Pravara Med Rev; March 2024, 16 (01), 24 – 28
DOI: 10.36848/PMR/2024/00000.51078

Original article

Ophthalmic manifestations in patients with tuberculosis in rural setting

Dr.Akshay Bhandari (1), Dr. Sakshi Bagdiya (2) , *Dr. Dipti Bhandari (3)

[1]Professor and Head of Department Of Ophthalmology, Balasaheb Vikhe Patil Rural Medical College,Loni , Pravara Institute of Medical Sciences.
[2]Post graduate resident, Department Of Ophthalmology, Balasaheb Vikhe Patil Rural Medical College,Loni , Pravara Institute of Medical Sciences.
[3]Assistant Professor , Department Of Ophthalmology, Balasaheb Vikhe Patil Rural Medical College,Loni , Pravara Institute of Medical Sciences.
*Corresponding author**

Abstract:

Introduction: This study provides the clinical profile of various ophthalmic manifestations in patients known to be infected with pulmonary and extra-pulmonary tuberculosis at Pravara Institute of Medical Sciences.

Methodology: This study, conducted in the ophthalmology OPD and DOTS centre of Pravara Institute of medical sciences during a period of 4 years from June 2017 to June 2021, aimed to comprehensively analyze the ophthalmic manifestations of tuberculosis patients. All the diagnosed cases of pulmonary(130) and extrapulmonary(72) tuberculosis were evaluated by ophthalmologist for any ocular manifestations.

Results: The study revealed Out of 202 cases, 32 (15.8%) cases had ocular manifestations including 12 cases (9%) of pulmonary and 20 cases (27.7%) of extrapulmonary tuberculosis. The most common Ocular manifestations seen were Anterior Uveitis(31.25%) followed by episcleritis(21.87%) to rare ones being pan uveitis(3.12%) and Lateral Rectus palsy(3.12%). Ocular manifestations were more common in extra-pulmonary Tb than pulmonary TB and more common in males than females.

Conclusion: Tuberculosis is of major concern in rural population of India. Ocular manifestations vary greatly ranging from Mild episcleritis to potentially blinding posterior uveitis and disabling Lateral Rectus palsy. Timely diagnosis of ocular manifestations in patients of Tuberculosis can prevent vision threatening complications and early initiation of treatment.

Keywords: ophthalmic manifestations, pulmonary TB, extrapulmonary TB.

Introduction

Tuberculosis is an infectious disease of chronic pathology caused by one of the members of the Mycobacterium tuberculosis complex that includes M. tuberculosis, M. bovis, and M. africanum (most commonly by M. tuberculosis). Two billion people are affected by tuberculosis[1].. India is endemic for tuberculosis with 256/lakh population. TB can affect majority of the structures of the eye with marked variability of the lesions[2].

Ocular tuberculosis encompasses any infection by Mycobacterium tuberculosis complex involving the eye. Terms as “primary” and “secondary” ocular tuberculosis are often used in literatures. Some literatures use ‘Primary tuberculosis’ to describe isolated ocular disease without systemic involvement, while others use the term when eye is the initial port of entry of the bacilli. The term, secondary ocular tuberculosis is reserved for those cases where there is ocular involvement from seeding by hematogenous spread from primary sites as lungs and lymph nodes[3]. Ocular manifestations of tuberculosis often manifests as a unilateral and asymmetric disease. Anterior uveitis and scleritis are among the most common manifestation of tuberculosis in the eye. Choroiditis, neuroretinitis and retinal vasculitis are other common posterior segment manifestations reported[4].

There is also lack of uniform diagnostic criteria in addition to the difficulties in confirming the diagnosis with traditional laboratory methods[5]. It is therefore necessary to identify the ocular manifestations of early stages of the disease. Hence this study was done to evaluate ocular findings in diagnosed cases of pulmonary and extra pulmonary tuberculosis to find out the frequency and types of ocular manifestations seen in tuberculosis.

PMR P ISSN: 0975-0533, E ISSN: 0976-0164

Material and methods

A hospital based, prospective cohort study was conducted in Ophthalmology OPD and DOTS centre of Pravara Institute of Medical Sciences, Loni during a period of 4 years from June 2017 to June 2022. The study was explained to all eligible people in their own language, and consent was obtained. General physicians first examined the patients with history suggestive of tuberculosis. Diagnosis of pulmonary and extra pulmonary Tuberculosis was done based on history, clinical findings and relevant investigations.

Complete ophthalmic examination was done in Ophthalmology OPD by using Snellen Vision Chart for visual acuity, diffuse torch light examination to examine periorbital area and anterior segment slit lamp examination used in appropriate magnification and illumination for further evaluation of anterior and posterior. Extra ocular motility and cover tests were done to see any evidence of ocular misalignment and abnormality of extra ocular movement.

Posterior vitreous and fundus were evaluated under dilatation using 90 diopters and 20 diopters Volk aspheric lenses and indirect ophthalmoscope. Gonioscopy was done as required. Uveitis cases evaluated for signs inflammation like distribution of keratic precipitates, posterior synechiae, anterior chamber reaction and iris nodules. Vitreous was examined for cells and exudates. Any evidence of posterior uveitis like choroidal tubercles, tuberculoma, subretinal abscess, serpiginous-like choroiditis or endophthalmitis was noted. Signs of papilloedema or optic neuropathy and retinal vasculitis were also looked for. The frequencies of ocular manifestations were evaluated using relevant statistical-tests.

Results

Table 1: Age and Sex wise distribution of tuberculosis cases

Out of 202 patients, 132 (65.4%) were male and 70 (34.6%) were female. Maximum in the age group of 41-50 years (30.5%) followed by 31-40 years (16%)

Age group	Male	Female	Percentage
0-10	0	0	0
11-20	3	2	2.5%
21-30	6	3	4.5%
31-40	21	11	16%
41-50	41	21	30.5%
51-60	29	14	21.5%
61-70	18	11	14%
71-81	14	08	11%
Total	132 (65.4%)	70(34.6%)	

Table 2: Age wise distribution of pulmonary and extra pulmonary TB cases.

Out of 202 patients, 130 (64%) were Pulmonary Tb patients and 72 (36%) were Extra-pulmonary patients. Males were more than females in both pulmonary(68%) and extrapulmonary(61%) cases of tuberculosis. Maximum number of patients of pulmonary and extra pulmonary TB was found to be in 41-50 years age group (43+19) followed by 31-40years age group(21+ 11)

	Pulmonary TB		**Extra pulmonary TB**	
Age group	Male	Female	Male	Female
0-10	0	0	0	0
11-20	2	1	1	1
21-30	4	2	2	1
31-40	14	7	7	4
41-50	30	13	11	8
51-60	20	8	9	6

PMR P ISSN: 0975-0533, E ISSN: 0976-0164

61-70	10	6	8	5
71-81	8	5	6	3
Male/female TOTAL	88 (68%)	42	44 (61%)	28
CASES TOTAL	130 (64%)		72 (36%)	

Table 3: Cases with Ophthalmic manifestation in pulmonary and extrapulmonary TB patients
Out of 202 cases, a total of 32 (15.8%) cases were found to have ophthalmic manifestations, out of which 12 (37.5%) were of pulmonary TB and 20 (62.5%) were of extra-pulmonary TB. Maximum ophthalmic manifestaions were found in the age group of 31-40 years (40.6%) followed by 71 – 80 (15.6%) and least being in 21-30 years (9.4%)

	Pulmonary TB		Extra pulmonary TB		Percentage
Age group	Male	Female	Male	Female	
0-10	0	0	0	0	0
11-20	0	0	0	0	0
21-30	1	0	1	1	9.4%
31-40	4	2	5	2	40.6%
41-50	1	0	2	1	12.5%
51-60	0	1	1	1	9.4%
61-70	1	0	2	1	12.5%
71-80	1	1	2	1	15.6%
TOTAL	12 (37.5%)		20 (62.5%)		

Table 4: Ophthalmic manifestations in Tuberculosis patients:
Most common ophthalmic manifestation in the 32 Tuberculosis patients is Anterior uveitis -10 cases(31.25%) followed by episcleritis- 7 (21.8%), followed by nodular scleritis- 5(15.6%), papilloedema – 4 (12.5%), intermediate and posterior uveitis- 2 each (6.25%), pan uveitis and LR plasy- 1 each (3.125%)

OCULAR MANIFESTATIONS	NUMBER OF CASES	PERCENTAGE
Episcleritis	7	21.8%
Nodular scleritis	5	15.6%
Anterior uveitis	10	31.25%
Intermediate + Anterior uveitis	2	6.25%
Posterior uveitis	2	6.25%
Panuveitis	1	3.125%
Papilloedema	4	12.5%
Lr palsy	1	3.125%

Discussion:

In this study of 202 cases of tuberculosis, majority 130 (64.4%) of cases were of pulmonary tuberculosis. Though pulmonary tuberculosis is more common than extra-pulmonary tuberculosis, ocular manifestations were commonly seen in cases of extra pulmonary tuberculosis (62.5%). Literatures have suggested that majority of patients with extrapulmonary TB do not have any evidence of pulmonary Tuberculosis[6] [7]. The common age group with ocular manifestations in our study was 31-40 years (13 cases, 40%) This is in accordance with general disease pattern of systemic tuberculosis which mainly affects younger age group of population[8]. Uveitis (31%) is the most common ocular manifestation in tuberculosis since uvea receives the most share of blood supply in eye. The most common ocular finding was bilateral healed focal choroiditis according to a study by Biswas et al (50%) [9]. In another study from India by Sahu et al, where 55 cases of ocular tuberculosis were evaluated, the most common ocular finding was acute anterior uveitis (21.8%) [8]. Tubercular uveitis can result from direct infection or immune-mediated hypersensitivity response to mycobacterial antigen. It can present as granulomatous or non-granulomatous anterior uveitis, intermediate uveitis, vitritis, retinal vasculitis, neuro-retinitis, solitary or multiple choroidal tubercles, multifocal choroiditis, choroidal granulomas, subretinal abscess, endophthalmitis, and pan-ophthalmitis and hence can mimic multiple uveitis etiologies [2] [3]. This study helps in outlining some of the common manifestations that patients with ocular tuberculosis can present with. It is very important for clinicians as it helps clinicians to be well aware of the different manifestations of tuberculosis in eye which helps to make an early diagnosis and start the correct treatment before the patient suffers from irreversible loss of vision. As tuberculosis is mainly a disease of young people, proper ophthalmic examination of tuberculosis patients is recommended for early diagnosis and treatment; thus preventing significant years of productivity that can be lost due to visual disability having a tremendous impact on wellbeing of a society. tuberculosis help in diagnosis of ocular involvement in systemic tuberculosis[10]. Ocular manifestations have been found more in extra pulmonary tuberculosis than pulmonary tuberculosis, which makes it important for timely diagnosis of ocular manifestations in patients of extra-pulmonary Tuberculosis as well. This can prevent vision threatening complications and early initiation of treatment.

Conclusion

Tuberculosis is one of the existing pandemic diseases in the world that can affect almost every organ of the body. Despite the low percentage of ocular manifestation in TB, ocular morbidity due to tuberculosis is still in significant numbers because of high prevalence of tuberculosis among people in developing countries. Newer diagnostic tools as PCR showing mycobacterial load in intraocular fluids in combination with ophthalmic features of

References

1. Bhatta, S., Thakur, A., Shah, D.N., Choudhary, M. and Pant, N. (2019) Ocular Manifestations among Systemic Tuberculosis Cases: A Hospital Based Study from Nepal. Journal of Tuberculosis Research, 7, 202-211

2. Goyal JL, Jain P, Arora R, Dokania P. Ocular manifestations of tuberculosis. Indian J Tuberc. 2015 Apr;62(2):66-73. Doi: 10.1016/j.ijtb.2015.04.004. Epub 2015 Jun 16. PMID: 26117474.

3. Gupta, V., Gupta, A. and Rao, N.A. (2007) Intraocular Tuberculosis—An Update. Survey of Ophthalmology, 52, 561-587.

4. Shah JS, Shetty N, Shah SK, Shah NK. Tubercular Uveitis with Ocular Manifestation as the First Presentation of Tuberculosis: A Case Series. J Clin Diagn Res. 2016 Mar;10(3):NR01-3. doi: 10.7860/JCDR/2016/16219.7375. Epub 2016 Mar 1. PMID: 27134908; PMCID: PMC4843294.

5. Gupta, B., Agrawal, R., Swampillai, A.J., Lim, R.H.F., Kee, A., Gunasekaran, D. and Pavesio, C. (2016) Ocular Manifestations of Tuberculosis: An Update. Expert Review of Ophthalmology, 11, 145-154.

6. Parchand, S., Tandan, M., Gupta, V. and Gupta, A. (2011) Intermediate Uveitis in Indian Population. Journal of Ophthalmic Inflammation and Infection, 1, 65-70. https://doi.org/10.1007/s12348-011-0020-3

7. Cimino, L., Herbort, C.P., Aldigeri, R., Salvarani, C. and Boiardi, L. (2009) Tuberculous Uveitis: A Resurgent and Underdiagnosed Disease. International Ophthalmology, 29, 67-74.
8. Sahu, G.N., Mishra, N., Bhutia, R.C. and Mohanty, A.B. (1998) Manifestations in Ocular Tuberculosis. The Indian Journal of Tuberculosis, 45, 153-154
9. Biswas, J. and Badrinath, S.S. (1996) Ocular Morbidity in Patients with Active Systemic Tuberculosis. International Ophthalmology, 19, 293-298
10. Yeh, S., Sen, H.N., Colyer, M., Zapor, M. and Wroblewski, K. (2012) Update on Ocular Tuberculosis. Current Opinion in Ophthalmology, 23, 551-556