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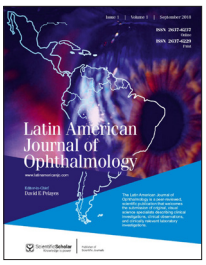

Case Report

Intraocular tuberculosis, a challenge in diagnosis and treatment

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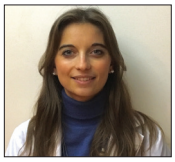

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ABSTRACT

Ocular tuberculosis (TB) is an extrapulmonary tuberculous condition and has variable manifestations. The incidence of TB is still high in developing countries, and a steady increase in new cases has been observed in industrial countries as a result of the growing number of immunodeficient patients and migration from developing countries. Choroidal granuloma is a rare and atypical location of TB. We present a case of a presumptive choroidal granuloma. This case exposes that diagnosis can be remarkably challenging when there is no history of pulmonary TB. The recognition of clinical signs of ocular TB is extremely important since it provides a clinical pathway toward tailored investigations and decision making for initiating anti-TB therapy and to ensure a close follow-up to detect the development of any complication.

Keywords: Intraocular tuberculosis, Ocular tuberculosis, Choroidal granuloma, Granulomatous uveitis, Posterior uveitis

INTRODUCTION

Tuberculosis (TB) is one of the most common bacterial infections, nearly one-third of the world's population is infected, and therefore is an important differential diagnosis in any form of uveitis specially in endemic regions. The clinical course tends to be insidious and chronic, primarily affecting the lungs, but may also affect extrapulmonary organs, including the eye. Clinical manifestations of intraocular tuberculosis are diverse and diagnosis can be challenging.

CASE REPORT

A 33-years-old female was referred to the Uveitis Department of Dr. Pedro Lagleyze Ophthalmological Hospital, a tertiary referral public hospital in Buenos Aires city, presenting red eye, pain, and blurred vision in her right eye (RE) for the past 48 h.

On examination, she presented best-corrected visual acuity of 20/20 (BCVA) in both eyes. RE evidenced a diffuse non-necrotizing anterior scleritis on the superonasal quadrant, without anterior chamber inflammation. The left eye examination was unremarkable. Intraocular pressure was within normal limits in both eyes.

RE fundus examination showed a yellowish-white subretinal lesion, with blurred edges, located at the superonasal quadrant, with an overlying exudative retinal detachment [Figure 1].

Ultrasonography showed a mass of uniform echogenicity with low-to-medium internal reflectivity, mass thickness was 4 mm, without vascular pulsations, and an exudative retinal detachment adjacent to the lesion was observed [Figure 2].

No relevant findings on the general medical examination or medical history. Ancillary tests were performed, including tuberculin skin test (Mantoux test), chest X-ray and computed tomography scan, and laboratory workup including serological testing for toxoplasma, toxocara, syphilis and immunodeficiency virus, and blood chemistry, including test of liver and kidney function, erythrocyte sedimentation rate, C-reactive protein, Angiotensin-converting enzyme, and antineutrophil cytoplasmic antibodies. Furthermore, the patient was referred for oncology screening.

All the results were within normal limits, except for a positive Mantoux test reaction.

Based on these results, and patient refusal to go through an invasive procedure to get a biopsy for confirmatory histopathology, a therapeutic trial with four drug anti-TB treatment (ATT) was initiated.

After 15 days of ATT, the lesion showed sharper and more delimitated edges and the exudative retinal detachment decreased its magnitude. At 1 month follow-up, there was a clear improvement, with reduction of lesion size, pigmentation of its edges, and complete resolution of retinal detachment. Nevertheless, blurred disc margins were found with a parapapillary flame hemorrhage, which were construed as a paradoxical reaction [Figure 3]. Therefore, oral prednisolone (1 mg/kg body weight/day) was initiated, achieving fast and highly satisfactory results. Corticosteroids were then tapered in the following months; (not reaching a daily dose of prednisone <10 mg/day at 60 days after the instauration of treatment).

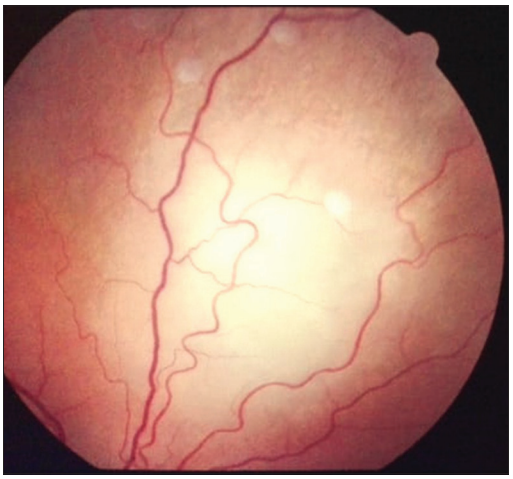

Figure 1: Subretinal mass lesion with an overlying exudative detachment.

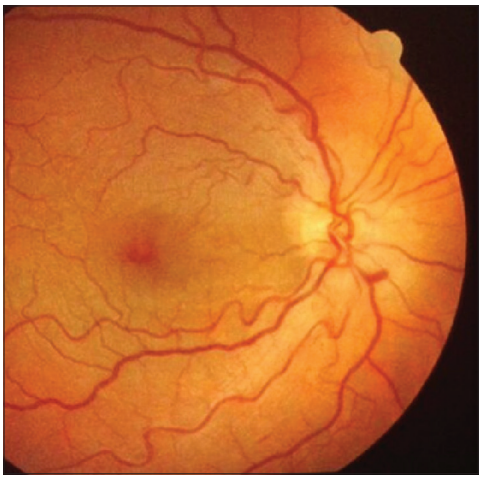

Figure 3: Paradoxical reaction: Papillitis with a parapapillary flame hemorrhage.

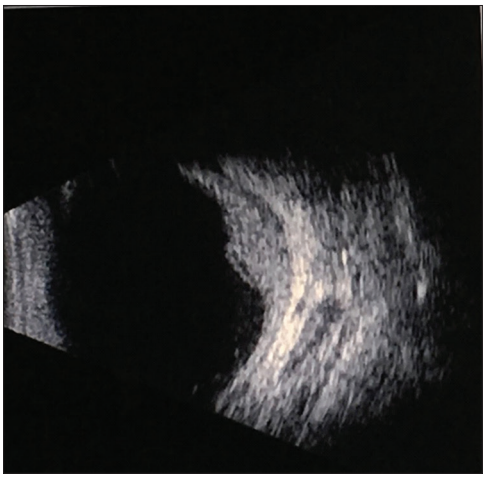

Figure 2: Ultrasonography of the lesion showing low-to-medium internal reflectivity, and a thickness of 4 mm.

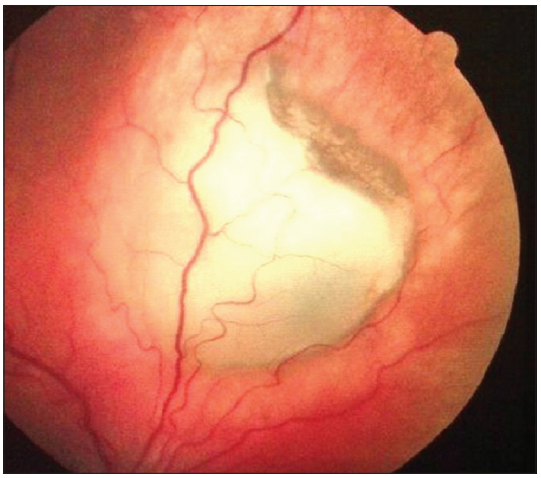

Figure 4: Lesion edges clearly demarked and pigmented, without subretinal fluid.

After 4 months of treatment, the lesion was significantly smaller, its edges clearly demarked and pigmented [Figure 4], without subretinal fluid, and complete resolution of papillitis was observed [Figure 5], preserving initial visual acuity of 20/20.

A diagnosis of presumed isolated choroidal granuloma without systemic tuberculosis (TB) was suggested.

A 10-month follow-up patient reported a decrease of vision in her RE, BCVA falling to 20/50. The fundus examination showed cystoid macular edema (CME) evidenced by optical coherence tomography (SD-OCT) that revealed an increased foveal thickness [Figure 6]. A slow-release intravitreal dexamethasone implant was injected, but the CME did not completely resolve at 4-month follow-up, and patient refused to go through any other procedure**.** At the last visit, BCVA was 20/40.

DISCUSSION

The diagnosis of presumptive choroidal tuberculoma, based on Gupta *et al*. classification,[1] was reached, taking into account the compatible and highly suggestive ocular clinical manifestations associated with a prompt response to ATT.

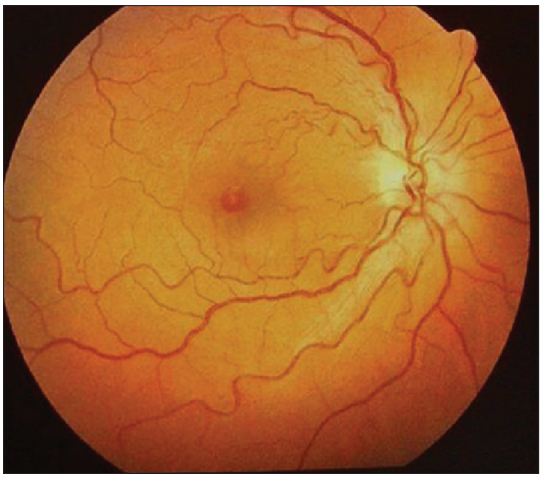

Figure 5: Complete resolution of papillitis.

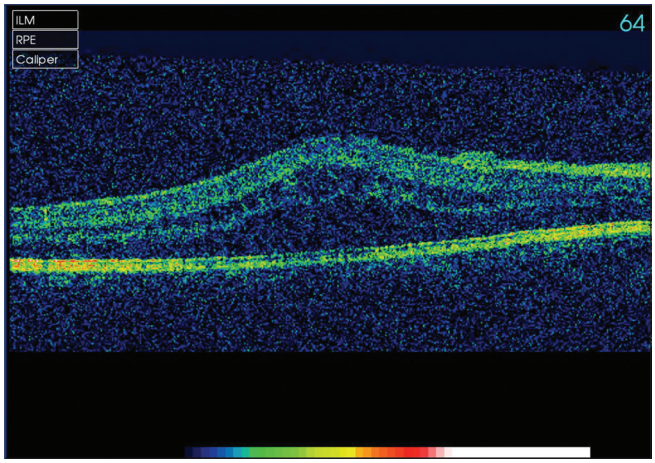

Figure 6: Cystoid macular edema evidenced by optical coherence tomography.

It is important to bear in mind the high prevalence of TB in Argentina[2] and that 60% of patients with ocular manifestations does not have a pulmonary compromise.[3]

The optic disc inflammation after a month of treatment was interpreted as a paradoxical reaction, triggered by the death of the bacillus and the inflammatory response in an immunocompetent host.[4]

TB is still a common systemic infectious disease; nearly one-third of the world population is infected. According to the WHO in 2017, 10 million people became ill with TB, and 1.6 million died from the disease.[2] People infected with TB have a 10% lifetime risk of falling ill with TB, and 50% will occur during the 1st year. The fairly scant number of intraocular TB (IOTB) cases is explained by the fact that extrapulmonary TB represents only 20% of TB cases, and 1% of those represent IOTB.

It is important to highlight that intraocular inflammation is the most frequent ocular presentation, especially affecting the posterior segment, with choroid compromise, related to the high oxygen concentration in that tissue.[5,6]

There is no gold standard diagnosis test for IOTB,[7] and confirmed IOTB becomes a really challenging diagnosis,[7,8] due to the unlikelihood of isolating the *Mycobacterium tuberculosis* organisms from the ocular tissues and fluids. Moreover, many times ocular involvement is secondary to an immune reaction, also explaining the lack of positive mycobacterial cultures from ocular fluids.

IOTB can be classified into three categories proposed by Goupta *et al.*[1] comprising "confirmed IOTB," "probable IOTB," and "possible IOTB."

ATT regimen must be continued at least for 9 months. It can be associated or not to corticosteroids, to reduce the tissue's damage generated by inflammation, but they should never be used as monotherapy.[4,7,9]

Finally, is crucial to ensure a close follow-up to identify any complication that can occur either during or because of ATT (like paradoxical reaction), or after the ATT is completed.[7,9]

CONCLUSION

Due to the high prevalence of TB in our milieu, and its protean ocular manifestations, an ophthalmologist must include TB in the differential diagnosis of uveitis cases. There is still a lack of consensus about the diagnostic criteria of ocular TB, which may conduce to misdiagnosis. A delay or lack of diagnosis may lead to severe visual morbidity. On the other hand, overtreatment exposes patients to the broad adverse effects of ATT drugs. It is important to plan

an extended follow-up, considering the probable long-term complications.

For the aforementioned reasons, differential diagnosis of choroidal granulomas, namely, sarcoidosis, toxocariasis, and TB[3,6,8] has to be considered in the context of uveitis; a comprehensive questionnaire of medical history, a complete physical examination, and ancillary tests must be performed to aid diagnosis and promptly start treatment, if needed.

Declaration of patient consent

Patient's consent not required as there are no patients in this study.

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Nil.

Conflicts of interest

There are no conflicts of interest.

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