology, which is particularly varied. Ocular involvement can occur at all stages of the disease (early and late). It is reported in nearly 1% of cases of systemic disease (4) (5). All ocular structures can be affected during the different phases of the disease, uveitis occurs predominantly during the late phase. This is mainly an anterior involvement with granulomatous retrocorneal precipitates, iridocrystalline adhesions, iris nodules, but also intermediate uveitis with hyalitis (6). A Japanese study was conducted in patients with uveitis, in an area endemic for Lyme disease (7). Patients with inflammation of undetermined origin had a positive serology in 48% of cases. The frequency of positivity in the general population in this area was 5% (8) (9). The authors concluded that Lyme disease was a cause of idiopathic uveitis, hence the interest in searching for Lyme disease in cases of unexplained ocular involvement.

### **Conclusion:**

The clinical spectrum of ocular manifestations associated with Lyme borreliosis is particularly broad while the frequency of this involvement remains low. Most inflammatory conditions affecting the ocular tunics occur during the late phase of the disease, which partly explains the diagnostic and therapeutic difficulties. The pathophysiology of the disease is controversial. Direct infection and hypersensitivity phenomena may be involved during the different phases of the infection. The ocular manifestations of Lyme disease are potentially serious but the evolution can be favorable with antibiotic therapy. This justifies the prescription of serology in the presence of ocular inflammation without an obvious diagnosis.

### **CONSENT :**

As per international standards or university standards, patient(s) written consent has been collected and preserved by the author(s).

### **ETHICAL APPROVAL :**

Ethical approval was exempted by the Ethical Committee at Ibn Roch university hospital for reporting this case.

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Author(s) hereby declare that NO generative AI technologies such as Large Language Models (ChatGPT, COPILOT, etc.) and text-to-image generators have been used during the writing or editing of this manuscript.

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