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LETTER TO THE EDITOR

Patterns of uveitis in patients with proven systemic (pulmonary and extrapulmonary) tuberculosis

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Abstract

Purpose To report patterns of uveitis in patients with systemic tuberculosis.

Methods Records of patients presenting at uvea clinic of a tertiary eye care centre were evaluated retrospectively, and 47 cases with proven systemic tuberculosis were analyzed for patterns of uveitis. Tuberculosis had been proven with a combination of radio imaging and detection of acid fast bacilli in body fluids. All patients had been reviewed by a specialist as applicable before diagnosing tuberculosis. These patients had undergone a thorough ocular workup. Pattern of uveitis was the primary outcome measure.

Results Mean age was 35.34 ± 15.56 years. Lung was the commonest systemic focus, seen in nearly 75% of the cases. Anterior uveitis was the most common presentation (48.9%), followed by posterior (25.5%), panuveitis (10.6%) and intermediate uveitis (10.6%). Multifocal serpiginoid choroidopathy (MSC) was seen in only one patient, while granulomatous choroiditis was the commonest type of posterior uveitis.

Conclusions Anterior uveitis is the most frequent type of uveitis seen in patients with proven systemic tuberculosis. Rarity of MSC in such patients indicates possibility of etiologies other than tuberculosis in causing MSC.

Keywords Ocular tuberculosis · Tuberculosis · Uveitis · Multifocal serpiginoid choroidopathy

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Dear Editor,

The etiological relationship between tuberculosis and ocular inflammation is complex. Also, there exists a great deal of ambiguity in establishing a firm relationship. There are several published reports on the prevalence of uveitis, both from countries where tuberculosis is endemic and where it is not. Even from countries wherein the disease is endemic, prevalence rates of uveitis differ highly [1–5].

When mention of tubercular uveitis is made, majority of studies also include patients wherein a diagnosis of tuberculosis is presumed and not proven. Reasons for presumption of tubercular etiology in

these studies include strong Mantoux reaction, healed lesions on chest radiography, Quantiferon TB-Gold test, positivity using in-house PCR tests and suggestive clinical picture. The limitations of firmly establishing a cause-effect relationship between tuberculosis and uveitis using these presumptions continue to be a matter of debate. It is not the purpose of our report here to further delve into the drawbacks on the current criteria used to make a diagnosis of ocular tuberculosis. Instead, we wanted to identify the patterns of uveitis in patients who had been treated with proven pulmonary and extrapulmonary tuberculosis. Patients with presumed ocular tuberculosis were excluded from our analysis. These observations were made over a two-year period at our tertiary care centre, in a country that is endemic for tuberculosis.

Fifty-one (5.2%) of the total 980 patients with uveitis or vasculitis or scleritis evaluated during the study period were found to have a history of proven pulmonary or extra pulmonary tuberculosis. Patients who had episcleritis (1) and scleritis (3) were excluded from the analysis. Mean age of these patients was 35.34 ± 15.56 years (range 9–78 years). Thirty-six percent of the patients had both eye involvement. Thirty-eight percent of the patients had clinical evidence of granulomatous inflammation (mutton fat deposits or iris nodules or choroidal granulomas). Anterior uveitis was the most common presentation (48.9%), followed by posterior (25.5%), panuveitis (10.6%) and intermediate uveitis (10.6%). There were two patients with retinal vasculitis (Table 1). Seventy-five percent of the patients with posterior uveitis had choroidal involvement in the form of granuloma or choroiditis. In the five patients with panuveitis, choroidal tubercle (3) was the commonest presentation in the posterior segment, while there was one patient each with tuberculoma and multifocal choroiditis. No case had sub-retinal abscess. Multifocal serpiginoid choroidopathy (MSC) was seen in one patient with posterior uveitis.

Lung was the most common site of tubercular focus and was present in 35 of 47 (74.46%) patients followed by spinal (5) and meningeal TB (3) (Table 1). Complete blood count, Mantoux test and chest X-ray had been done for all patients. Pulmonary TB was diagnosed by proving presence of acid fast bacilli in sputum and with the help of imaging features seen in high-resolution computerized tomography scans of the chest. TB of the central nervous system was diagnosed with magnetic resonance imaging of head/spine and cerebrospinal fluid analysis. In all the cases, the diagnosis had been confirmed by either a pulmonologist, neurologist or physician as appropriate. Four patients had HIV coinfection, and three of these patients had pulmonary TB. Among patients with pulmonary tuberculosis, anterior uveitis (56.25%) was the most common anatomical presentation of uveitis. Patients with coexisting HIV infection presented as posterior or panuveitis. In these four patients with HIV coinfection, two had CMV retinitis, one had HIV micro-angiopathy, and one had panuveitis with choroidal tubercles.

In 1967, Donahuae [6] published his "ophthalmologic experience in a TB sanatorium." During his evaluation of over 10,000 hospitalized patients, he reported the prevalence of ocular TB to be 1.4%. The commonest lesion was "choroiditis of any type" (∼ 30%). This study was conducted in Boston before the HIV outbreak and optimal usage of anti-tubercular therapy. It was noted by the author that ocular tissue may have immunity despite advanced pulmonary TB. In the current era where treatment of tuberculosis in sanatoria is not recommended, there are only a few

Table 1 Uveitis patterns in patients with proven systemic tuberculosis (pulmonary and extrapulmonary)

	Anterior	Intermediate	Posterior	Panuveitis	Vasculitis
Pulmonary (n = 32)	18	4	6	3	1
Intestinal (n = 2)	2	0	0	0	0
Spinal (n = 5)	3	1	0	0	1
TB with HIV (n = 4)	0	0	3	1	0
Bone (n = 1)	0	0	0	1	0
Meningeal (n = 2)	0	0	2	0	0
Lymphadenitis (n = 1)	0	0	1	0	0
Total (n = 47)	23 (48.93.0%)	5 (10.64%)	12 (25.53%)	5 (10.64%)	2 (4.26%)

reports which mention the incidence and patterns of ocular involvement in patients with proven systemic tuberculosis. In 1995, Biswas and Badrinath [7] evaluated 2010 eyes of patients with active systemic TB and reported ocular morbidity in only 1.4% of patients. They found healed posterior uveitis to be commonest. This study was conducted in India where TB is known to be endemic. Bouza E et al. from Spain have reported ocular involvement in 18% of patients with culture positive systemic tuberculosis in 1997. Forty-five percent of these patients also suffered from HIV infection, and majority were asymptomatic. They did not find any patient with uveitis although choroidal lesions in the form of tubercles and tuberculoma were observed in 17 of these patients [8]. Tognon [9] from Italy report ocular involvement in 8.3% patients with pulmonary and extrapulmonary tuberculosis. Majority of these patients were asymptomatic despite suffering from resolved or active posterior and panuveitis. Lung was the most common site of TB in this study. In 2009, Mehta evaluated patients with disseminated TB and discovered ocular findings in 6 of the 10 patients with proven mycobacterial sepsis. They also found choroidal tubercles (50%) to be the commonest manifestation. This study was done by screening patients admitted for intensive care [10]. All these studies, unlike our evaluation, have been done by actively screening patients with systemic TB. This difference in methodology is the likely reason for their finding of asymptomatic choroidal tubercles as the commonest lesion.

Traditionally, ocular TB has been divided as primary or secondary. In primary cases, the eye is initial site for microbial invasion (conjunctival, corneal and scleral), whereas in secondary hematogenous spread is believed to result in TB uveitis [11]. Our study of patients with proven systemic TB therefore confines to the latter group. Considering the controversy surrounding ocular TB with regard to its definition, diagnosis and treatment, we believe that observations on ocular TB in patients with proven systemic TB are more likely to be similar across the globe as compared to the highly varied results seen in studies on presumed ocular TB [12].

In conclusion, our observations suggest anterior uveitis to be the most common pattern of uveitis. MSC seems to occur infrequently in patients with proven pulmonary and extrapulmonary tuberculosis.

Compliance with ethical standards

Conflict of interest All authors certify that they have no affiliations with or involvement in any organization or entity with any financial interest (such as honoraria; educational grants; participation in speakers' bureaus; membership, employment, consultancies, stock ownership or other equity interest; and expert testimony or patent-licensing arrangements), or non-financial interest (such as personal or professional relationships, affiliations, knowledge or beliefs) in the subject matter or materials discussed in this manuscript.

Ethical approval All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional research committee (All India institute of Medical Sciences, New Delhi) and with the 1964 Declaration of Helsinki and its later amendments or comparable ethical standards. For this type of study, formal consent is not required.

Informed consent Informed consent was obtained from all individual participants included in the study.

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