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Silent occlusive retinal vasculitis in a patient with pulmonary Tuberculosis

Abstract - The presence of retinal vasculitis in patients with pulmonary tuberculosis is not uncommon. However, asymptomatic presentations are quite rare. Here, we present a case of 25-year-old Malay gentleman with pulmonary tuberculosis, who was referred for an eye assessment following initiation of anti-tuberculosis drugs. His vision was good; he had no other symptoms despite having retinal neovascularization, pre-retinal haemorrhages and healed choroiditis at the fundus of the left eye. Fundus fluorescein angiography showed multiple areas of capillary fallouts at the superotemporal quadrant of the left eye with leakage from the retinal neovascularization. He was treated with laser retinal photocoagulation and oral steroids for 6 weeks, while the anti-tuberculosis drugs were continued for 9 months. Subsequent follow-ups showed regression of the neovascularization. He has remained asymptomatic since his initial visit to the eye clinic.

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1 INTRODUCTION

Tuberculosis (TB) is one of the major public health problems in Malaysia. Despite being a curable and preventable disease, its annual incidence has been increasing to the current 96 per 100,000 population per year (1). With *Mycobacterium* as the causative agent, TB can infect any structure in the body, including the eyes. Ocular TB can occur as a result of direct hematogenous spread to the eye following a primary infection, or by a hypersensitivity response (2). Ocular TB in the presence of active systemic TB is rare, with an incidence of only 1.72% (3). Nevertheless, numerous studies have shown that its prevalence varied by region and country. Patients with ocular TB can present in many ways; the most common presentation of which is uveitis (4, 5). Here, we present a rare case of silent occlusive retinal vasculitis in a pulmonary TB patient. This case highlights the ocular features of the disease and the importance of early intervention to prevent potential blindness.

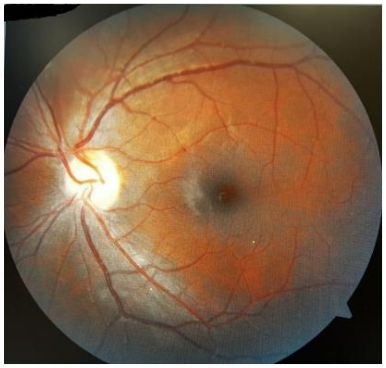
2 CASE REPORT

A 25-year-old Malay gentleman, presented to a local health clinic with history of cough and fever for more than 2 weeks. Chest X-ray revealed a consolidation at the lower lobe of the left lung. Mantoux test was positive while sputum stain positive for acid-fast bacilli (AFB). Anti-TB treatment was initiated, after which he was referred to us for eye screening. Otherwise, he had no ocular complaints.

Initial assessments of the eyes were normal. During follow-up 3 months later, there were no visual symptoms, with 6/6 visual acuity of both eyes. There were no colour and visual field defects. Both anterior segments were unremarkable and there were no afferent pupillary defects. The fundus of the right eye was normal as well. However, the fundus of the left eye showed retinal neovascularization at peripheral ends of the superotemporal vessels, with adjacent streaks of preretinal haemorrhages. There was a small, healed area of choroiditis inferior to these. Otherwise, there was no sheathing or perivascular cuffing. The optic disc

and macula were normal with no evidence of vitritis or retinitis. Fundus fluorescein angiography (FFA) showed multiple areas of capillary fallouts at the superotemporal quadrant of the left eye with leakage from the neovascularization.

Laser retinal photocoagulation was initiated. He was also started on oral prednisolone 30 mg (0.5 mg/kg) daily for 2 weeks with subsequent tapering over 6 weeks. Anti-TB drugs were continued for 9 months. Subsequent follow-ups showed regression of the neovascularization. He has remained asymptomatic since his initial visit to the eye clinic.



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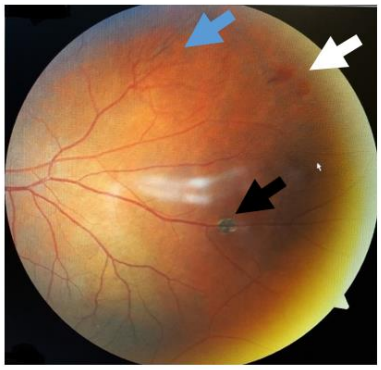
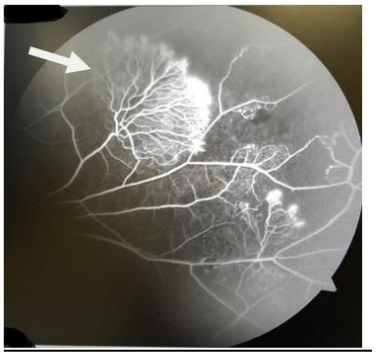


B

Figure 1: Photograph of the left fundus.
A: Normal posterior pole.
B: Neovascularization (blue arrow) at the end of superotemporal vessels with preretinal hemorrhages (white arrow). Healed choroiditis (black arrow) inferior to it.



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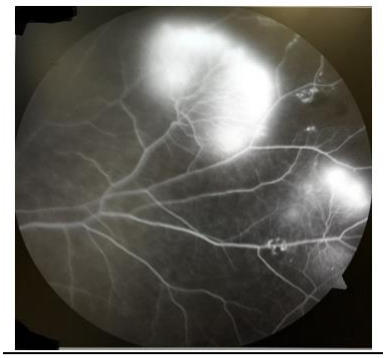

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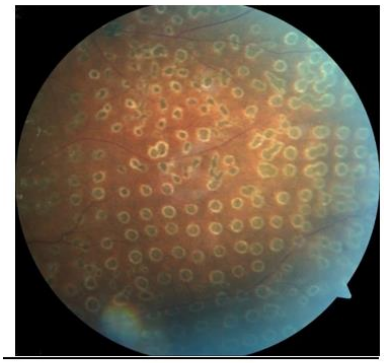

C

Figure 2: Photograph of the left fundus at the superotemporal quadrant.
A & B: Fundus fluorescence angiography showed areas of capillary non-perfusion and leakage (white arrow) from neovascularization.
C: Multiple laser marks with regression of neovascularization after completed retinal photocoagulation laser.

3 DISCUSSION

The Malaysian Clinical Practice Guidelines for the Management of Tuberculosis in 2012 advocated baseline eye screening upon initiation of anti-TB drugs (6). This is for the detection of the side effects of the drugs, particularly ethambutol, which include optic neuritis (7). Patients are usually referred for baseline visual acuity tests, and follow-ups are done every 3 months until the completion of treatment. This patient had a baseline eye screening, but retinal vasculitis was detected only during the second scheduled follow-up session. He was otherwise asymptomatic and had good vision. This emphasises the importance of regular ocular examinations when patients are on anti-TB drugs. Hence, it is crucial to look not only for the side effects, but also TB-associated ocular features, as with our case.

Ocular TB is often unilateral, and the most common presentation of this condition in patients with systemic TB is choroiditis or choroidal mass (8). This is due to the hematogenous spread of tubercle bacilli from distant foci of infection. In our case, the ocular involvement was unilateral, with the presence of healed choroiditis and retinal vasculitis. He was on anti-TB drugs prior to the discovery of these findings. Therefore, the detection of healed choroiditis was not surprising as it was a response to the treatment. Retinal vasculitis may arise due to hypersensitivity reactions to *Mycobacterium tuberculosis* rather than the infective process (9). It is postulated that the antibody-antigen complex reaction leads to hypersensitivity-like reactions, subsequently resulting in the occlusion of blood vessels (10). This leads to ischemia and ultimately, neovascularisation.

Retinal vasculitis in TB more commonly involves veins than arteries. The condition is typically occlusive in nature (11). Active retinal vasculitis is characterised by the sheathing or cuffing of blood vessels and vitritis. Late changes include neovascularisation, which can lead to vitreous haemorrhage, fibrovascular proliferation, and finally, tractional retinal detachment. All of these can result in vision loss. A local study by Fang et al. (10) reported 3 cases of severe tuberculous retinal vasculitis. The patients presented with visual disturbances due to severe vitritis, macular exudates, vitreous haemorrhage, and retinal detachment. In our patient, his vision remained normal because (i) there was no vitritis or macular involvement, and (ii) the neovascularization and preretinal haemorrhages were located at the periphery of the retina. A study by Hoh et al. (12) reported similar clinical symptoms when the patient underwent eye screening following the commencement of anti-TB drugs; which revealed bilateral periphlebitis, although the patient was visually asymptomatic.

FFA in this case showed multiple areas of capillary fallouts with leakages from the neovascularisation. Also, the lesions were located at the periphery of the retina. These features were suggestive of TB infection rather than the other etiologies of retinal vasculitis (13). Furthermore, in the Asian population, tuberculous retinal vasculitis should be suspected if there are marked capillary fallouts with mild vitritis (2).

The diagnosis of retinal vasculitis in ocular TB is challenging as the lesions cannot be subjected to bacteriological or histological investigations (9). Gupta et al. (4) proposed a guideline for the diagnosis of ocular TB to aid clinicians to determine the situations in which treatment should be initiated. In view of the difficulty or impracticality in obtaining ocular tissues for diagnosis, most cases are usually diagnosed as presumed ocular TB. Umi et al. (14) reported a case of bilateral retinal vasculitis without inflammation in a 17-year old female. The diagnosis was presumed ocular TB, based on positive Mantoux test and elevated erythrocyte sedimentation rate (ESR). Furthermore, the patient responded well to anti-TB drugs, steroid, and laser retinal photocoagulation (14). However, in our case, the patient had a background of active pulmonary TB. With a strong association with this disease and the presence of healed choroiditis, other possible etiologies of retinal vasculitis had been ruled out. This made diagnosis of ocular TB more likely.

Our patient was started on oral corticosteroids, while laser retinal photocoagulation was conducted in view of neovascularization. The reason for corticosteroid therapy was to limit the ocular tissue damage caused by hypersensitivity reactions (4). The anti-TB regimen was continued for 9 months. The patient responded well to treatment. Fortunately, no further complications arose and his vision remained normal throughout the follow-up period.

4 CONCLUSION

This case demonstrated that ocular manifestations can develop silently in the presence of systemic TB. It also highlights the importance of eye screening in patients with pulmonary TB despite their having good vision and being asymptomatic. Eye screening should not be solely focused on the detection of side effects of anti-TB drugs, but also to look for TB-related ocular manifestations. Early detection of sight–threatening ocular manifestations can prevent untoward blindness.

CONFLICTS OF INTEREST

The authors report no conflicts of interest. The authors alone are responsible for the content and writing of the paper.

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