Nigerian Medical Journal
NIGERIA MEDICAL ASSOCIATION
Print ISSN 0300-1652, E-ISSN 2229-774X

Case Report

Bilateral Optic Atrophy and Epiretinal Membranes: An Atypical Presentation of Ocular Tuberculosis

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Abstract

A 15-year-old boy presented himself to the retina clinic with a six-year history of poor vision in both eyes. Ocular symptoms started with deterioration in the vision of both eyes associated with ocular pain. There was no history of antecedent trauma, headaches, seizures, or loss of consciousness. The general and systemic examinations were normal. On ocular examination, the corrected visual acuity was 6/24 and 6/6 in the right and left eyes, respectively. The anterior segment examination was normal except for a relative afferent pupillary defect in the right eye. Examination of the posterior segment revealed bilateral optic atrophy worse in the right eye and cup disc ratios of 0.3 bilaterally. The vessels were within normal limits with epiretinal membranes in both eyes. Yellowish chorioretinal lesions were present temporal to the disc in both eyes. There was a positive history of tuberculosis in the father and brother. A diagnosis of bilateral optic atrophy and epiretinal membranes secondary to presumed ocular tuberculosis was made.

Keywords: Choroidal Tubercles; Epiretinal Membrane; Optic Atrophy; Tuberculosis.

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How to cite: Babalola YO. Bilateral optic atrophy and epiretinal membranes: An atypical presentation of Ocular Tuberculosis. Niger Med J 2025; 66 (1):389-393.https://doi.org/10.71480/nmj.v66i1.711.

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Introduction

Tuberculosis (TB) is an infectious disease caused by mycobacterium tuberculosis. It is a multi-systemic disease that may affect the eye.[1] These ocular manifestations of TB are thought to be rare and represent about 5.1% of tuberculosis patients in the United States and 9.8% in Nigeria. [2, 3, 4]. Different ocular and adnexal structures may be involved including the conjunctiva, cornea, uveal tissue, sclera, optic nerve, and choroid. [1,4,5,6] Posterior segment involvement such as multifocal and serpiginous choroiditis, tuberculomas, choroidal tubercles, subretinal abscess, and neuro retinitis may be associated with TB. [9.10,11] Choroidal tubercles are visualized on the retina as white-gray or yellow lesions which have a predilection for the posterior pole. [7,8] Optic nerve involvement in tuberculosis may present as papillitis, neuro retinitis, optic nerve tubercle, compressive optic neuropathy, retrobulbar neuritis, optic neuritis, anterior ischemic optic neuropathy, and papilledema.[11] These lesions have been documented in association with tuberculous meningitis and optic atrophy and may be a sequela of optic neuritis in these patients.[11,12,13] Epiretinal membranes are abnormalities of the vitreoretinal interphase which may ensue in patients with uveitis from causes inclusive of tuberculosis amongst other aetiology.[14,15] Visual impairment may result from these manifestations of ocular tuberculosis.

Case Report

A 15-year-old boy presented himself to the Retina clinic with a six-year history of poor vision in both eyes. His complaints and symptoms started with a history of deterioration in vision of both eyes at the onset associated with ocular pain. There was no history of antecedent trauma, headaches, seizures, or loss of consciousness. The general and systemic examinations were essentially normal. On ocular examination, the best corrected visual acuity was 6/24 and 6/6 in the right and left eye respectively. The lids were normal, and the extraocular movements were full. The anterior segment examination was normal with no inflammatory cells or nodules in the anterior chamber and iris and clear lens. A relative afferent pupillary defect in the right eye. Examination of the posterior segment revealed bilateral optic pallor which was more marked in the right eye and cup disc ratios of 0.3 with distinct margins bilaterally. The vessels were attenuated with a few ghost vessels present towards the inferotemporal periphery of the retina. Yellowish, chorioretinal lesions measuring approximately 0.5mm by 0.5mm suggestive of choroidal tubercles, were present temporal to the optic disc in both eyes.

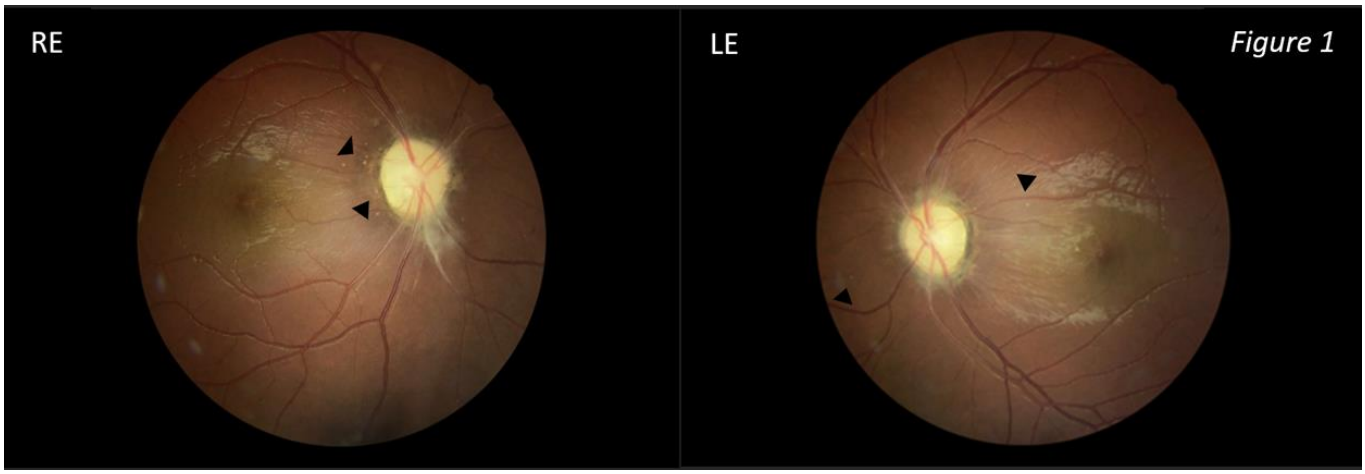

Figure 1: Fundus photographs of the right and left eye show marked disc pallor bilaterally, peripapillary degeneration, and gliosis. Choroidal tubercles (black arrowheads) are visible peripapillary and are more pronounced in the right eye. Epiretinal membranes are present on the maculae in both eyes.

Epiretinal membranes were present in both eyes which was confirmed with an optical coherence tomography scan.

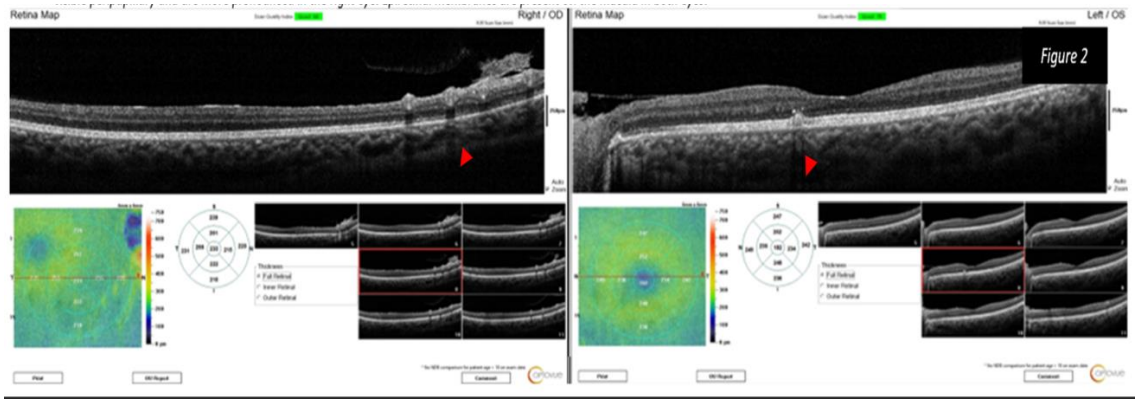

Figure 2: Optical coherence tomography scan shows epiretinal membrane, hyperreflectivity with back-shadowing of the choroidal tubercles (red arrowheads), and hyperreflectivity of the fibrotic scars in both eyes.

Intraocular pressures by Goldmann applanation tonometry was 11mmHg in both eyes. The general and systemic examinations were normal. The chest was clear with vesicular breath sounds and a respiratory rate of 22 cycles/minute.

Due to the morphology of the chorioretinal lesions observed, the mother was probed on possible contact with a patient with chronic cough or Tuberculosis. She admitted to the father being diagnosed with pulmonary tuberculosis five years ago which also coincided with the time of onset of symptoms in our index patient. His mother stated that all the family members were screened for TB by sputum examination with our index patient and the mother tested negative for TB while the sputum AFB test for his brother was positive. Subsequently, the father and brother had anti-tuberculous therapy for 9 months about five years prior to our patient's presentation at the Retina clinic.

The chest x-ray was within normal limits, retroviral screening was non-reactive, erythrocyte sedimentation rate (ESR) was 10mm/hr and the full blood count was within normal limits. Mantoux test measured 10 mm by 11mm. A gene Xpert test for sputum was done which was negative. These pointed to a possible extra-pulmonary tuberculosis affecting the eye. The central visual fields were constricted and more marked on the right eye. Colour vision was affected as our patient could identify only 6 plates out of 17 in the right eye and 11 plates out of 27 in the left eye respectively using the Ishihara colour test.

A cranial computerized tomography scan was done prior to the presentation at the retina clinic to rule out intracranial space-occupying lesions that were within normal limits. Due to the clinical findings and investigation results, an assessment of bilateral optic atrophy and epiretinal membranes secondary to presumed ocular tuberculosis was made. The patient was referred to the infectious disease unit for further review and management.

Discussion

The patient was seen at the retina clinic about six years after the onset of symptoms. He had been diagnosed with optic atrophy of an unknown etiology prior to his presentation at the retina clinic. He was referred to our clinic when a diagnosis of epiretinal membranes was made and subsequently, the choroidal tubercles were identified. This was consistent with the history of contact with a case of Tuberculosis and assisted in clinching the diagnosis. A similar case has been described in a 32-year-old male who had no signs nor symptoms of extraocular TB seen in our patient. [9] Choroidal tubercles are often seen in patients with miliary tuberculosis or tuberculous meningitis. Our patient had no features indicating miliary or tuberculous meningitis and no signs of pulmonary tuberculosis as the sputum test for acid-fast bacilli he did earlier which corresponded to the time of onset of symptoms was negative. [11,12,13]

Optic papillitis, neuro retinitis, and tubercles on the optic nerve amongst others are some of the varying presentations of optic nerve involvement in ocular TB.

There was a history of pain at the onset of symptoms, and this may be an indication of possible retrobulbar neuritis or papillitis which may occur with TB. Optic atrophy as seen in the patient may be a sequel to an inflammatory process involving the optic nerve head hence it is a secondary optic atrophy. [7,8,10,11] Visual loss from optic atrophy was the main factor for the patient's presentation to the eye clinic. He had no history of ingestion of anti-TB drugs such as Isoniazid and ethambutol which are known as a cause of optic neuritis.

As seen in this patient, optic atrophy was one of the ocular manifestations in an observational study of a group of patients with tuberculous meningitis and a group of patients with TB in Nigeria. [4,16] Bilateral visual loss due to optic atrophy was also the initial presentation in a female, immunocompetent patient but unlike our patient, the cranial computerized tomography scan revealed features of chronic tuberculous meningitis.[17] Epiretinal membrane formation in uveitis is not an unusual finding. [14,15,18] The discovery of the epiretinal membrane was the reason for the patient's presentation at the retina clinic before the choroidal tubercles were identified. The formation of epiretinal membranes epiretinal membranes has been described in a patient with Eales' disease, believed to be due to tuberculosis who presented with poor vision associated with vitreoretinal traction.[14]

The inflammatory process of tuberculosis would have led to optic neuritis with the after-effect of optic atrophy and the development of epiretinal membranes. Presuming the patient presented at the onset of his symptoms, he would have been seen by the chest physicians, had a chest X-ray, and commenced anti-TB. From the ophthalmology point of view, if optic disc swelling was present on ocular examination, systemic steroids would have commenced, and if signs of anterior segment examination, topical steroids and dilating drops such as Atropine would have been added. This could have been prevented if the index patient presented to the ophthalmologist at the onset of ocular symptoms. Cases of optic atrophy occurring in isolation and likewise epiretinal membrane occurring in ocular TB have been documented. The coexistence of both epiretinal membrane and optic atrophy with choroidal tubercles is rare to the best of our knowledge. Optic atrophy may be the initial presentation of tuberculosis. Despite the history of TB in his father and sibling, this patient had a negative sputum AFB for acid-fast bacilli. Screening for extrapulmonary manifestations of TB such as ocular TB when there is a positive history of contact with a patient with Tuberculosis. [6] It may be fundamental to recommend ocular screening in all patients diagnosed with TB in the national treatment protocol to reduce visual impairment from these ocular manifestations of TB as seen in our index patient.

Conclusion

Optic atrophy may be the initial presentation of ocular tuberculosis. Awareness of the affectation of the eye by tuberculosis is essential amongst all physicians. A high index of suspicion, detailed clinical history, and ocular examination are key in limiting visual impairment from Tuberculosis.

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