

# What Lies Beneath a White Cataract: Uncommon Presentation of Bilateral Ocular Tuberculosis

Hnich H<sup>1\*</sup>, Berraho A<sup>2</sup>

<sup>1,2</sup>Ophthalmology B Department, Hospital of Specialties, Rabat Morocco

\*Corresponding author: HNIC H, Ophthalmology B Department, Hospital of Specialties, 51000, Rabat Morocco  
Email: [hajar.hnich93\[at\]gmail.com](mailto:hajar.hnich93[at]gmail.com)

**Abstract:** Purpose: to report a rare presentation of isolated bilateral ocular tuberculosis. Methods: a 34 years old female patient with the history of an old contact with a tuberculous patient consulted for a white cataract in her right eye associated with floaters. Results: ophthalmological examination showed white dense cataract in the OD, the dilated fundus in the left eye showed limited chorioretinal atrophy that could go unnoticed correlating with presumed tuberculosis-related serpiginous like choroiditis. The laboratory tests plead for a high suspicion of ocular tuberculosis. Conclusion: ocular tuberculosis is a great mimicker infection which still make it a serious challenge in our clinical practice.

**Keywords:** Uveitis, ocular tuberculosis, serpiginous-like choroiditis

## 1. Introduction

Ocular tuberculosis (OT) is a rare extrapulmonary manifestation of *Mycobacterium tuberculosis* (MTB) infection that can be seen in a few patients with disseminated TB or with localized disease. It is the manifestation of the infection in various tissues of the eye. Ocular tuberculosis is a great imitator of ocular pathologies and therefore requires a high index of suspicion before making the diagnosis. (1)

Delay in diagnosis or treatment can result in vision loss but since the diagnosis is rarely achieved, there still are a broad variety of approaches to this clinical entity.

The aim of this case study is not only to report a rare presentation of bilateral ocular tuberculosis in asymptomatic patient very likely secondary to direct ocular infection, but also to draw the clinician's attention to the rising fact of OT and keep in their minds that the ghost of tuberculosis still overshadows over many regions.

## 2. Case Report

"I have a white reflex in my right eye" that was the main complain of N. H, a 34 years old female patient with the history of an old contact with a tuberculous patient (brother treated for pulmonary tuberculosis two years ago and declared cured), she consulted for chronic loss of vision in both eyes especially her right eye since one year with mild myodesopsia without any context of ocular trauma, she also denies having taken any sort of medication.

The best corrected visual acuity was reduced to motion of fingers in her right eye (OD) and 6/10 in her left eye (OS), slit lamp examination showed white dense cataract (figure1) in the OD with the presence of lens deposits proving old posterior synechia, unlike the examination of the OS that revealed no sign of anterior uveitis but the dilated fundus showed limited chorioretinal atrophy that could go unnoticed.

Ocular mode B ultrasonography of the OD revealed multiple mobile point echoes in the vitreous cavity that indicate vitreous haze. Fluorescein angiography of the OS demonstrated inter maculo papillary scarring hyperfluorescent lesion with sharp margins (figure3, 5). This could correlate with presumed tuberculosis-related serpiginous like choroiditis.

Based on these clinical findings, systemic work up of uveitis was done and returned back negative, tuberculin skin testing found phlyctenular reaction (figure2) and the Interferon Gamma Release Assay was highly positive.

Since there were no signs of active ocular inflammation, the patient was referred to the anti-tuberculosis center in order to detect other tuberculosis localization that may need immediate anti tuberculous treatment.

The systemic examination and the complementary investigations showed no active tuberculosis sites especially no pulmonary abdominal or lymph node involvement.

The patient underwent a surgical procedure for her pathological cataract after getting a written consent, and making clear of the possible intra and post-operative complications, the surgery went uneventful despite the difficulties of making the anterior capsulorhexis due to the very elastic anterior capsule. The post-operative best corrected visual acuity slightly improved to 2/10 because of the vitreous haze (figure 6, 7)

## 3. Discussion

Tuberculosis (TB) represents a global health challenge. According to the World Health Organization (WHO), TB is one of the top ten causes of death worldwide and the leading cause of death from a single infectious agent, with one-third of the world's population infected with *Mycobacterium tuberculosis* (MTB) [2]. Ocular TB is a rare extra pulmonary form of the disease (3)

Historically, Maitre-Jan (4). is often credited with publishing the earliest description of OT (1707). Major contributions to the understanding of the disease mechanism were not made until the latter part of the 19th century. OT is either primary in which MTB directly infects ocular tissue, or secondary to extra ocular tissue such as lungs lymph nodes or so on.

Posterior uveitis is the most common presentation of OT, with lesions predominantly present in the choroid as focal, multifocal or serpiginous choroiditis, solitary or multiple choroidal nodules (tubercles), choroidal granuloma (tuberculoma), neuroretinitis, subretinal abscess, endophthalmitis, panophthalmitis, and retinal vasculitis (5)

Clinical manifestations of OT vary, which poses a challenge for diagnosis. The definitive diagnosis of TB is established by isolation of MTB from ocular tissues. However, because this is difficult to achieve, the diagnosis of ocular TB is often presumed in the presence of suggestive ocular findings in combination with any of the following (6)

- Systemic findings consistent with TB infection
- Positive interferon gamma release assay
- Positive tuberculin skin test in asymptomatic individuals

In addition, clinical response to anti-TB treatment (ATT) further supports a presumed diagnosis of OT.

In general, the treatment of ocular tuberculosis is the same as for pulmonary TB. Treatment consists of a four-drug regimen, administered in two phases: rifampicin, isoniazid, pyrazinamide, and ethambutol daily for two months, followed by rifampicin and isoniazid for four months. If the patient fails to respond in three to four weeks, consider multidrug resistance, TB, and management should continue in conjunction with an infectious disease specialist.

Steroids are given to reverse insult from granulomatous inflammation and to help prevent a delayed-type hypersensitivity response to TB antigens (7) They must be used judiciously with anti-tuberculous therapy

Back to our case study, in light of all our clinical findings and the positive interferon gamma release assay and the phlyctenular reaction of the tuberculin skin test, the diagnosis of a presumptive ocular tuberculosis diagnosis was made without extraocular localization, no signs of active ocular inflammation were found therefore it was considered as latent tuberculosis infection with no need for anti-tuberculous chemoprophylaxis since the patient is immunocompetent and presents no risk factors of tuberculosis reactivation. She is continued to be seen in regular controls.

#### 4. Conclusion

In conclusion, we emphasize the need to know the various clinical presentations of ocular tuberculosis. Most of the patients with ocular tuberculosis do not show any signs of pulmonary or other systemic manifestations and no laboratory test is conclusive of tuberculosis, making it difficult to put an early diagnosis. Though no laboratory investigation is confirmatory of OT, a high index of suspicion of tuberculosis is required for the diagnosis. Ocular tuberculosis can be

treatable and any delay in diagnosis can lead to irreversible lesions like the case we report. Hence early consultation and diagnosis helps in preventing the irreversible complications.

#### 5. Financial support and sponsorship

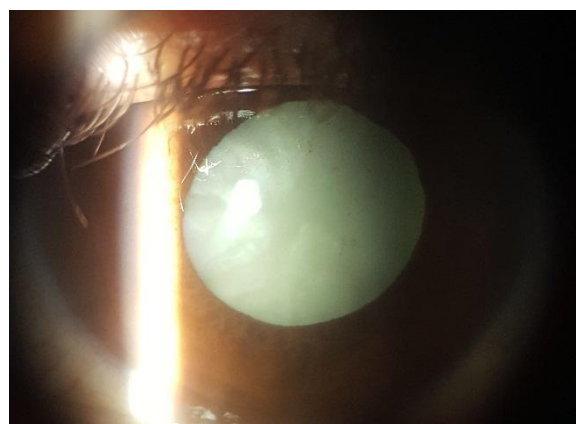
None

#### 6. Conflict of Interest

We confirm and deny any conflicts of interest existing.

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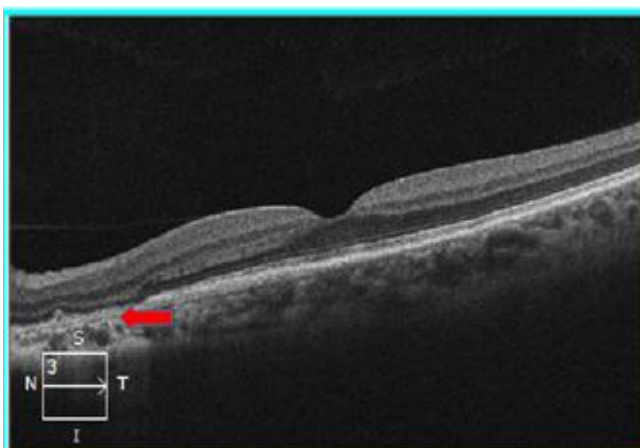
**Figure 1:** White dense cataract in OD, note the presence of lens deposits



**Figure 2:** Phlyctenular reaction in tuberculin skin test read after 72 hours of injection



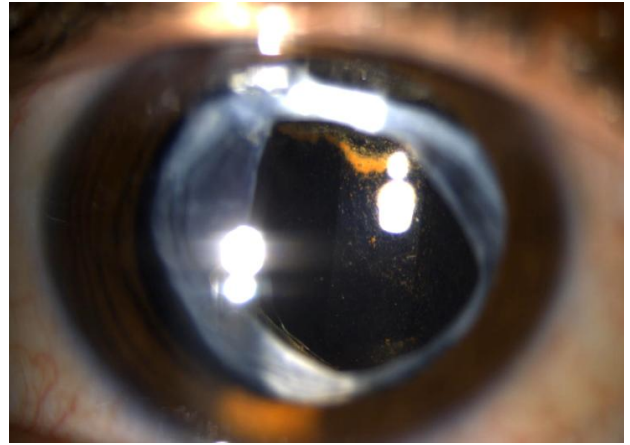
**Figure 3:** Color fundus of the left eye showing inter maculopapillary limited chorioretinal lesion



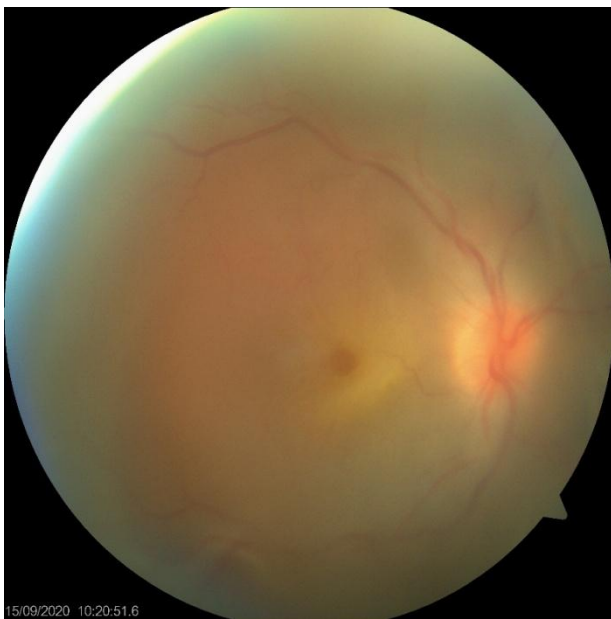
**Figure 4:** OCT of the left macula showing the damaged outer retinal layers and the retinal pigmentary epithelium



**Figures 5:** Early, intermediate and late phase fluoresce in retinal angiography of the left eye highlighting the 'window defect' lesion due to damage of the retinal pigment epithelium.



**Figure 7:** Image of the right eye showing the vitreous haze seen behind the intraocular lens



**Figure 6:** Color fundus of the right eye after the extraction of the white cataract showing significant vitreous haze