Diagnosis, treatment, and outcomes of presumed Ocular Tuberculosis patients attending Central Chest Clinic, Colombo

ABSTRACT

Aims

Main objective of this study was to describe the diagnosis, treatment, outcomes, and associated factors of presumed ocular tuberculosis patients attending Central Chest Clinic, Colombo.

Study Design, Place and Duration

A cross sectional descriptive study was conducted among all ocular tuberculosis patients referred to Central Chest Clinic, Colombo for treatment from 1st of January 2016 to 31st June 2018.

Methodology

Pretested content validated secondary data extraction form was used. Socio-demographic and work-related characteristics were analysed using frequency distributions. Association between socio-demographic characteristics and factors associated with diagnosis, treatment and outcomes were analysed using Fisher-extract test.

Results

Among study respondents, 52.6% showed abnormal ESR finding (>20mm), 17.8% displayed Chest X-ray abnormalities and 89.5% reported positive Tuberculin skin test (>14mm in diameter). Uveitis was the most common diagnosis (87.9%). Among Uveitis patients, 36.5% presented with posterior uveitis. Out of all ocular TB patients who have completed the treatment, 77.6% reported improvement of vision following the anti-TB treatment regimen. Duration of the treatment with anti-TB drugs was similar across all types of ocular diseases among Ocular TB patients. (p=0.590)

Conclusions

Large number of patients received treatment for 6 months with majority reported as improved vision on completion of treatment. Further prospective studies using primary data need to be conducted to have greater insight of the ocular tuberculosis in Sri Lanka.

Key words: Ocular TB, Uveitis, Tuberculosis, Sri Lanka

INTRODUCTION

Tuberculosis is a communicable disease, which is transmitted by Mycobacterium tuberculosis, an acid-fast bacillus. Sri Lanka is a country with relatively higher prevalence of tuberculosis. It is estimated by the WHO, the prevalence of tuberculosis cases in Sri Lanka is 65/100,000. Although majority of the cases are due to pulmonary Tuberculosis, one in four tuberculosis cases are due to extra-pulmonary tuberculosis [1].

Exact prevalence of ocular tuberculosis and TB uveitis is not known. One of the reasons is the absence of definitive diagnostic criteria. Direct relationship between the Uveitis and the tuberculosis is difficult to prove. Ocular abnormalities in the presence of positive mantoux test or IGRA, characteristic slit lamp findings suggestive of TB uveitis, such as Mutton keratic percipitates, Irish nodules, Bushka nodules, presence of TB at another site are considered as presumed TB uveitis [2-6].

Ocular tuberculosis can involve any of the ocular structures, unilaterally or bilaterally. Since TB has predilection for organs with high oxygen tension, choroid is the most common structure involved. Posterior uveitis is the most common, followed by anterior uveitis, pan uveitis and intermediate uveitis. Other ocular manifestations of tuberculosis are cyclitis, retinitis, retinal vasculitis, neuro-retinitis, optic neuropathy, endopthalamitis and panopthalamitis [7-8]. Main objective of this study was to describe the diagnosis, treatment, outcomes, and associated factors of presumed ocular tuberculosis patients attending Central Chest Clinic, Colombo.

SUBJECTS & METHODS

A cross sectional descriptive study was conducted in Central Chest clinic, Colombo. All Ocular TB Patients who were referred to Central Chest Clinic for treatment by Consultant Ophthalmologists of National Eye Hospital Colombo following the diagnosis of ocular tuberculosis from 1st of January 2016 to 31st June 2018. Pretested content validated Secondary data extraction form was formulated to collect data from the clinic records and registers at Central Chest Clinic, Colombo. Missing data were collected from tracing the patients through contact details obtained from clinic record with prior approval and appropriate ethical consideration. Study variables were markers of immunity to TB (Mantoux reading, Interferon gamma release assay), slit lamp findings, chest x ray abnormalities, features suggestive of pulmonary or Extra pulmonary TB at another site, history of recurrence and duration of illness and presumed response to treatment. Data was entered and analysed using SPSS package by principal investigator, herself. Socio-demographic

characteristics and work-related characteristics were analysed using frequency distributions. Association between socio-demographic characteristics and factors associated with diagnosis, treatment, and outcomes of presumed ocular TB patients was analysed using Fisher extract test. Confidentiality and privacy were strictly ensured. Ethical clearance was obtained from Ethics Review Committee of Sri Lanka Medical Association.

RESULTS

This study was conducted to describe the diagnosis, treatment, and outcomes of presumed ocular TB patients attending Central Chest Clinic, Colombo. Sixty-one ocular TB patients were treated during the study period at Central Chest Clinic. Out of them 58 patients were eligible to be included in the study. Sixty nine percent of the Ocular TB patients belonged to the working population between the ages of 18 to 60 years. More than fifty-five percentage of the Ocular TB patients were males and majority were Sinhalese (79.3%). Ninety-four-point five percent of the patients had received at least secondary education. Majority of the patients were unemployed (58.5%). Close to six percent of patients were from armed forces (5.7%) and a similar percentage of patients were employed in private sector (Table-1).

Prevalence of Diabetes mellitus was 21.8% among ocular TB patients. In addition, close to 30 percentage of the Ocular TB patients smoke (29.1%) and more than 1 in 4 patients consume alcohol. Fifty-two-point six percent of the Ocular TB patients had an abnormal ESR finding (>20mm). Chest X-ray abnormalities were detected in 17.8% of patients. Eighty-nine-point five percent of Ocular TB patients showed a positive Mantoux test of more than 14mm in diameter (89.5%). Patients who have undergone ocular histological investigations were close to 5 percent (Table-2).

Urticaria/Rash was the most common side effect experienced by 8 out of 58 patients during anti TB treatment. (13.8%) According to type of ocular pathology, eighty-nine-point nine percent of Ocular TB patients were diagnosed with uveitis. Out of all uveitis patients, more than 35 percent presented with posterior uveitis (36.5%). (Table-3)

Eighty-seven-point nine percent of the patients have received anti TB medication for 6 months whereas six-point nine percent of the patients have received anti-TB regimen for 9 months. Out of all ocular TB patients who have completed the treatment, more than three quarter of patients reported improvement of vision following the anti-TB treatment regimen (77.6%). (Table-4)

Table 1- Selected Socio-demographic characterises of study participants

Characteristic		Number(n)	Percentage (%)
Age in years	1-18	4	6.9
	19-45	22	37.9
	46-59	18	31.0
	60 and above	14	24.1
Gender	Male	32	55.2
	Female	26	44.8
Occupation*	Unemployed	31	55.8
	Government sector-skilled labour	6	11.3
	Private sector- skilled labour	3	5.7
	Unskilled labour-Government or Private	5	9.4
	Self employed	5	9.4
	Forces	3	5.7
Total		**58**	**100**

*n= 53, Missing= 5 (8.6%)

Table-2 Prevalence of comorbidities and risk behaviours among Ocular TB patients

Comorbidity/Risk factor	Number (n)	Percentage (%)
Comorbidity		
Diabetes mellitus*	12	21.8
Hypertension**	7	12.5
Bronchial Asthma*	4	7.3
Risk factor		
Smoking*	16	29.1
Alcohol*	14	25.5
Illicit Drug use*	1	1.8
Total	55	100

*n=55, Missing=3 (5.2%); **n=56, Missing=2 (4.3%)

Table-3 Types of Ocular TB patients based on Ophthalmological disease

		Number (n)	Percentage (%)
All types of Uveitis		52	89.9
	Anterior uveitis/ Iritis 17 (32.7%)		
	Posterior uveitis 19 (36.5%)		
	Panuveitis 16 (30.8%)		
Retinitis including detachment		3	5.2
Vitritis		2	3.4
Scleritis		1	1.7
Total		58	100

Table-4 Selected factors related to duration and outcome of the treatment of Ocular TB patients

	Number (n)	Percentage (%)
Ophthalmological assessment of outcome		
Conducted	49	84.5
Status not known	9	15.5
Result of ophthalmological assessment*		
Vision improved	38	77.6
Vision not improved	11	22.4
Duration of treatment		
6 months	51	87.9
8 months	1	1.7
9 months	4	6.9
12 months	2	3.4
Total	58	100

*Out of the patients whom ophthalmological assessment is conducted, n=49

Analysis using Fisher extract showed that induration diameter of Tuberculin skin test was more in patients with Chest X-ray abnormalities (p=0.018). However, no significant variation was observed in abnormal ESR findings among various types of Ocular TB disease. (p=0.411). Duration of the treatment with anti-TB drugs was similar across all types of ocular diseases among Ocular TB patients. (p=0.590) (Table not provided).

DISCUSSION

Prevalence of Diabetes mellitus was 21.8% among ocular TB patients. Chest X-ray abnormalities were detected in 17.8% of patients. Eighty-nine-point five percent of Ocular TB patients showed a positive Mantoux test of more than 14mm in diameter (89.5%). Urticaria/Rash was the most common side effect experienced by 8 out of 58 patients during anti TB treatment. (13.8%) According to type of ocular pathology, eighty-nine-point nine percent of Ocular TB patients were diagnosed with uveitis. Out of all uveitis patients, more than 35 percent presented with posterior uveitis (36.5%). Out of all ocular TB patients who have completed the treatment, more than three quarter of patients reported improvement of vision following the anti-TB treatment regimen (77.6%).

Our study revealed higher proportion of the patients was employed in tri forces diagnosed with Ocular TB compared to national average. Out of employed respondents, 11.1% (3 out of 27) were from the tri forces whereas only 0.5% were employed in tri forces out of the total employment at national level. This signified the necessity for more stringent screening among personnel from armed forces [9]. The most occurring comorbidity among Ocular TB patients in the present study was Diabetes mellitus (21.8%). This emphasized the importance of screening TB patients for Diabetes as Diabetes itself causes ocular complications [10].

Among ocular TB patients, all had a Mantoux reading of 10mm or more. Each of them was provided with a minimum of 6 months' anti-TB treatment. Similarly, in a prospective study conducted in TB endemic country Iraq, a group of patients with primarily unexplained uveitis were followed up and 61 out of 64 patients (95.3%) had positive Tuberculin test (10mm) [11].

In the present study, commonest ocular TB presentation was uveitis with 89.9%. Out of all uveitis, posterior uveitis was common (36.5%) followed by Anterior Uveitis (32.7%). Following uveitis, retinitis and vitritis were more frequent (5.2% and 3.4% respectively). A prospective study conducted in Iraq, vitritis with multifocal choroiditis was the most common mode of presentation [11]. In a study from India, 66 (42%) had posterior uveitis, 57 (36%) anterior uveitis, 18 (11%) panuveitis, and the remaining 17 (11%) reported intermediate uveitis [12].

Most of the patients have received anti TB medication for 6 months (87.9%) whereas 6.9% of the patients have received anti-TB regimen for 9 months. Out of all ocular TB patients who have completed the treatment, 77.6% reported improvement of vision. Two separate studies were conducted in non-endemic United Kingdom on Ocular Tb treatment. Both studies concluded that 6 months standard anti-tuberculosis treatment provide good visual outcomes in the majority of patients which was similar to this study [3,12].

Conclusion

Most common presentation was Posterior Uveitis followed by Anterior Uveitis, Pan-Uveitis and Retinitis. Close to ninety percent of patients received treatment for 6 months with more than 3/4 reported as improved vision on completion of six months' treatment.

Limitations

This study was conducted with secondary data sources. The details of these sources namely clinic records and registers were maintained by qualified medical officers employed in Central Chest Clinic, Colombo. Due to the workload and human errors could have occurred during entry of data which could have influenced the outcome of this study. Further, data of only 58 patients with presumed ocular tuberculosis was available for the analysis.

Visual assessment following completion of anti TB treatment was assessed according to patients' experience. Objective assessment of visual outcome was not part of the routine documentation at Central Chest Clinic, thus limiting the objective ocular assessment in this study.

Secondary data was not available on concurrent corticosteroid therapy on these ocular TB patients which was one of the major limitations of this study.

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COMPETING INTERESTS

The authors have no affiliation with any organization with a direct or indirect financial interest in the subject matter discussed in the article.

AUTHORS' CONTRIBUTIONS

Author DT designed the study and carried out the data collection. Author MK performed the statistical analysis. Both authors DT and MK wrote the protocol, and the manuscript.

CONSENT

Informed written consent was only taken from patients with missing data which were collected from tracing the patients through contact details obtained from clinic record. If tracing the patients was not required and only secondary data was needed, consent was not obtained.

ETHICAL APPROVAL

Ethical clearance was obtained from Ethical Review Committee of Sri Lanka Medical Association.

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