

A RARE CASE OF OPTIC NEURITIS BY RELAPSE OF CHOROIDAL TUBERCULOMA

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PRESENTATION OF THE CASE

Solitary choroidal tuberculoma is a rare disease which possesses diagnostic and therapeutic challenges. There is a dearth of literature discussing its presentation and outcome. We present a 28 years-old female presented with unilateral drop in vision (20/80) in left eye for last 15-days. Fundoscopy showed positive vitreous cells with choroidal granulomatous lesion involving inferotemporal arcade and extending into posterior pole. Positive QuantiFERON test and tuberculin-skin-test established the diagnosis of tuberculosis. There was no past history of tuberculosis. Laboratory and radiological examination revealed no evidence of systemic tuberculosis. Treatment was initiated with first line Anti-Tubercular Treatment (ATT) and oral steroids. Choroidal lesion regressed for 2-months and visual acuity was maintained at 20/30. Subsequently relapse was noted with a new tubercular granuloma causing optic neuritis with relative afferent pupillary defect. Sudden worsening of visual acuity to hand movement perception was noted. Intravenous methyl prednisolone showed partial remission of inflammation and resolution of granuloma was noted at the end of 6-months of ATT. However, secondary optic atrophy could not be averted and the visual acuity at the end of treatment was 20/500. This is one of the rare cases of relapsed choroidal granuloma showing atypical location of tuberculosis and presenting as sight threatening optic neuritis.

A 28 years old female presented with painless blurring of vision for 15 days in left eye. Her best corrected visual acuity measured on Snellen's chart was 20/80 and N18 for distant and near vision respectively in left eye. Right eye was normal with a visual acuity of 20/20 and N6 for distant and near vision.

Anterior segment was normal on slit lamp examination and intraocular pressure was normal. Vitreous showed grade 1 haze (according to National Eye Institute Grading System for Vitreous Haze). On fundus examination, there was an ill-defined, elevated yellow (slightly pigmented) subretinal

mass measuring 5x3.5-disc diameters in dimension and located 2-disc diameter inferotemporal to the optic disc extending to macula in the left eye (Figure 1 and Figure 2). Foveal reflex was absent with epiretinal membrane and cystoid macula oedema. Optical coherence tomography (OCT) of the same is shown in Figure 3. B scan ultrasound showed acoustic hollow mass measuring 13.5 x 4.67 x 3.5 millimeters.

On further investigation, ESR was raised (45 mm/hr) but HIV, toxoplasma titres and angiotensin converting enzyme titres were not elevated. QuantiFERON-TB test was positive and Tuberculin Skin test showed 26 mm of induration. The patient did not receive BCG vaccination but on further examination and investigations, no pulmonary or systemic involvement of tuberculosis was found.

CLINICAL DIAGNOSIS

The diagnosis of solitary choroidal tuberculoma was made with initiation of systemic first line ATT.

DIFFERENTIAL DIAGNOSIS

The differential diagnosis of choroidal tuberculoma include sarcoidosis, toxoplasmosis, syphilis, brucellosis, histoplasmosis, metastases, amelanotic melanoma, infective abscess which have been ruled out by clinical and laboratory evaluation.¹ OCT is very helpful in differentiating choroidal granuloma from other non-inflammatory conditions. The contact sign-attachment between the retinal pigment epithelial-choriocapillaries layer and the neurosensory retina over the granuloma was not clearly visible due to lack of enhanced depth imaging (EDI) in OCT. Fluorescein angiography and B-scan, can assist in excluding other diagnoses, especially intraocular tumours (e.g., melanoma) or infective abscesses.² Fluorescein angiography was not performed in this case since the diagnosis was confirmed by laboratory tests and specific OCT findings. Choroidal tuberculoma possess a diagnostic and therapeutic challenge as the histopathological confirmation of tubercular bacteria from the posterior chamber is not practical, can be performed mostly in the enucleated eye.³ Systemic features of military tuberculosis, clinical examination, fundus examination, OCT, fundus fluorescein angiography, radiological examinations, Polymerase Chain Reaction (PCR), QuantiFERON assay and histopathological confirmation are used for the detection of tubercular granuloma. Choroidal tuberculoma is difficult to diagnose in patients with no other systemic features of tuberculosis. To the best of our knowledge eight such cases have been reported previously. Tuberculin skin test, DNA PCR,

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QuantiFERON-TB were used for the diagnosis in cases.^{2,4,5,6,7} QuantiFERON-TB being more sensitive than other methods is being increasingly used to diagnose tuberculosis. It has higher specificity than Tuberculin Skin Test and is unaffected by previous BCG vaccination.⁸ The aqueous chamber tap may not show AFB and often show negative polymerase chain reaction for tuberculosis.¹ Vitreous or fine needle aspiration biopsy may be useful in clinching the etiological diagnosis in difficult situations. RT-PCR of the intraocular fluid is being increasingly used for diagnosis in patients presenting with isolated uveal tuberculoma with negative systemic tuberculosis evaluation.⁹

PATHOLOGICAL DISCUSSION

Tuberculosis is an infectious disease caused by mycobacterium tuberculosis and it primarily involves lung. Many other organs including eye may be affected by tuberculosis. Ocular involvement in tuberculosis is relatively rare with occurrence reported in 1% of all cases of tuberculosis.¹⁰ It can occur with or without any systemic features of tuberculosis and most common presentation is in the form of choroiditis.^{2,10} Choroidal tuberculosis usually is unilateral, either as solitary or multiple lesions (tubercles) in the posterior pole which are yellow and ill-defined.^{10,11} The retinal vessels overlying these lesions appear normal but hemorrhage, striae and exudative retinal detachment may occur.¹¹ Rapid multiplication of bacilli in tuberculoma can lead to serous exudative retinal detachment.¹² The inflammatory changes and retinal changes are minimal in a patient with acquired immunodeficiency.¹³

Ocular involvement of tuberculosis can occur due to direct infection (hematogenous spread) or indirectly due to immune-mediated hypersensitivity reaction.¹ Hematogenous seeding of systemic tuberculosis may involve uveal tissues due to their rich vascular structure. Tubercular uveitis in absence of systemic manifestations of tuberculosis may represent hypersensitivity reaction towards tubercle DNA.⁴ Hence the treatment of tubercular manifestation may involve starting anti-tubercular therapy and/or steroids.¹⁰ Sporadic cases of choroidal tuberculoma have been reported to respond to anti-tubercular treatment and/or steroids. But relapse during treatment of tuberculoma with no systemic sign of tuberculosis has never been reported. We report a rare case of choroidal tuberculoma showing resolution with Anti Tubercular Treatment (ATT) and steroids during initial therapy, but it relapsed with optic neuritis during continuation phase leading secondary optic atrophy. The inflammatory changes associated with choroidal tuberculoma may lead to optic neuritis and can cause secondary optic atrophy in an immunocompetent patient as noted in our case report.

Prompt diagnosis and systemic treatment with first line anti tubercular therapy (ATT) can lead to visual recovery and involution of choroidal tuberculoma to a flat inactive scar.¹² ATT regimen comprising isoniazid, rifampin, pyrazinamide, and ethambutol for a total of 6-12 months has been accepted as standard therapy.^{1,7,10,12} Ethambutol was replaced by Levofloxacin due to ocular side effects

associated with ethambutol. With clinical evidence of response, the 2-month initiation phase should be followed by 4-month of consolidation phase (isoniazid and rifampin). The size of tuberculoma may shrink and there is usually a demonstrable reduction in inflammation.¹⁴ But in the present case, a favourable response to treatment was demonstrated by the shrinking of the tuberculoma at the end of 12 weeks of treatment. When patient was shifted to continuation phase, there was relapse with another tuberculoma emerged involving optic disc. Features of optic neuritis were predominant. Although it resolved, it led to secondary optic atrophy and permanent blindness. This is the first case report of relapsed solitary choroidal tuberculoma without any systemic feature of tuberculosis. The probable cause of relapse could be presence of partial drug resistance tuberculosis or may be selection of drug resistant mutant bacilli in tuberculoma.

Relapsing choroidal granuloma is an atypical presentation of ocular tuberculosis which can also present as sight threatening optic neuritis. We recommend checking patient compliance for the treatment on everyday bases with the antibiotic sensitivity profile assessment in all possible cases presenting with ocular tuberculosis.



Figure 1 and 2. Shows Colour Fundus Photograph of the Left Eye Showing Choroidal Tuberculoma

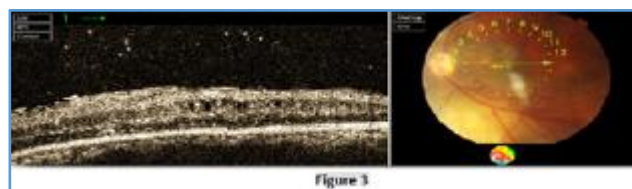


Figure 3. Optical Coherence Tomography of the Left Macula showing Cells in the Vitreous, Loss of Foveal Contour, Epiretinal Membrane with Intra Retinal Cystoid Spaces and Granularity of the Outer Photo Receptor and Proliferating Retinal Pigment Epithelium

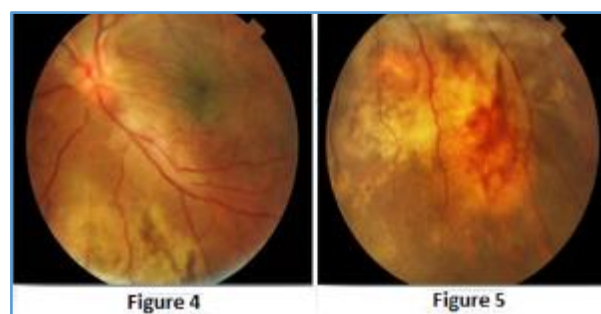


Figure 4 and 5. Shows Colour Fundus Photograph of the Left Eye Showing Pigmented Scar of Resolving Choroidal Tuberculoma

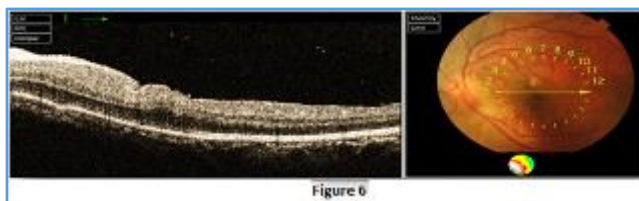


Figure 6. Optical Coherence Tomography of the Macula showing Reduction in the Vitreous Cells, Granularity of Outer Photo Receptors and Retinal Pigment Epithelium

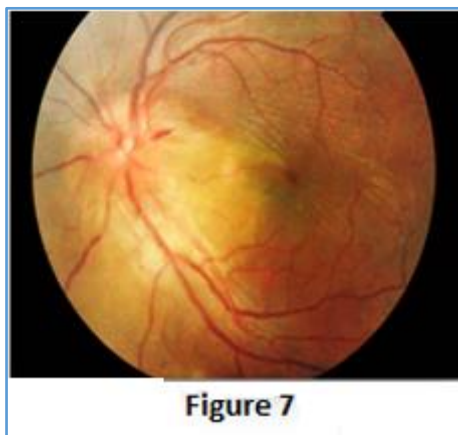


Figure 7. Recurrence of Solitary Choroidal Tuberculoma Causing Optic Neuritis



Figure 8. Resolving Tuberculoma and Optic Neuritis

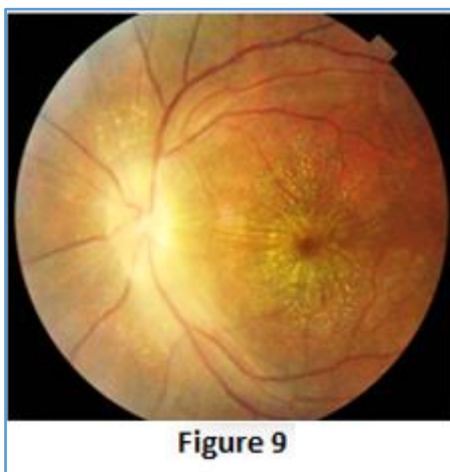


Figure 9. Showing Macular Star



Figure 10. Complete Resolution of the Tuberculoma, Macular Star and the Optic Neuritis with Secondary Optic Atrophy

DISCUSSION OF MANAGEMENT

Isoniazid 5 mg/kg, rifampicin 10 mg/kg, pyrazinamide 30 mg/kg and levofloxacin 750 mg/kg were initiated to avoid potential ocular toxicity of ethambutol. Oral corticosteroids were started at the dose of 1 mg /kg. The intensive phase of two months was followed by continuation phase with isoniazid and rifampicin for 4 months.

Choroidal granuloma showed complete regression in 6 weeks of treatment (Figure 4 and 5) with improvement documented in the OCT (Figure 6). Visual acuity improved to 20/30 and N6 in the left eye and was maintained for a period of 12 weeks. Choroid granuloma relapsed while the patient was on continuation phase of ATT at the 13th week of treatment. The patient presented with acute loss of vision for last 2 days. On examination there was 2.5x2 disc diameter granuloma involving optic disc causing optic disc oedema with haemorrhages (Figure 7). Relative afferent papillary defect was present and visual acuity dropped to perception of hand movements suggestive of optic neuritis.

Diagnosis of relapse of choroidal tuberculoma was made. Considering the sight threatening property of lesion patient was started on intravenous methyl prednisolone (IVMP) 1 G/day for 3 days followed by oral prednisolone 1 mg/kg with 7 days tapering of the same, along with isoniazid and rifampicin as continuation phase of ATT. Lesion showed regression with macular star formation at the end of 18th week and 20th week respectively (Figure 8 and 9) with the continued treatment. There was slight improvement in visual acuity due to remission of inflammation. At the end of 6 months of treatment patient had 20/500 vision in her left eye. Changes of secondary optic atrophy were visible (Figure 10). The visual acuity in right eye was maintained at 20/20 and N6 for distant and near vision.

FINAL DIAGNOSIS

Unilateral Optic Neuritis due to Relapse of Choroidal Tuberculoma.

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