CASE REPORT

Unilateral Isolated Ocular Tuberculosis with no systemic involvement

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Abstract
A case of tuberculous anterior uveitis in a 42 years old lady is reported. She presented with typical signs of anterior uveitis in the left eye. There was no systemic tuberculosis in the body. The diagnosis was based on eye signs, raised ESR, positive tuberculin test and positive response to isoniazid test. She regained normal vision with antituberculous treatment. This case highlights that ocular tuberculosis may occur in the absence of systemic disease; early diagnosis and prompt treatment may prevent ocular morbidity and blindness.

Keywords: Ocular Tuberculosis; Uveitis; Granulomatous; Koeppe nodule.

INTRODUCTION
Ocular tuberculosis can manifest a myriad of clinical presentation and the definitive diagnosis can be daunting due to the difficulty of getting ocular samples for microbiologic or histologic evaluation. Granulomatous anterior uveitis may be a primary manifestation of ocular tuberculosis. The disease may also present with severe non-granulomatous anterior uveitis. Uveitis may be acute relapsing, or chronic and persistent. Tubercles may be seen on the iris, and more commonly in the choroid with associated focal choroiditis. In a case records study of 8759 cases of uveitis, Rathinam and Namperumalsamy reported that tuberculosis was found to be the cause in 5.6% of all types of uveitis (anterior, intermediate, posterior, diffuse); and in 4% of 5028 anterior uveitis patients. They reviewed the pattern of uveitis of 15221 cases reported from several countries over 35 years and found that tuberculosis comprised between 0.2% and 10.5% as aetiology of uveitis. Literature search did not show any data on the aetiology of uveitis in Malaysia. We report a case of tuberculous anterior uveitis, the diagnosis of which was based on typical signs of anterior uveitis, absence of systemic tuberculosis in the body, raised ESR, positive tuberculin test and positive response to isoniazid test.

CASE REPORT
A 42 years old Chinese lady presented to our eye clinic on 1/6/2005 with the complaints of blurring of vision and redness of the left eye for the past 2 months with worsening of condition over the past 3 weeks. She had no history of chronic cough or fever, no significant past medical history and no family history of tuberculosis. She was not on immunosuppressive therapy. She saw a general practitioner who gave eye drops with no improvement.
Ocular examination of the left eye showed a visual acuity of 6/60, not improving with pinhole. There was circumcorneal injection. Slit lamp examination showed mutton fat keratic precipitates on the inferior half of the corneal endothelium; +++ cells in the anterior chamber. A Koepppe nodule was noted between 5 and 6 o’clock position, and posterior synechiae at 8 o’clock (Figure 1).

There was no hypopyon or rubeosis irides. Intraocular pressure was 16 mm Hg. Fundus examination revealed vitreous condensations. However, there was no evidence of active vitritis. The optic disc was pink with a cup-disc ratio of 0.3 and the retina was normal. There was no perivascular sheathing or choroidal tubercle.

Examination of the right eye was normal, with a 6/6 visual acuity. Intraocular pressure was 16 mmHg; anterior and posterior segments were normal.

Examination of the respiratory system showed clear lungs with no palpable regional lymph nodes. The rest of systemic examination was unremarkable.

A provisional diagnosis of anterior granulomatous uveitis was made. Gutt dexamethasone 0.1% four hourly and gutt homatropine 2% tds were started for the left eye. Blood investigations were carried out for full blood count, renal profile, erythrocyte sedimentation rate, connective tissue disease screening, toxoplasma specific IgG and IgM, VDRL, sputum for acid-fast bacilli and Mantoux test. A chest radiograph was also done.

The patient was reviewed one week later. Visual acuity of the left eye had improved to 6/18. Keratic precipitates were less in the size. The inflammatory reaction in the anterior chamber was less (++ cells). Pupil was irregular and dilated. All blood investigations were normal except raised erythrocyte sedimentation rate (32mm/hour). The Mantoux test was strongly positive with a blister measuring 25mm. The chest radiograph was normal. A diagnosis of ocular tuberculosis in the left eye was made and the patient was started on anti-tuberculosis therapy which consisted of ethambutol 800mg once daily, isoniazid 300mg once daily, rifampicin 600 mg once daily, pyrazinamide 1000 mg once daily and pyridoxine 10 mg once daily.

On a review 2 weeks later, the visual acuity of the left eye had further improved to 6/12 and the anterior segment findings remained the same. However, she developed vitritis (+++ cells) with a hazy fundus view. Anti-tuberculosis therapy and topical steroids were continued. Two weeks later, visual acuity of the left eye had improved to 6/9 and the vitritis had reduced (+ cells). There was no retinal vasculitis or choroidal tubercle.

On three successive follow up visits to the clinic at two-weeks interval, the inflammatory cells in the anterior chamber had reduced to occasional cells and there were no cells in the vitreous; the topical steroids were reduced to a qid for 2 weeks, tds for 2 weeks, bd for 2 weeks and od for 2 weeks in left eye; and then stopped. The intraocular pressure was 17-19 mm Hg during the follow up period. On completion of the 3-month intensive regime of the anti-tuberculosis treatment, the visual acuity of the left eye was 6/12 with quiet anterior and posterior segments. The left fundus was normal. The intensive anti-tuberculosis treatment regime was subsequently switched to a maintenance regime consisting of isoniazid 300 mg daily and rifampicin 600 mg daily for six months. On the completion of the regime, the visual acuity of the left eye
had improved to 6/6. The anterior and posterior segments of the left eye were quiet. The intraocular pressure in left eye was normal (18 mm Hg). The left eye remained quiescent with a visual acuity of 6/6 on the subsequent follow-up sessions in the next three months. The right eye remained unaffected throughout the course of the disease.

**DISCUSSION**

Endogenous Tuberculosis is a curable disease and it is one of the major causes of morbidity and mortality worldwide. It is estimated to affect 1.86 billion individuals with 8 million new cases and 1.87 million deaths annually in the world. Ocular tuberculosis is relatively rare, comprising of 1% of all cases of tuberculosis. It is often a result of haematogenous spread or hypersensitivity reaction to the Mycobacterium tuberculosis antigen from a distant foci in the absence of any infectious agent in the eye. Tuberculosis may affect any part of the eye, the most common site being the choroid because of its high level of blood supply and oxygenation. The infection may be primary or secondary in nature. There is no systemic lesion in primary ocular tuberculosis and the infection is usually restricted to the conjunctiva and cornea and may present as an ulcer, a tumour mass, phlyctenulosis or interstitial keratitis. In secondary tuberculosis, the infection occurs as a result of local spread from an adjacent structure or haematogenous spread, mainly from the lungs. Ocular tuberculosis is frequently unilateral or asymmetric. The most common manifestation is choroiditis followed by anterior uveitis and sclerokeratitis. Ocular tuberculosis may masquerade as ocular neoplasm. Our patient presented with granulomatous anterior uveitis with the characteristic mutton fat kerato-precipitates, iris nodules and posterior synechiae but there was no choroidal involvement throughout the course of the disease.

The definitive diagnosis of tuberculosis requires a positive culture of Mycobacterium tuberculosis from tissue samples. Ocular tuberculosis is often difficult to diagnose owing to its similar clinical features of other causes of uveitis, the invasiveness of obtaining tissue samples and the limitations of the available diagnostic tests. An initial work-up with negative results should not eliminate tuberculosis from the differential diagnosis. A thorough history and a complete physical examination are mandatory in addition to the investigations. Sputum for acid-fast bacilli is carried out to diagnose pulmonary tuberculosis as this method detects the infectious cases of tuberculosis and it is highly specific and inexpensive and this was negative in this patient. Mantoux skin testing with purified protein derivative of tuberculin is a widely used test for screening but it is of limited value in the diagnosis because false negative reaction is found in immunosuppressed patients and false positive is observed in individuals vaccinated with bacilli Calmette-Guerin. It has been postulated that hypersensitivity to mycobacterial antigens plays a role in the pathogenesis of anterior uveitis. Mantoux test was strongly positive in our patient with a blister measuring 25 mm. Polymerase chain reaction is a recent rapid diagnostic technique in which the mycobacterial DNA is amplified and detected with high sensitivity and specificity. This test is of paramount importance in diagnosing primary ocular tuberculosis as only a small amount of aqueous humour is needed. The detection of anti-cord factor antibody via enzyme-linked immunosorbent assay (ELISA) is another new diagnostic method. Cord factor (trehalose-6, 6′dimycolate) is the most characteristic cell wall component of the tubercle bacilli and the detection of antibodies against the cord factor antigen supports the diagnosis of tuberculosis. The isoniazid therapeutic trial, also known as Schlagel test consists of a course of isoniazid of 300 mg daily for 3 weeks. A positive test consists of a dramatic improvement in 1 to 3 weeks of treatment. The treatment of ocular tuberculosis is aimed at the infection and the inflammatory reaction. Primary treatment for ocular
Ocular Tuberculosis

tuberculosis should be systemic with a multi-drug combination because pulmonary or other foci of infection may coexist. Multi-drug therapy also avoids mycobacteria resistance. An initial clinical response usually occurs in 2 weeks. The American Thoracic Society recommends a 2-month initial phase of isoniazid, rifampicin and pyrazinamide followed by a 4-month maintenance phase of isoniazid and rifampicin. The regime of this patient differed (a 3-month initial phase and a 4-month maintenance phase) as it is tailored to this patient’s clinical response. Collaboration with the physician in the management should be established to monitor for the systemic toxic effects of the drugs.

Ocular tuberculosis may occur in the absence of systemic disease. The disease may mimic several clinical entities. Early diagnosis and prompt treatment may prevent ocular morbidity and blindness.

References