TUBERCULOSIS FIRST PRESENTING AS AN ORBITAL MASS

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Abstract. Orbital tuberculosis is a rare manifestation of extrapulmonary tuberculosis. We report here 2 cases of females who presented with non-tender orbital masses. Both patients presented with orbital masses without other symptoms. Neither had a history of an underlying disease. In both cases excision biopsy was performed on the masses and the pathology of both cases showed granulomatous inflammation with caseation. Both cases were treated with isoniazid, rifampicin, ethambutol and pyrazinamide. In both cases the masses resolved completely without residuals. Orbital tuberculosis is rare but can have a good outcome if treated correctly and early.

Keywords: orbital tuberculosis; orbital mass; tuberculosis; tuberculous dacryoadenitis

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INTRODUCTION

Orbital tuberculosis is a rare manifestation of extrapulmonary tuberculosis, even in places where tuberculosis is endemic (Aggarwal *et al*, 2002). The disease may involve the lacrimal gland, bones, periosteum or soft tissue of the obits. The left orbit is more commonly involved than the right (Sen, 1980). We report here 2 cases of orbital tuberculosis which first presented with orbital masses. Both patients gave informed consent to have their cases described here.

CASE REPORTS

Case 1

A 39-year-old female presented to

the hospital with a 1-month history of bilateral upper palpebral swelling with no significant pain or impairment in visual acuity. She denied having fever, asthenia, weight loss, or night sweats. She denied any past medical history of chronic or immunodeficiency disease. She denied a history of exposure to tuberculosis.

On physical examination she had bilateral, solid, fixed, non-tender masses palpable in the superotemporal orbits bilaterally. The masses were not erythematous and the eyes had no discharge. The tumor in the right eye slightly displaced the globe inferomedially but the eyes had full range of motion bilaterally. The pupils were equal, round and reactive to light bilaterally and dilated fundoscopy was normal bilaterally.

The general physical examination was unremarkable and no lymphadenopathy was found.

A CT scan of the orbits demonstrated irregular soft tissue densities in the area of the lacrimal glands bilaterally. The margins of the globes could not be differentiated from the masses. No boney destruction of the orbits was seen (Fig 1).

Ultrasonography of the orbits showed a moderately hyperechoic space occupying density in the superolateral part of both orbits with unclear margins.

Laboratory examination of liver and kidney function, coagulation and erythrocyte sedimentation rate were normal.

We surgically removed the right orbit mass under general anesthesia. The mass was about 3 cm × 2.5 cm × 1 cm in size, without an obvious capsule. It was closely adherent to the lacrimal gland and orbital periosteum. Grossly, it was grayish red in appearance and hard. Histological examination showed granulomatous inflammation with giant cells and proliferation of fibrous tissue consistent with tuberculous dacryoadenitis (Fig 2). The patient continued to deny a personal history of tuberculosis exposure and a family history of tuberculosis.

A purified protein derivative (PPD) skin test for tuberculosis was positive but the chest x-ray was normal.

The patient was given anti-tuberculosis treatment with isoniazid, rifampicin, ethambutol and pyrazinamide. By the end of 1 year, the masses had resolved completely.

Case 2

A 42-year-old female presented to the hospital with a 3-month history of a slow-growing mass in the lateral part of the right upper eyelid. The mass was painless and there was no associated erythema. There was no associated eye discharge, epiphora or impairment in visual acuity. She denied a past medical history of major medical problems or exposure to infection.

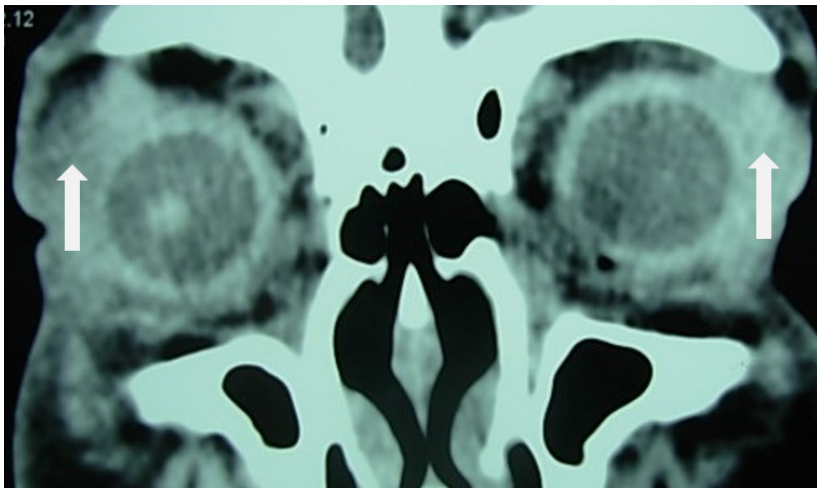

Fig 1 - Orbital computed tomography showing irregular soft tissue in the area of the lacrimal gland area bilaterally (white arrows)

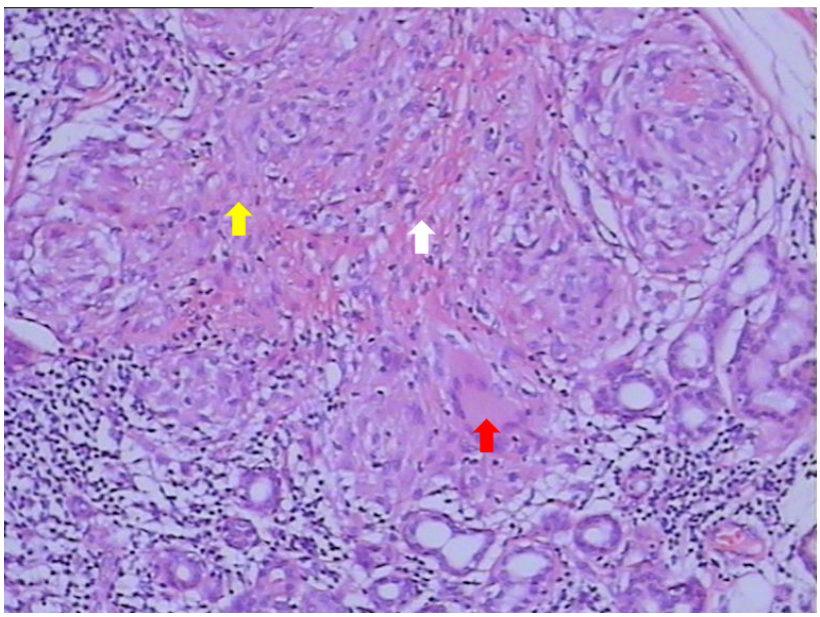

Fig 2 - Histology of biopsied tissue stained with hematoxylin-eosin at 100x magnification showing granulomatous inflammation (yellow arrow) with giant cells (red arrow) and proliferation of fibrous tissue (white arrow)

On physical examination the lateral third of the patient's right upper eyelid had mild edema. A fixed, non-tender 1.0 cm × 0.8 cm subcutaneous nodule was palpable in the upper eyelid (Fig 3). The pupils were equal, round and reactive to light and the fundoscopic examination was normal.

On general physical examination there were no abnormalities seen.

Laboratory examination of liver and kidney function, coagulation and erythrocyte sedimentation rate were normal. A chest x-ray was showed no abnormality.

The mass was removed under local anesthesia. The mass measured 1.0 cm × 0.8 cm × 0.5 cm in size. It did not have an obvious capsule and was closely adherent to the eyelid plate.

Grossly, the mass was grayish red in color and a firm texture. Histological examination of the mass revealed fibrous hyperplastic tissue and granulomatous inflammation with giant cells present in the subcutaneous tissue (Fig 4).

The patient was diagnosed as having orbital tuberculosis and treated with isoniazid, rifampicin, ethambutol and pyrazinamide. By 1 year she had no evidence of mass or residual problems.

DISCUSSION

Tuberculosis is a public health worldwide. The human immunodeficiency virus (HIV) epidemic, immigration, overcrowding and homelessness led to a resurgence of tuberculosis in the 1980s (Pillai *et al*, 1995). Most cases of tuberculosis just involve the lungs but some infections may be extrapulmonary. Orbital tuberculosis is a rare type of tuberculosis with reported incidences varying from 1.4% to 18% (Ruman-Colombier *et al*, 2017). Orbital tuberculosis can be divided into primary and secondary. Primary orbital tuberculosis is an ocular infection with only orbital symptoms but no systemic symptoms. Secondary orbital tuberculosis involves the periosteum or soft tissues of the orbit by hematogenous or direct spread from adjacent structures, such as the paranasal sinuses (Kaur *et al*, 2007). The disease can involve the soft tissue, orbital bones or both, the nasolacrimal apparatus and/or the overlying skin (Madge *et al*, 2008).

Culture for *Mycobacteria tuberculosis* is the gold standard for diagnosing tuberculosis but false negatives can occur, especially with low mycobacterial loads. Biopsy is one way of trying to identify tuberculosis. Histological features consistent with tuberculosis include epithelioid granulomas with caseating necrosis and Langhans giant cells (Madge *et al*, 2008).

The two cases presented here were both diagnosed by biopsy which showed granulomatous inflammation with giant cells and proliferation of fibrous tissue. A polymerase chain

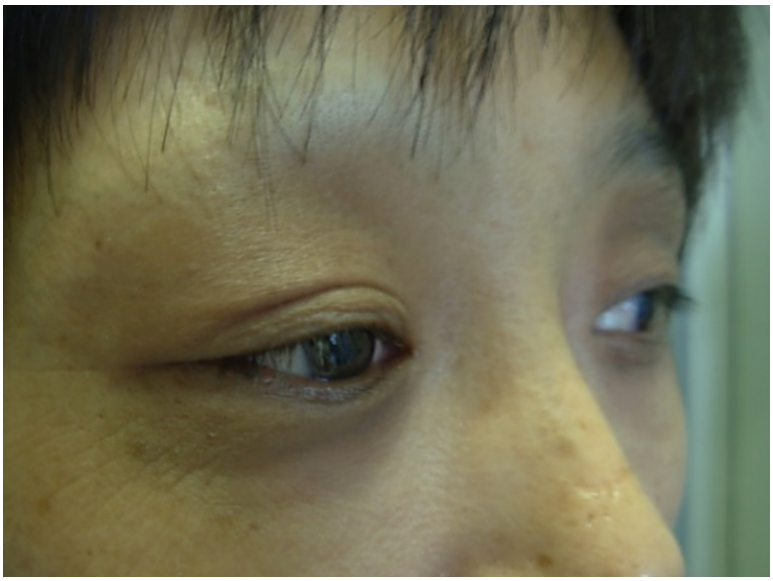

Fig 3 - Patient with the right upper palpebral swelling

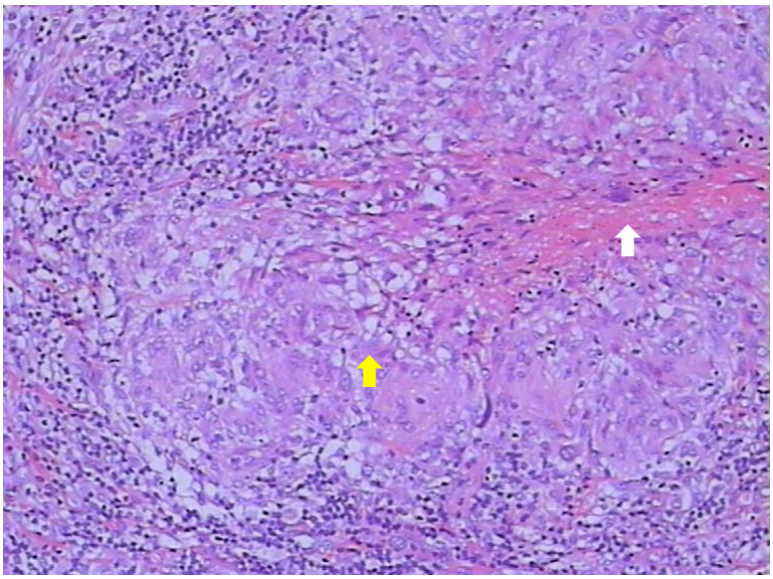

Fig 4 - Histology stained with hematoxylin-eosin at 100x magnification revealed fibrous tissue (white arrow) hyperplasia and granulomatous inflammation (yellow arrow) with giant cells in the subcutaneous tissue

reaction is a rapid diagnostic test that can be used to diagnose tuberculosis with high specificity. However, its sensitivity is relatively low, with reported sensitivities ranging from 27% to 100% (Cheng *et al*, 2005). Ancillary investigations include chest radiography and tuberculin skin tests.

With orbital tuberculosis the mass grows painlessly without any specific clinical symptoms, making it difficult to make a definite diagnosis (Madge *et al*, 2008). The differential diagnosis of orbital tuberculosis includes cavernous hemangiomas, pseudotumors of the orbit and lymphomas. Both of our cases presented with eyelid masses without specific clinical symptoms; excisional biopsy showing granulomatous lesions helped us make the diagnosis.

In our cases, anti-tuberculous treatment was successful in eliminated the disease without residual sequelae. Although surgery may relieve mass anti-tuberculous treatment essential to eliminate orbital tuberculosis. As with any case of tuberculosis, it is important to have an early diagnosis, appropriate treatment and good compliance with that treatment to result in a good outcome. Although rare, orbital tuberculosis should be considered in the differential diagnosis of orbital tumors.

CONFLICT OF INTEREST DISCLOSURE

The authors declare no conflict of interest.

REFERENCES

Aggarwal D, Suri A, Mahapatra AK. Orbital tuberculosis with abscess. *J Neuroophthalmol* 2002; 22: 208-10.

Cheng VC, Yew WW, Yuen KY. Molecular diagnostics in tuberculosis. *Eur J Clin Microbiol Infect Dis* 2005; 24: 711-20.

Kaur A, Kant S, Bhasker SK. Periorbital tuberculosis. *Orbit* 2007; 26: 39-42.

Madge SN, Prabhakaran VC, Shome D, Kim U, Honavar S, Selva D. Orbital tuberculosis: a review of the literature. *Orbit* 2008; 27: 267-77.

Pillai S, Malone TJ, Abad JC. Orbital tuberculosis. *Ophthalmic Plast Reconstr Surg* 1995; 11: 27-31.

Ruman-Colombier R, Crisinel PA, Cohen Dumani N, Ceschi G, Rochat Guignard I. Bilateral dacryoadenitis: Don't forget tuberculosis! *Pediatr Infect Dis J* 2017; 36: 117-9.

Sen DK. Tuberculosis of the orbit and lacrimal gland: a clinical study of 14 cases. *J Pediatr Ophthalmol Strabismus* 1980; 17: 232-8.