

CASE SERIES

VARIOUS SPECTRUM OF OCULAR TUBERCULOSIS

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Mycobacterium Tuberculosis may infect any organ in the body, when it affects ocular tissue symptoms are vague and hence diagnosis is challenging, through a number of cases reported in our clinic it is emphasized to make Quantiferon test as part of routine investigation for cases of presenting with uveitis thus leading to timely diagnosis and accurate treatment.

Keywords: Ocular tuberculosis; Mycobacterium; Blurring of vision

Citation: Haq A, Shaheen F, Farooq S. Various spectrum of ocular tuberculosis. J Ayub Med Coll Abbottabad 2021;33(2):332-4.

INTRODUCTION

Tuberculosis (TB) is one of the most contagious infection known after it was first isolated and presented in 1882. This infection has caused a high rate of mortality over centuries and current researches show that it is responsible for almost 1.4 million deaths yearly.¹

Nearly one third of the world's population is latently infected with TB. According to World Health Organization 80% of the reported cases of tuberculosis are pulmonary and remaining 20% are extra pulmonary. Pakistan is the fifth country in the world which reports high number of cases of pulmonary tuberculosis.²

Tuberculosis can involve any organ in the body including ocular tissue, either directly or by spreading from other sites in the body. Despite the lethal complications of this infection, it often goes undiagnosed due to the masked appearance of its symptoms.

We came across 3 cases of ocular tuberculosis which differ from each other in presentation, but thorough investigation led us to a common diagnosis in all three of them.

Case-1:

45-year-old female presented with complaints of pain, floaters and blurring of vision in both eyes. No significant past medical and surgical history except history of a mild painful nodule on the back was present, which was suspected as a sebaceous cyst and patient was recommended to get an excision biopsy of the nodule. Her examination performed in the clinic showed

Visual acuity (VA): Right Eye (RE) 6/9 Left Eye (LE) 6/6p

- Anterior segment: bilateral cataract, posterior segment: Cells in vitreous cavity. Her fundal examination was normal. Patient was

diagnosed to have bilateral intermediate uveitis and was advised Complete Blood Count (CBC), Erythrocyte Sedimentation Rate (ESR), Rapid Plasma Reagin (RPR), Anti-Nuclear antibody profile (ANA), Quantiferon-TB Gold- test. Her Quantiferon test came back positive.

- Patient was referred to an infectious disease specialist for further management and was started on ATT for 9 months. She presented 2 weeks later with significant improvement of vision and regression in size of the nodule.

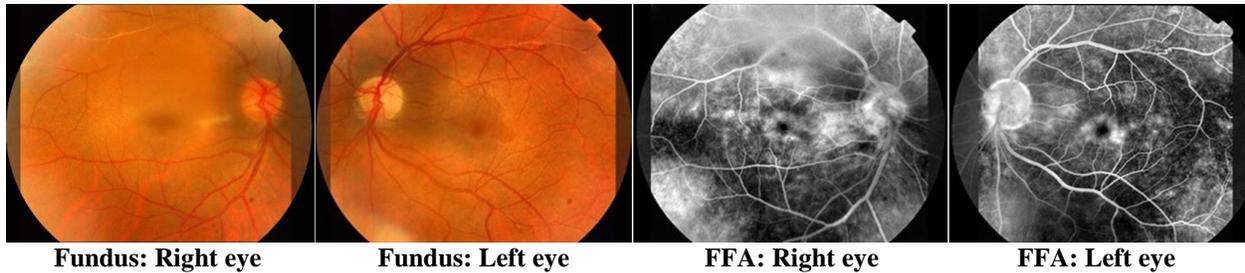
Case-2:

A 34 years old male presented for the review of his right eye cataract surgery. His complaint was blurring of vision in the right eye for the past few months. There was no significant history however, he gave a positive family history of Pulmonary Tuberculosis in his father which was treated 6-years ago.

On examination Right Eye visual acuity was 6/12 and in the left eye it was 6/9. Anterior segment in the right eye showed posterior sub capsular (PSC) cataract grade 3 while left eye showed grade 1 Posterior Sub Capsular cataract. It was accompanied with mild vitritis in both eyes (BIOScore 2).

Fundal examination revealed moderate macular oedema with superior arteriolar sheathing in the right eye. Left fundus showed slight pigmentary changes over the macula with superior venous sheathing.

FFA revealed late leakage at the macula in the right eye and mild leakage in the left eye. There was vascular tortuosity in the superior arcade in the both eyes but no ischemia. Investigations for posterior uveitis showed significantly raised Quantiferon levels.



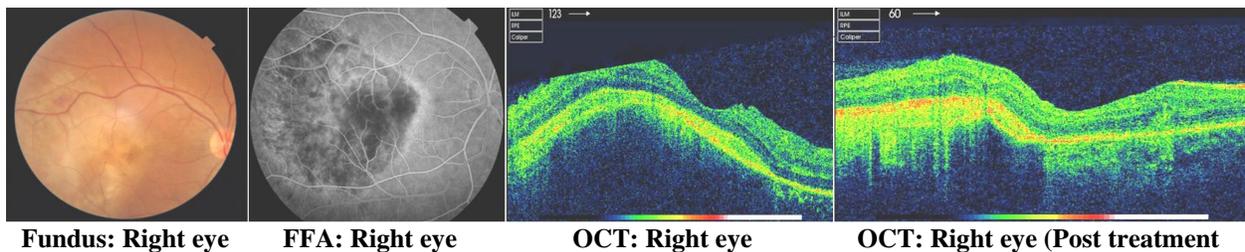
Patient was diagnosed of having intraocular tuberculosis and was started on Anti Tuberculous Therapy (ATT) for 9 months. 1 year follow up showed improvement in signs and symptoms. Visual acuity Right eye to be 6/9 and left eye to be 6/6. Patient has now been offered right eye cataract surgery with lens implant which is yet to be done.

CASE-3

A 45 years old female with no known comorbid presented as a referral case from another ophthalmologist with complaints of decreased vision in the right eye for the last 4 weeks. She was initially diagnosed to have Central Serous Chorio Retinopathy

and observed for 2 weeks. With no improvement in visual acuity, she was started on oral corticosteroids.

On examination her RE VA was CF and 6/6 in the LE. On right eye fundal examination, there was an ill-defined extra foveal mass for which B scan and Optical Coherence Tomography (OCT) was done. B-scan ultrasound showed the size of 12.26×14.32×3 mm. While OCT showed a choroidal mass lifting the retina. Fundus Fluorescein Angiography (FFA) was done which showed a hypo fluorescent extrafoveal area with late hyper-fluorescence and leakage. Blood investigations related to posterior uveitis were done revealing a significantly positive Quantiferon TB test.



On the basis of examination findings and investigations, Patient was diagnosed of a solitary choroid tuberculoma and was started on anti-tuberculosis therapy which was continued for 9 months.

Patient showed significant recovery within 6 months of treatment initiation with improvement in visual acuity to about 6/9. No recurrence of inflammation was recorded.

DISCUSSION

Most commonly effected site by mycobacterium tuberculosis is lungs known as pulmonary tuberculosis however other organs, like the eye can also get affected by this organism, leading to intraocular tuberculosis.³ Tuberculosis in eyes presents mostly in the form of uveitis, an inflammatory condition that can affect any layer of the eyeball. frequently ocular tuberculosis presents as posterior uveitis with choroid being the most common site affected.

Tuberculosis is a worldwide challenge with Asian countries being the hardest hit. Pakistan has a high tuberculosis burden in the WHO eastern Mediterranean region.

Patients with ocular tuberculosis present frequently in our clinical settings however diagnosing the condition is a challenging situation as the symptoms are variable and routinely performed tests are difficult to carry out.⁴ Isolating the organism and growing on culture is the corner stone of diagnosis, ocular tissue being a very small structure doesn't allow much sampling thus rendering tissue biopsy a very invasive task. In all the scenarios that we came across no typical signs of active tuberculosis like fever and weight loss were present. We suggested base line investigations in all the cases and a positive quantiferon test directed us to the right path. Since quantiferon is an immune base test its positivity doesn't signify an active infection also the test has got its limitations in immunocompromised people with being falsely negative in them.⁵

Through our case reports and the outcome of our treatment we strongly suggest the need for considering tuberculosis at the top of the differentials of posterior uveitis especially in our country. Measures should be taken for the easy availability and affordability of quantiferon test for latent Tuberculosis diagnosis. The disease flares up as soon as the immunity of the patient is compromised due to any factor. Quantiferon test has a specificity >95% for diagnosing latent TB infection hence it should be considered mandatory as a baseline investigation for patients presenting with uveitis as timely diagnosis and appropriate management can lower the complications of the disease. Quantiferon test is not an appropriate tool to gauge the response of the therapy hence clinical examination should be done regularly to monitor the response. A study published in December 2018 mentioned about Collaborative Ocular Tuberculosis Study (COTS-1) where data from 40 uveitis experts was gathered to address the current confusions related to diagnosis and management of intraocular tuberculosis. The study included 945 subjects out of which 74 percent were Asians. It highlighted the high prevalence of intraocular tuberculosis in Asian population and the differences in practice guidelines among physicians and the management of the disease.⁶ This study showed overall a better outcome of ocular tuberculosis in patients of Asian ethnicity as compare to rest of the countries.

Despite the fact that tuberculosis is a highly prevalent disease in our region and there are advancements in diagnostic tools, intraocular tuberculosis clinical diagnosis is a challenging situation and to completely cure the disease team work of ophthalmologist and internist is necessary to establish definite guidelines for its diagnosis and treatment.

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Submitted: March 28, 2020

Revised: August 26, 2020

Accepted: September 6, 2020

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