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TUBERCULAR ETIOLOGY AS A CAUSE OF UVEITIS: A STUDY IN GMC JAMMU

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ABSTRACT

Background: Tuberculous uveitis is a vision-threatening disease, eventually leading to blindness in absence of timely diagnosis and treatment. It is usually not associated with clinical evidence of pulmonary tuberculosis. There is absence of definitive diagnostic guidelines in India. The aim of this study was to illustrate clinical features of various types of tubercular uveitis and to find their effect on visual acuity and its management. **Methods:** A prospective observational study was carried out in GMC Jammu, between September 2016 to February 2017, on 80 patients presenting to Uvea and Retina services. A detailed history regarding the symptoms - duration, course and recurrence, contact history and previous history of any form of tuberculosis treated or untreated with anti-tubercular therapy was noted. **Results:** Median was found to be38 years, with 44 males and 36 females. The incidence of ocular tuberculosis was higher in patients with exposure to or contact with tubercular patients 51(63.75%), while only 10(12.50%) patients had miliary tuberculosis. The most common complaint was defective vision (59%) followed by floaters in 19% of the patients. Posterior uveitis was seen in 49%, anterior uveitis in 29% followed by intermediate uveitis in 16% and panuveitis in 6% of cases. The mean (logMAR) at initially was 0.80, which improved to 0.13 at 16th week of follow-up. **Conclusion:** Poor socio-economic conditions, overcrowding, illiteracy and a background of contact of TB, can be sufficient for a suspicion of tuberculous etiology among patients.

KEYWORDS: Ocular Tuberculosis, Uveitis, Visual Acuity, LogMAR Scale.

INTRODUCTION

Tuberculosis (TB), a multisystem infectious disease caused by Mycobacterium tuberculosis (MTB). Mycobacterium tuberculosis is a slow-growing (with a doubling time of 15-20 hours while most bacteria have 1hour or less), obligate aerobe, facultative intracellular, non- sporing, non-motile, bacilli.[1] TB bacilli are resistant to dry environment, becoming an important factor in the transmission of infection, which is mainly by airborne respiratory aerosol. Tuberculosis affects the lungs in 80% of the patients, with 20% occurring in other organs including the eye. Tuberculous uveitis, however, is a vision-threatening disease, eventually leading to blindness in absence of timely diagnosis and treatment.[2] Ocular tuberculosis is usually not associated with clinical evidence of pulmonary tuberculosis and upto 60% of extra-pulmonary tuberculosis patients may not present it.[3] Ocular tuberculosis presents itself same as that of various other types of uveitis and is kept in the differential diagnosis of any type of intraocular inflammation.[4] There is absence of definitive diagnostic guidelines in India, however, the prevalence of ocular tuberculosis is considered to range from 0.39 to 9.86%. India has reported the largest number of tuberculous uveitis cases in the world, with the current prevalence being 0.4-9.8%.[5] With high risk groups include immigrants from endemic areas, health care professionals, indigent and immune-compromised patients.

There are several different mechanisms through which the eye can become infected with tuberculosis: by hematogenous spread with the involvement of uveal tract; direct extension from surrounding tissues or by contamination with the patient's own sputum; or by Phlyctenular disease or Eales disease.[6]

The aim of this study was to illustrate clinical features of various types of tubercular uveitis and to find their effect on visual acuity and its management.

MATERIAL AND METHODS

A prospective observational study was carried out in a tertiary care hospital of Jammu. The study was conducted for 6-months' period: between September 2016 to February 2017. 80 patients presenting to Uvea and Retina services in GMC Jammu, were recruited for the study who gave consent and fulfilled the inclusion criteria. A detailed history regarding the symptoms - duration, course and recurrence, contact history and

previous history of any form of tuberculosis treated or untreated with anti-tubercular therapy was noted.

Inclusion Criteria: Patients between 15-70 years, with positive Mantoux test i.e. 10mm or more in duration at 48-72 hours with or without specific lesion in chest radiograph, with evidence of active uveitis and positive contact history or known pulmonary or extra-pulmonary tuberculosis were included in the study.

Exclusion criteria: patient denying consent, patients with infective uveitis other than tubercular uveitis and patient diagnosed with non-infectious uveitis.

Systemic examination included evaluation of cervical lymph nodes and respiratory system. Ocular examination included best corrected visual acuity (BCVA) (using Snellen's chart and converting to LogMar scale for statistical purpose), intra-ocular pressure (using Goldmann Applanation Tonometer), examination of anterior segment (using slit- lamp) and posterior segment (using +90D biomicroscopy). Fundus examination was done when required. All patients, following chest physician opinion, were started on anti- tuberculosis therapy and corticosteroids. Patients were followed up in 2 weeks, 4 weeks, 8 weeks and 16 weeks duration. Response to treatment was assessed using improvement in BCVA and decrease in intraocular inflammation.

Ethical clearance was taken from the institutional ethical committee. Statistical analysis was carried out using MS Excel 2010 software. Statistical analysis included descriptive statistics, and percentages, calculated for categorical variables. P value <0.001 was considered as statistically significant.

RESULTS

In our study the maximum numbers of patients were from the age group of 35- 44 years (36.25%). The minimum age of the patient was 18 years and maximum age was 70 years with the age median being 38 years. In this study, there were 44 male and 36 female patients. Right eye was more frequently affected (35%) than the left eye or bilateral involvement. (Table 1)

Table 1: Socio-demographic characteristics of participants in the study.

Sr No	Socio-Demographic Characteristics	Number	%
1	Age group (in years)		
	<25	16	20.00
	25 to ≤34	29	36.25
	35 to ≤44	12	15.00
	45 to ≤54	09	11.25
	>54	14	17.50
2	Sex		
	Male	44	55.00
	Female	36	45.00
3	Residence		
	Rural	39	48.75
	Urban	41	51.25
4	Education		
	Illiterate (without formal education)	8	10.00
	Literate	72	90.00
5	Social class		
	Upper class	16	20.00
	Middle class	26	32.50
	Lower class	38	47.50
6	Affected Eye		
	Right	28	35
	Left	26	32.5
	bilateral	26	32.5

The incidence of ocular tuberculosis was higher in patients with exposure to or contact with tubercular patients 51(63.75%), while only 10(12.50%) patients had miliary tuberculosis at the time of diagnosis of ocular tuberculosis. (Figure 1)

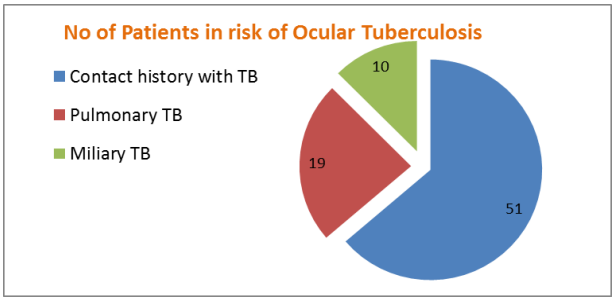

Figure 1: Patients in Risk of Ocular Tuberculosis.

The most common complaint of the patients was defective vision (59%) followed by floaters in 19% of the patients. (Figure 2)

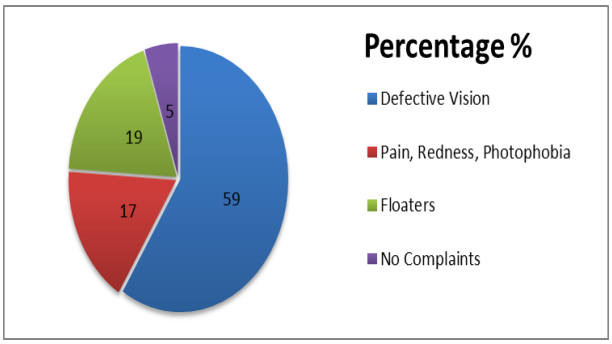

Figure 2: Frequency of various complaints in the study population.

In this study, posterior uveitis was seen in 49%, anterior uveitis in 29% followed by intermediate uveitis in 16% and panuveitis in 6% of cases. (Figure 3) Choroiditis was most common among the posterior uveitic cases.

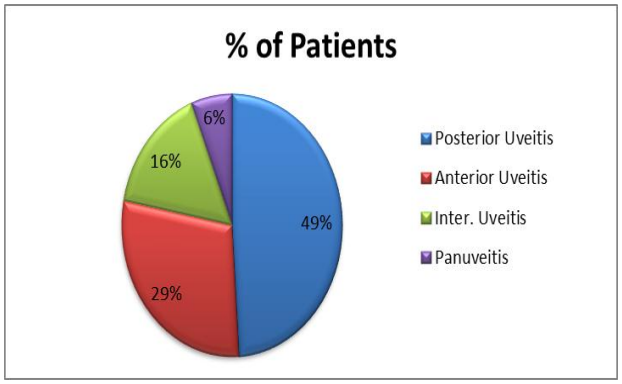

Figure 3: Types of uveitis in the study population.

Poorer visual acuity (<6/60) at presentation was noted mostly in posterior uveitic cases and those presenting with anterior uveitis followed by panuveitic cases. The vision of the patients was not much affected in intermediate uveitis. There was improvement in best corrected visual acuity (BCVA) with treatment at every follow-up visit. The mean (logMAR) at initial presentation in this study population was 0.80, which improved to 0.32 at 4th week and 0.13 at 16th week of follow-up. (Table 2).

Table 2: Visual acuity among patients with treatment and follow up.

Follow up Week	Mean Visual Acuity (logMAR)
1	0.80
2	0.48
4	0.32
8	0.21
16	0.13

The recurrence rate was more in posterior uveitic cases, while there was hardly any kind of recurrence in other types. Recurrence of TB was related anti-tuberculosis treatment as well.

DISCUSSION

In ocular tuberculosis, inflammation may involve one or both the eyes. Uveitis in intraocular tuberculosis may present as anterior, intermediate, posterior, or panuveitis.[7] Tubercular anterior uveitis, which is a chronic granulomatous disease presents with an subtle onset. The ocular manifestations seen are mostly those which are observed in other granulomatous diseases.[8] In intermediate uveitis cells are seen in the vitreous along with formation of snowballs, and in severe cases snow banking with peripheral retinal vasculitis, sometimes with spilling of cells into the anterior segment causing a spill-over anterior uveitis. Intermediate uveitis can be unilateral or asymmetrically bilateral.

In a study by Samrin et al,[9] it Tubercular etiology was ascertained as a cause of uveitis, which should be kept in mind when patients present with clinical signs such as granulomatous uveitis, broad synechiae, tuberculoma, etc. Poor socio-economic conditions, overcrowding and illiteracy pose a suspicion of tuberculous etiology. Study by Gupta et al[10] showed that in Indian population, comprising of 158 patients with presumed intraocular TB, 42% had posterior uveitis and 36% presented anterior uveitis. In our study also, posterior uveitis was seen in 49%, anterior uveitis in 29% followed by intermediate uveitis in 16% and panuveitis in 6% of cases.

The most common presentation of intraocular TB is posterior uveitis as seen in our study with choroiditis present in 40% of the cases. Solitary or multiple choroidal nodules (tubercles), choroidal granuloma (tuberculoma), neuroretinitis, subretinal abscess can also be seen in posterior tubercular uveitic cases as seen in our study.[11] Choroidal tubercle appears as orange-yellow lesion with indistinct margins and is not accompanied by inflammation. Patients are usually asymptomatic, since the lesions do not involve the macula. The presence of an active or healed choroiditis patch is highly suggestive of tubercular etiology. Besides, Miliary tuberculosis with hematogenous spread of tubercle bacilli infects all layers of the eye leading to panophthalmitis.

In another study done over 50 patients by Al-Shakarchi et al,[4] presenting with multifocal choroiditis, treated with anti-tubercular therapy (ATT) and without simultaneous use of oral corticosteroids. All patients treated had a favorable response. There was no recurrence recorded. This response to therapy can be attributed to direct microbial invasion which lead to choroiditis.

Ophthalmologists mainly face challenges in the diagnosis mainly because of lack of definite diagnostic guidelines, varied manifestation of the disease and

limited ocular samples. The US FDA has recommended 9 months course of ATT in the treatment of extra-pulmonary tuberculosis.[12] If there is no improvement after 2 months of intensive treatment, the patient has to be reassessed and alternate diagnosis or resistant forms of bacilli are to be suspected.

CONCLUSION

Tuberculosis is quite far from reach in India, and with the emergence of MDR-TB having unwavering incidence due to poor socio-economic conditions, overcrowding and illiteracy and a background of contact of TB, can be sufficient for a suspicion of tuberculous etiology among patients.

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DECLARATIONS

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Ethical approval: Taken

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