Primary Conjunctival Tuberculosis Presenting as Dry Eye: A Rare Case Report and Review of the Literature

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Established Facts

- Primary conjunctival tuberculosis is very rare.

Novel Insights

- Presentation of primary conjunctival tuberculosis with dry eye has not been reported in the literature.

Keywords

Conjunctiva · Tuberculosis · Histopathology · Granulomas

Abstract

Primary conjunctival tuberculosis is very rare in the developed countries. In an endemic country like India, it should be considered in the differential diagnosis of any unusual conjunctival lesion with unilaterality, chronicity, and nonresolution of symptoms after steroid use. We present the case of a 52-year-old female who presented with unilateral itching and blurring of vision for 20 days. There were irregular nodular elevated areas with shrinkage of the lower palpebral conjunctiva. A biopsy of the lesion revealed necrotizing epithelioid cell granulomas along with Langhans type of giant cells. However, no acid-fast bacilli were seen on Ziehl-Neelsen stain. Systemic examination of the patient was normal, and there was no evidence of pulmonary tuberculosis. Polymerase chain re-

action of conjunctival scrapings was positive for *Mycobacterium tuberculosis*. The patient was started on antitubercular drugs. We present this very rare case of primary tuberculosis of the conjunctiva presenting with dryness of the eye.

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Introduction

Tuberculosis remains a major global health problem and is one of the top 10 causes of death worldwide [1]. Six countries account for 60% of new cases of tuberculosis worldwide, and India is one of them. Even with this endemicity of the disease, primary conjunctival tuberculosis is rare. An allergic (hypersensitivity) reaction to tubercular protein is more common than primary conjunctival involvement. Primary conjunctival tuberculosis is usually unilateral with a female sex predilection.

Fig. 1. **a** On clinical examination, slightly elevated multiple erythematous nodules (multiple black arrows) were seen in the lower palpebral conjunctiva. **b** On microscopic examination, stratified squamous epithelial lining (black arrow) was identified. In the subepithelium, a necrotizing epithelioid cell granuloma (red arrow)

was identified with surrounding lymphocytic infiltrate. HE, $\times 4$. **c, d** In other areas, both Langhans type of giant cells (black arrows) and foreign-body giant cells (red arrows) are seen. **c** Ziehl-Neelsen stain, $\times 10$. **d** HE, $\times 10$.

Case Report

A 52-year-old female presented with complaints of itching and blurring of vision in the left eye. There was no watering, but a feeling of dryness and irritation had been present in the eye for 20 days. The patient was a teacher by profession, and there was no history of any foreign-body impaction in the eye. On examination, there was irregular nodular thickening of the left lower palpebral conjunctiva along with shrinkage of the conjunctiva (Fig. 1a). No conjunctival exudate was seen. Vision and intraocular pressure were normal in both eyes. Fundus examination was within normal limits. The Schirmer test I was 3 in 5 min in the left eye. There were no mucosal lesions or skin lesions. No preauricular or cervical lymphadenopathy was present. The patient was hypertensive and hypothyroid, which was controlled by medications. She was given

topical steroids (prednisolone) and lubricating eye drops and was asked to come to a follow-up after 1 week.

The patient returned after 1 week with no improvement in the symptoms. Routine investigations were done. A complete blood count was within normal limits (hemoglobin 11.2 g/dL, total leukocyte count $6.4 \times 10^9/L$). Erythrocyte sedimentation rate was 18 mm in the 1st hour (Westergren method). A biopsy was taken from the conjunctival lesion under local anesthesia and sent for histopathological examination. A grey-white tissue piece measuring $0.3 \times 0.2 \times 0.2$ cm was received, which on microscopic examination revealed focally ulcerated stratified squamous lining. The subepithelium showed multiple necrotizing epithelioid cell granulomas (Fig. 1b) along with Langhans type of giant cells and a few foreign-body giant cells (Fig. 1c, d). However, Ziehl-Neelsen stain did not reveal any acid-fast bacilli. Periodic acid-Schiff stain did

not reveal any fungus. A diagnosis of granulomatous inflammation was made, and further investigations were suggested. The patient was investigated further. Her chest X-ray was normal. There was no family history of tuberculosis. She was nonreactive for retrovirus. Rheumatoid factor and antinuclear antibody were negative. Angiotensin-converting enzyme and serum calcium levels were within normal limits. Conjunctival scrapings were sent for polymerase chain reaction in normal saline for *Mycobacterium tuberculosis*, and the test was positive. A diagnosis of primary conjunctival tuberculosis was made. The patient was started on antitubercular drugs and showed improvement of the symptoms. No ocular toxicity due to the antitubercular drugs was reported.

Discussion

Although conjunctival involvement is uncommon in tuberculosis, primary conjunctival tuberculosis has been reported. Koester first reported a case of tuberculosis of the conjunctiva in 1873 [2]. Due to the rarity of the lesion, the clinician's index of suspicion is very low for tuberculous conjunctival lesions [3]. They occur due to direct inoculation of microbes into the eye or endogenous infection during the stage of tuberculous bacillema. Aerosols from sputum of a person with active pulmonary tuberculosis can contaminate the conjunctiva of a contact. Sometimes, autogenous infection from a person's own respiratory tract can also occur [4]. Conjunctival tuberculosis can be classified into 4 types: ulcerative, nodular, hypertrophic, and pedunculated. There can be marked pleomorphism of the lesions, varying from papillary thickening and hypertrophy of the conjunctiva to ulceration with elevated edges of the ulcer. It is uncommon for both eyes to be involved [4]. The palpebral conjunctiva is more frequently involved than the bulbar conjunctiva with enlargement of the preauricular lymph nodes. In our patient, only the left palpebral conjunctiva was involved without any regional lymphadenopathy.

Usually, histopathology reveals caseous necrosis with epithelioid cell granulomas. Acid-fast bacilli can be seen in biopsy or conjunctival scrapings. However, no acid-fast bacilli were seen in our case. The histopathological differential diagnosis of other granulomatous conditions must be kept in mind, i.e., foreign-body granulomas, fungal granulomas, and sarcoidosis. In our case, there was no history or microscopic evidence of any foreign body. The granulomas were necrotizing and rimmed with lymphocytes, thus ruling out the possibility of sarcoidosis. Normal angiotensin-converting enzyme levels and serum calcium further supported this. No fungal organisms were identified on periodic acid-Schiff stain. Absence of skin/mucosal lesions ruled out the possibility of secondary involvement with lu-

pus vulgaris. Negative rheumatoid factor and antinuclear antibody ruled out scleritis due to rheumatoid arthritis or systemic lupus erythematosus. However, the definite diagnosis was established by polymerase chain reaction.

Conjunctival tuberculosis runs a chronic course and can spread to adjacent structures. Involvement of the optic nerve may occur with loss of vision [5]. It can also lead to Parinaud oculoglandular syndrome. Tuberculosis is curable regardless of the site [6]. In our patient, the response was good to all the 4 first-line antitubercular drugs. The diagnostic criteria for ocular tuberculosis are poorly established, and there has been variability in the reporting of the incidence of ocular tuberculosis [7].

Conclusion

In an endemic country like India, primary conjunctival tuberculosis is still rare. In view of the rising number of cases with multidrug-resistant *Mycobacterium*, there is an urgent need for an early diagnosis of tuberculosis, especially at rarer sites, to prevent its spread and complications.

Statement of Ethics

The patient's informed consent was obtained.

Disclosure Statement

The authors have no conflicts of interest to disclose.

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