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PRIMARY CONJUNCTIVAL TUBERCULOSIS: A CASE REPORT

Respiratory Medicine

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ABSTRACT

A 11 year old female was referred from ophthalmology clinic to pulmonary medicine department for further evaluation of a case of unilateral conjunctivitis not responding to treatment as suspected case of conjuctival tuberculosis. In the right eye, bulbar conjunctiva in supranasal quadrant polypoidal appearance was seen and there was subconjunctival cystic nodular mass in the superior conjunctival fornix. Systemic examination was unremarkable. Microbiological and histopathological examination of excision biopsy of the subconjunctival cyst revealed a granulomatous inflammation but acid fast bacilli was negative. Tissue sample was subjected to CBNAAT (Cartridge based nucleic acid amplification technique) examination in which mycobacterium tuberculosis was detected and sensitive to rifampicin. Patient was started on anti tuberculosis treatment under NTEP (national tuberculosis elimination programme) and full remission was achieved with 6 months of anti tuberculosis treatment. Although primary tuberculous conjunctivitis is a very rare condition, it should be considered in the differential diagnosis of treatment-resistant unilateral conjunctivitis. For definitive diagnosis, microbiological, histopathological and molecular examinations should be performed in conjunctival samples.

KEYWORDS

Primary conjunctival tuberculosis, conjunctival cyst, anti tuberculosis treatment, CBNAAT (Cartridge based nucleic acid amplification technique).

INTRODUCTION

Conjunctival tuberculosis is a rare condition. The first definitive conjunctival tuberculosis case was recorded by Koaster in 1873 and numerous cases were reported until the early part of the 20th century.[1] Conjunctival involvement is usually through direct inoculation of the organism to the conjunctiva or with contagious spread.[1,2] Conjunctival lesions are generally accompanied by regional lymphadenopathy, but the association with pulmonary tuberculosis is rare.[1] For definitive diagnosis, *Mycobacterium tuberculosis* organisms must be identified in conjunctival biopsy specimens by direct microscopy or culture.[3] Histopathological examination and molecular techniques such as CBNAAT (Cartridge based nucleic acid amplification technique) are also helpful in diagnosis.[4,5]

Case Details

A 11 year old girl was referred from ophthalmology department for evaluation in pulmonary medicine department in February, 2020 with treatment resistant unilateral conjunctivitis. She had been diagnosed with bacterial conjunctivitis and treated with various topical antibiotics and corticosteroids for last 2 months; however, the symptoms had progressed gradually despite treatment. In the right eye, there was hyperemia of the supranasal bulbar conjunctiva along with polypoidal appearance and edema of the upper fornix. On slit lamp examination there was conjunctival cystic nodular mass in the in the superior conjunctival fornix. Her uncorrected near vision was 6/6 in both the eyes. Her fundus examination showed no significant abnormality in both eyes. On tonometry with electronic indentation tonometer her intra ocular pressure was normal in both eyes. Rest of the ocular examination was normal. Examination of left eye was unremarkable.

Systemic examination was unremarkable. Since previous conjunctival cultures were negative, non-infectious granulomatous disease was suspected and further laboratory tests were ordered. Hematologic and biochemical parameters including hemoglobin, white cell count and differential, erythrocyte sedimentation rate, liver function tests, electrolytes, urea, creatinine, glucose, C-reactive protein and erythrocyte sedimentation rate were normal. Tuberculin skin test (TST) was negative. Human immunodeficiency virus testing and syphilis serology were negative. Chest radiography findings were normal, and there were no enlarged hilar and pre auricular lymph nodes. A computed tomography scan of the orbits showed preseptal thickening of the right supranasal eyelid.

The conjunctival nodular cystic mass was excised totally under general anaesthesia. Histopathological examination of the specimen revealed a granulomatous inflammation with no caseous necrosis, but Ziehl Neelsen staining for acid-fast bacilli (AFB) was negative. Then her specimen was subjected to CBNAAT (Cartridge based nucleic acid amplification technique) which revealed mycobacterium tuberculosis which was sensitive to rifampicin. Her tissue sample was also sent for liquid culture (MGIT 960, Becton Dickinson) which later revealed mycobacterium tuberculosis complex. First line anti tuberculosis drug line probe assay was done which showed mycobacterium tuberculosis was sensitive to both rifampicin and isoniazid.

Systemic examination and investigations were repeated for systemic tuberculosis. Sputum AFB and cultures were negative. Her family screening for tuberculosis was also negative. As there was no evidence for systemic tuberculosis in other parts of the body, her diagnosis was considered to be primary conjunctival tuberculosis.

A four drug anti tuberculosis treatment under national tuberculosis elimination programme (NTEP) was initiated with Isoniazid (10 mg/Kg), Rifampicin (15 mg/ Kg), Pyrazinamide (35 mg/Kg) and Ethambutol (20 mg/ Kg) as daily dosing using fixed dose combination for the first 2 months (initiation phase). At the end of second month, Pyrazinamide was stopped and isoniazid , rifampicin and ethambutol was continued for next 4 months. A total course of six months of anti tuberculosis drugs was given to the patient. The conjunctival showed significant improvement at the end of 4 months and was completely resolved by the end of six months of treatment. During the course of treatment patient was continuously evaluated for ocular toxicity.

DISCUSSION

Tuberculosis is a serious public health problem. The incidence of ocular TB in a population is difficult to estimate. The incidence of TB uveitis in India has varied from 2% -30%.[6,7] While tuberculosis can affect all areas of visual system, choroid is probably the most commonly affected intraocular structure. Intraocular tuberculosis is unique amongst all forms of tuberculosis in that it is paucibacillary in nature and displays multiple clinical manifestations.[8] Primary tuberculosis of eyelid, conjunctival sac and optic nerve is rare. Further ocular tuberculosis is usually not associated with manifestations of systemic tuberculosis.[9]

In 1912, Eyre[1] reviewed a total of 206 cases with their 24 cases and described the characteristics of conjunctival tuberculosis in detail. Since then, conjunctival involvement has gradually decreased due to advances in the treatment of pulmonary tuberculosis.[2] Only 4 cases of conjunctival tuberculosis have been reported from the WHO European region in last 5 decades. Three of the cases were diagnosed with primary conjunctival tuberculosis.[10,11,12,13]

It is very unlikely to diagnose tuberculosis as the cause of conjunctivitis even in endemic areas due to variations in the clinical picture that complicate the diagnosis. Tuberculosis can involve the conjunctiva primarily and secondarily. Primary lesions present as unilateral nodular or ulcerative conjunctivitis [14,15] ocassionally associated with regional lymphadenopathy. Children are most commonly affected. [15]

Conjunctival tuberculomas start insidiously and 3-4 weeks later may lead to regional lymphadenopathy. The enlarged preauricular and rarely submandibular lymph nodes may suppurate and drain forming a sinus. Thus, conjunctival tuberculosis is one of the cause of Parinaud's occulogladular syndrome of an infectious conjunctivitis accompanied by regional lymphadenopathy. Very rarely disease may start as an acute purulent or mucopurulent conjunctivitis with symptoms of fever and malaise.[16]

Several types of conjunctival granulomas have been described and include ulcerative, nodular, polypoid or hyperplastic lesions. [1,17]These lesion may be solitary or multiple. Solitary tuberculomas involving the bulbar conjunctiva is observed in 2 – 30 % of the cases.[18] The nodular prototype may simulate trachomatous lesion. It has a propensity to involve bulbar and upper fornix of conjunctiva.[19]Associated follicles and corneal infiltration may be present. The nodule may enlarge to to assume a cauliflower like lesion with central ulceration. The ulcerative form has the propensity to involve inferior cul-de-sac. It may also involve bulbar conjunctiva and tarsus and may also spread to involve the cornea, lid or sclera. Mycobacterium tuberculosis can also be found in ulcer crater.[1,17]The hyperplastic variety develops most commonly in the fornix and rarely on tarsus. This form is associated with severe conjunctival chemosis and lid edema. It may assume a pedunculated appearance like a polypoidal form.[1]

The definitive diagnosis of conjunctival tuberculosis requires identification of mycobacterium organisms in biopsy specimens by direct microscopy or culture. However, detection of mycobacteria may not be possible in small biopsy samples. In cases in which AFB and culture are negative, CBNAAT (Cartridge based nucleic acid amplification technique) and LPA (Line probe assay) in the tissue or biopsy specimens can be useful in the diagnosis.[5]

Treatment of conjunctival tuberculosis is on the same lines as treatment of pulmonary tuberculosis. When patients are detected to have ocular involvement, systemic work up to rule out active tuberculosis must be carried out. The Guidelines for Extrapulmonary tuberculosis for India [INDEX-TB] suggest that conjunctival tuberculosis should be treated with standard anti tuberculosis with rifampicin, isoniazid, Pyrazinamide and ethambutol for the first two months followed by rifampicin, isoniazid and ethambutol for the subsequent 4-7 months. Adjunctive treatment with local or systemic corticosteroids, immunosuppresants and others may be required in specific cases such as choroidal granulomas and panuveitis. Surgery is indicated in situations when retina or vitreous is involved and for management of complications of uveitis such as cataract and glaucoma.[20]

CONCLUSION

In our patient who was a 11 year old girl, having treatment resistant unilateral conjunctivitis with no family history of tuberculosis and initial diagnosis of bacterial tuberculosis. In her the source of infection with tuberculosis cannot be determined. In our case the morphological features of conjunctival lesion resembled nodular cystic mass. The possibility of tuberculous conjunctivitis was made when histopathological examination showed granulomatous lesion. In our case conjunctival biopsy was negative for acid fast bacilli. On performing CBNAAT (Cartridge based nucleic acid amplification technique) examination patient mycobacterium tuberculosis was found to be the implicating organism and was rifampicin sensitive and patient was treated with first line anti tuberculosis drugs.

Although primary tuberculous conjunctivitis is now a very rare entity, it should be considered in the differential diagnosis of unilateral chronic conjunctivitis not responding to treatment. For definitive diagnosis, microbiological, histopathological and molecular examinations should be performed with the conjunctival biopsy specimen.

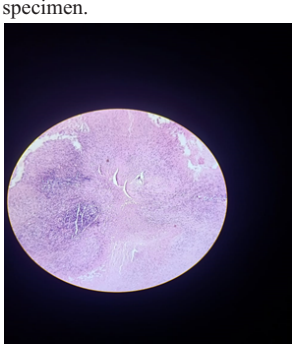

Figure 1

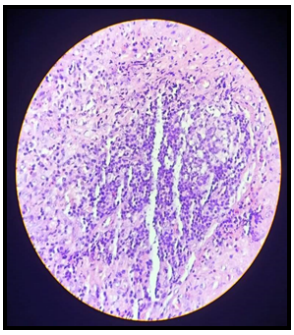

Figure 2

Histopathological Examination Showing Figure1 Casseous Necrosis,

Figure2 Granulomatous Inflammation

Picture Of Patient Showing Right Eye Conjunctival Cyst In Supranasal Quadrant

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