The Retinal Spectrum of Ocular Tuberculosis

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Tuberculosis is a chronic infection caused by Mycobacterium tuberculosis and Mycobacterium bovis. Ocular TB, involving any tissue of the eye, is a rare event. It occurs in 1% of all cases of TB. Mycobacteria can hematogenously disseminate to the eye and choroid is the most common initial site of intraocular tuberculosis.

Tuberculous panophthalmitis was common before the era of antitubercular treatment. Recently tuberculosis has come into focus because of its association with HIV and AIDS.

Anterior segment involvement can be seen as
1. Palpebral conjunctival ulcerations
2. Granulomatous or nongranulomatous anterior uveitis with or without keratitis
3. Scleritis

Retinal involvement usually present as
1. Choroidal tubercles
2. Choroidal tuberculomas
3. Suprachoroidal abscess
4. Retinal vasculitis, ischaemia, and venous occlusions

**Choroidal tubercles**

Choroidal tubercles are seen in 1.4% to 60% of patients with different forms of tuberculosis. Size ranges between 0.3-3.0 mm. Choroidal tubercles are frequently unilateral close to the posterior pole. They appear as polymorphic yellow white lesions with indistinct borders (Fig. 1). They appear slightly hyperfluroscent on fluorescein angiography (Fig. 2). The tubercles are initially flat, variable in size and exhibit variable pigmentation. Vitritis, papillitis and an overlying serous retinal detachment may be seen with choroidal lesions.

**Choroidal tuberculomas** can involve the macula and lead to severe visual loss. If appropriate treatment is not given, it may progress to gross vision loss. Fig. 3,4,5.

**Exudative retinal detachment** can very rarely be caused by large choroidal tubercles due to inflammatory exudation (Fig. 6, 7).

**Miliary tubercles** appear as pale yellow spots and are found in acute miliary tuberculosis, especially tuberculous meningitis, usually as a late event. It is a most important diagnostic evidence of tuberculosis in cases of meningitis and obscure general disease (Fig. 8).

**Choroidal tuberculomas**

They may involve retina and retinal vessels over it. This can lead to formation of hard exudates around the mass. Choroidal tubercles appear hypofluorescent in early phases and hyperfluorescent in late stages (Fig. 9-11).
Fig. 3. Choroidal tubercle with surrounding retinitis with gross macular destruction

Fig. 4. FFA-Choroidal tubercle with surrounding retinitis with gross macular destruction

Fig. 5. FFA - Late phase Choroidal tubercle with surrounding retinitis with gross macular destruction

Fig. 6. Tuberculous exudative retinal detachment

Fig. 7. FFA-Tuberculous exudative retinal detachment

Fig. 8. Multiple miliary tuberculosis of choroid

Fig. 9. Choroidal tuberculoma

Fig. 10. Choroidal tuberculoma (fluorescein angiography)

Fig. 11. Choroidal tuberculoma (fluorescein angiogram)

Fig. 12 (a) Large supra-choroidal abscess

Fig. 12 (b) fluorescein angiography of large suprachoroidal abscess

Fig. 13. Montage view of the same abscess

Fig. 14. Retinal vasculitis, hemorrhages and inferotemporal venous occlusion

Fig. 15. FFA showing gross peripheral retinal ischaemia of the same patient

Fig. 16. Post papillitis optic atrophy

Fig. 17. Neuroretinitis with macular star appearance

Fig. 18. Disc leakage seen on FFA in the same patient

Fig. 19. Multifocal choroiditis

Fig. 20. Resolving multifocal choroiditis after starting ATT
Suprachoroidal abscess

Large choroidal tuberculomas may undergo caseous necrosis and lead to abscess formation which may be very difficult to drain (Fig. 12 a & b; Fig. 13).

Retinal vasculitis, Venous occlusions and Neovascularisation

TB has also been associated with Retinal vasculitis, ischemia, and venous occlusions. Finally neovascularisation occurs with a high risk of intraocular hemorrhage (Fig. 14, 15).

Papillitis

Affection of optic disc can lead to papillitis. This is a rare presentation. In this case, the patient came with post papillitis optic atrophy (Fig. 16).

Neuroretinitis

Sometimes, neuroretinitis with a macular star can be due to tuberculosis which may be complete or incomplete (Fig. 17, 18).

Multifocal choroiditis

Rarely multifocal choroiditis can also be seen. This case presented with multifocal choroiditis which resolved after anti-tubercular treatment as seen in 2nd photo (Fig. 19, 20).

Rare presentations

- There has been a report of generalised miliary tuberculosis with retinal haemorrhages
- Presumed ocular tuberculosis presenting as a branch retinal vein occlusion in the absence of retinal vasculitis or uveitis has recently been reported
- Macular subretinal neovascularisation can also occur in choroidal tuberculosis
- Peripheral multifocal choroiditis has also been observed

Treatment

Treatment of ocular tuberculosis is similar to that of pulmonary disease. A four drug regimen of isoniazid, rifampicin, pyrazinamide, and either streptomycin or ethambutol for 2 mths is followed by isoniazid and rifampicin for next four months. Treatment should be coordinated with the physician

References