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Anterior uveitis as a manifestation of ocular tuberculosis

Uveíte anterior como manifestação de tuberculose ocular

Stephanie do Nascimento Câmara[1] https://orcid.org/0000-0003-3838-4233
José Bonifácio Barbosa Júnior[1] https://orcid.org/0000-0001-8781-5808
Karla Costa Resende Barbosa[2] https://orcid.org/0000-0003-4729-0650

Abstract

Tuberculosis (TB) is an infectious disease of great magnitude in the world. Of patients with extrapulmonary disease, ocular manifestations are rare but among reported cases the most common ocular manifestation is uveitis. The diagnosis of ocular TB should be made as early as possible so that treatment is initiated and the risks of ocular complications are minimized. The objective of this study is to report an ocular TB case that presented as anterior uveitis. A 52-year-old female patient, a nursing technician at a large hospital, presented a history of low visual acuity associated with myiodesopsia for 4 days. Her ophthalmologic history included an iridotomy due to narrow angle in both eyes. On examination, the best corrected visual acuity was 20/100, right eye, and 20/80, left eye. Among the most significant ocular alterations were granulomatous keratic precipitates, anterior chamber reaction, flare and light vitreitis, corresponding to anterior uveitis. Based on clinical history and ophthalmologic examination, tests were ordered that corroborated the diagnosis of ocular TB. Thereafter, antituberculous therapy was instituted with a good response in 15 days, including improvement in visual acuity. The patient was followed-up by ophthalmology and infectology. Intraocular TB should be considered in the differential diagnosis of any type of intraocular inflammation. The diagnosis of presumed ocular TB is a clinical challenge with the diagnosis modalities currently available. The faster the onset of treatment, the better the visual prognosis of the affected patient.

Keywords: *Tuberculosis, ocular; Uveitis; Uveitis, anterior.*

Resumo

A tuberculose (TB) é uma doença infecciosa de grande magnitude no mundo. Dos pacientes com doença extrapulmonar, as manifestações oculares são raras, mas entre os casos relatados, a manifestação ocular mais comum é a uveíte. O diagnóstico de TB ocular deve ser feito o mais precoce possível para que o tratamento seja iniciado e os riscos de complicações oculares sejam minimizados. O objetivo deste estudo é relatar um caso de TB ocular que se apresentou como uveíte anterior. Uma paciente do sexo feminino, 52 anos, técnica de enfermagem de um hospital de grande porte, apresentou história de baixa acuidade visual associada à miodesopsia por 4 dias. Sua história oftalmológica incluía uma iridotomia devido ao ângulo estreito em ambos os olhos. No exame, a melhor acuidade visual corrigida foi 20/100, olho direito, e 20/80, olho esquerdo. Dentre as alterações oculares mais significativas, destacam-se precipitados ceráticos granulomatosos, reação de câmara anterior, flare e vitreíte leve, correspondendo à uveíte anterior. Com base na história clínica e no exame oftalmológico, foram solicitados exames que corroboram o diagnóstico de TB ocular. Posteriormente, a terapia antituberculosa foi instituída com uma boa resposta em 15 dias, incluindo melhora na acuidade visual. A paciente foi acompanhada pelas especialidades: oftalmologia e infectologia. A TB intraocular deve ser considerada no diagnóstico diferencial de qualquer tipo de inflamação intraocular. O diagnóstico presumível de tuberculose ocular é um desafio clínico com as modalidades de diagnóstico atualmente disponíveis. Quanto mais rápido o início do tratamento, melhor o prognóstico visual do paciente afetado.

Descritores: Tuberculose; Tuberculose ocular; Uveítes; Uveíte anterior

[1] Universidade Federal do Maranhão, São Luiz, MA, Brazil.
[2] UDI Hospital – São Luís, MA, Brazil.

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Introduction

Tuberculosis (TB) is an infectious disease of great magnitude in the world with an estimate of one-third of the world's population infected with the Mycobacterium tuberculosis. Brazil is one of the 22 high-burden countries prioritized by the World Health Organization (WHO). Between 2005 and 2014, 73,000 new cases of TB were diagnosed.[1] Among patients with extrapulmonary disease, ocular manifestations are reported in about 1 to 2% of cases.[2,3] There is a wide spectrum of clinical manifestations of intraocular TB, but in the endemic countries it commonly manifests as uveitis.[4] Only a few patients with intraocular TB have respiratory symptoms making the diagnosis difficult due to the lack of extraocular manifestations and the broad spectrum of ocular features.[5] The precocious recognition of clinical signs of ocular TB is very important, because it can provide clinical targeted investigations which favors early initiation of anti-tuberculosis therapy.[6] The diagnosis of presumed intraocular TB is based on clinical findings, a positive tuberculin skin test (PPD) with an induration more than 10 mm, when other causes of uveitis are ruled out and by laboratory or by other ancillary tests.[7,8] Intraocular TB is associated with high ocular morbidity. Early recognition, appropriate treatment, and regular follow-up may help to reduce or avoid visual morbidity and ocular complications.[9,10]

Case Report

A 52-year-old Brazilian woman, a nursing technician in a high complexity hospital since 2002, presented with a 4 day history of low visual acuity and myiodesopsia. Her main complaints were low visual acuity and myiodesopsia. Her past medical history included hypertension and hemorrhagic stroke occurring 8 years ago. Her ophthalmologic history was significant for an iridotomy secondary to a narrow angle. She denies the use of ophthalmologic medications. Her family medical history was unremarkable. Best corrected visual acuities were 20/100 OD and 20/80 OS. Ocular findings in right eye (Figure 1) and left eye (Figure 2) included substantial conjunctival hyperemia, narrow iridocorneal angle with patent iridotomy, corneal edema with folds in descemet, granulomatous keratic precipitates, anterior chamber reaction (2+), flare (1+) and posterior synechiae. Intraocular pressure measured 16 mmHg OD and 15 mmHg OS. Indirect fundoscopic examination revealed vitreitis (2+) and sparse glassy opacities in both eyes but neuritis, vasculitis or chorioretinal lesions were absent. Pupillary reactions, confrontation, extraocular motility and color vision were normal.

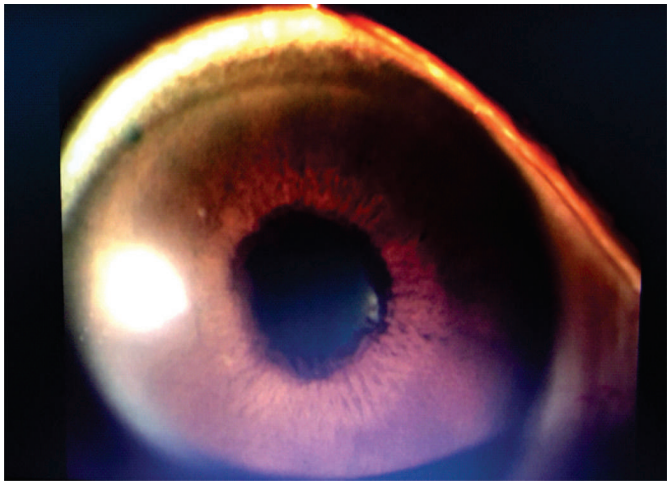

Figure 1: Right eye.

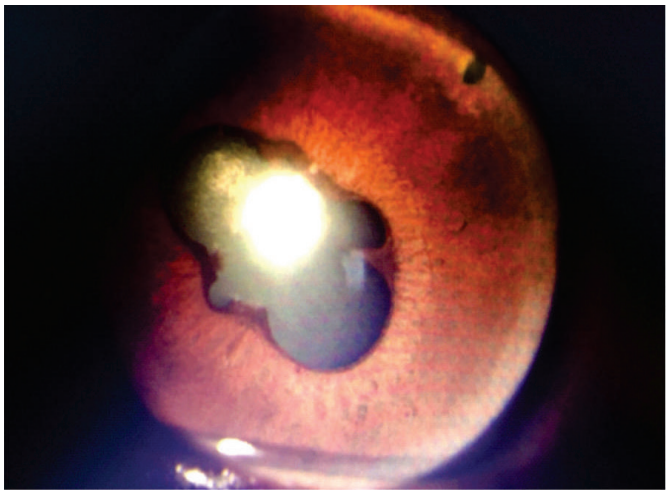

Figure 2: Left eye.

Based on the above findings, the most likely initial differential diagnoses were toxoplasmosis, sarcoidosis, syphilis, Vogt-Koyanagi-Harada syndrome and sympathetic ophthalmia. To rule-in the above differentials and exclude more rare differentials, drops of 1% prednisolone every 4 hours and 10 mg/ml tropicamide every 8 hours were initiated and a complete blood count, serum calcium, serum lysozyme, serum angiotensin-converting enzyme, aminotransferases, a PPD skin test, serologies (Syphilis, Cytomegalovirus, Toxoplasmosis, HIV, Herpes virus and Toxocara), HLA-B27, antiSS-A/Ro and antiSS-B/La antibodies, anti-neutrophil cytoplasmic antibody (ANCA), complement factors levels, rheumatoid factor, antinuclear factor and C-reactive protein were ordered. Parasitological examination of feces, chest X-ray and chest tomography were also requested. The results of the above blood tests, including serologies, the chest X-ray and chest tomography were all normal. The PPD skin test had an induration size of 12 mm (strong reactor). Thereafter, specific treatment for ocular TB with a triple scheme (Isoniazid, Rifampicin and Ethambutol) was started. After 15 days of treatment with the triple scheme, there was significant clinical improvement. Visual acuity improved (20/60 OD, 20/50 OS) and inflammatory signs, including vitreitis, became milder. The patient was followed in a joint follow-up by Infectology and Ophthalmology of a specialized hospital.

Discussion

In Brazil, the incidence of tuberculosis is still high. Its main risk factors are race (non-white), male sex, extreme ages (children and elderly), low socioeconomic level and the presence of comorbidities such as diabetes mellitus, tumors, alcoholism and AIDS. [8] Extrapulmonary disease with ocular manifestation presents a diagnostic challenge due to varied presentation.[5] Ocular TB can affect all ocular structures by lymphohematogenous

dissemination of the primary complex, post-primary reactivation in other organs and, in rare cases, direct inoculation of the bacillus. Ocular disease is most commonly seen in isolation, but may also be associated with pulmonary TB. Intraocular TB must be considered in the differential diagnosis of any type of intraocular inflammation. Ocular inflammation can be unilateral or bilateral. Uveitis can present as anterior, intermediate, posterior (most common) or panuveitis.[2,3]

In a study from India of 158 patients with presumed intraocular TB, 66 had posterior uveitis, 57 had anterior uveitis, 18 had panuveitis and 17 had intermediate uveitis. In a study from Saudi Arabia, from 73 eyes with presumed tuberculous uveitis, 79.5% eyes had panuveitis.[11] The patient in this case had tuberculous anterior uveitis, which according to the above studies is the least prevalent site of ocular inflammation secondary to TB. Tuberculous anterior uveitis has an insidious onset and manifests as granulomatous keratic precipitates associated sometimes with iris changes (nodules or granulomas). Anterior uveitis can occur with vitritis and be complicated by posterior synechiae and cataracts. In contrast to the above studies, a study in Brazil showed anterior and non-granulomatous uveitis was the most common type of inflammation in the area. The patients in this study received combined antitubercular therapy with a mean duration of 6.9 ± 2.3 months.[5,11]

Currently, it is recommended to investigate for ocular TB in any uveitis of unknown etiology, recurrent uveitis or uveitis unresponsive to conventional therapy. Due to the difficulty in isolating the mycobacterium, the diagnosis is presumed in most cases without culturing. Therefore it is important consider the epidemiology, clinical signs and symptoms (systemic and ocular) and immune response of the patient.[8,12]

The clinical manifestations of this disease varies between cases and there is no unified diagnostic criteria for diagnosing ocular TB.[13]

The diagnosis of presumed ocular TB is still a clinical challenge with the diagnostic modalities currently available. Interferon-γ release assays can distinguish exposure to M. tuberculosis from the Bacille-Calmette-Guérin vaccine strain, but it cannot distinguish between latent TB infection and active TB. Other molecular diagnostic techniques, including quantitative polymerase chain reaction (qPCR), may be valuable to establish a definitive diagnosis and institute appropriate therapy, but it is not economically feasible.[14] A definitive diagnosis of tuberculous uveitis can be confirmed through acid-fast smears, mycobacterial cultures or (PCR) assays of ocular fluids. However, these tests are not good initial tests because of the low sensitivity. Currently, the suspicion for the disease can be presumed with positive PPD tests, positive interferon gamma release assays and the presence of chest image lesions (chest X-ray and chest computed tomography). Uveitis and its response to treatment is also help in forming a diagnosis.[15]

It is important to note that PPD tests are classically used for the diagnosis of infection with M. tuberculosis, however, it cannot distinguish between latent and active TB infections. Thus, the epidemiological history of exposure is valuable. In addition, immunosuppressed patients, who are highly susceptible toTB, have a higher false PPD test rate.[2,16]

There is no a universal standard treatment regimen for TB. The treatment usually involves 4 antibiotics: rifampicin, isoniazid, pyrazinamide and ethambutol, in two phases: the intensive phase (the above 4 drugs given for 2 months) and the maintenance phase (rifampicin and isoniazid given for 4 months). If there is not a therapeutic response after 2 months, the diagnosis should be reconsidered. In this case report, a major improvement was observed within 15 days after the initiation of a triple therapy (rifampicin, isoniazid and ethambutol), which suggested our TB diagnosis was indeed correct.[15, 17]

Therapy with systemic corticosteroids is not well described. They can theoretically treat inflammation associated with the lesions. The initiation of antituberculosis therapy without the use of corticosteroids may lead to worsening of the initial lesions due to a paradoxical reaction. Therefore, the concomitant use of corticosteroids is suggested to inhibit progressive inflammation and subsequent complications.[18]

Conclusion

Tuberculosis is a multisystem disease with a major impact on global public health. The diagnosis of ocular TB is often difficult to make, but the earlier it is recognized and the appropriate treatment initiated, the lower the risk of visual morbidity. Further studies are needed to establish a standard approach to the diagnosis and management of this disease that presents challenges for ophthalmologists and related specialists.

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Corresponding author:
Stephanie do Nascimento Câmara
Av. Prof. Carlos Cunha, 2000 - Zip code: 65076-820, Jacarati, São Luís - MA, Brazil.
E-mail: Stephanie-nc@hotmail.com
José Bonifácio Barbosa Júnior: bonioftalmo@hotmailcom
Karla Costa Resende Barbosa: kcresende@hotmail.com