Commentry: Ocular coinfections in human immunodeficiency virus infection—What is so different?

Ocular tuberculosis (TB) in AIDS is relatively rare and can occur even at CD4+ cell counts greater than 200 cells/μl. Study done by Rajesh Babu *et al*. found CD4 cell counts ranging from 14 to 560 cells/μl with a mean of 160.85 cells/μl in 14 patients with ocular TB in AIDS. Bilateral presentation was present in 26.66%. Presentations of ocular TB included choroidal granulomas in 52.63%, subretinal abscess in 36.84%, worsening to panophthalmitis in three eyes, conjunctival tuberculosis, and panophthalmitis each in 5.26%. All cases had evidence of pulmonary TB. They found that patients who had poor visual outcome either because of severe intraocular disease despite treatment, or those whose eyes were eviscerated because of panophthalmitis, had a significant improvement in their systemic status. This may have implications for treatment of ocular TB. This may be related to the poor drug penetration into the blood aqueous and blood retinal barriers, resulting in decreased intraocular levels of the drug, indicating the need for higher dosages of Anti-tubercular therapy (ATT) for treating ocular TB as opposed to pulmonary TB, the precise cause for this phenomenon is not known.[1]

HIV/Multidrug Resistant Tuberculosis (MDR-TB) coinfected patients are at high risk for ocular inflammatory disease, mainly ocular TB. Routine ocular examination should be considered in HIV patients with or suspected MDR-TB, especially those with extrapulmonary TB.[2] In a cross-sectional study of 47 patients done by Salil Mehta *et al*. it was found that five eyes of five patients (10%) had choroidal tubercles, one eye of one patient (2%) had presumed tubercular chorioretinitis, and one eye of one patient (2%) had presumed active cytomegalovirus (CMV) retinitis.[2]

As per the National AIDS Control Organisation (NACO) guidelines for treating HIV/TB coinfected patients prompt initiation of TB treatment shall be started followed by early initiation of antiretroviral therapy (ART). Any new patient diagnosed with coinfection or who has taken ATT for less than 1 month should receive 2H7R7Z7E7 + 4 H7R7E7. Whereas treatment regime for any patient who has received 1 month or more of ATT includes 2H7R7Z7E7S7 + 1H7R7Z7E7 + 5H7R7E7. Furthermore, the ART treatment for ART initiation/continuation/modification in HIV/TB Coinfection, no specific changes have been made.[3]

British HIV Association (BHIVA) guidelines recommend use of Rifamycin-based TB regimens to be used whenever possible. In regards to starting HAART during TB treatment, recommendations are to assess the drug interactions and physicians need to balance the risks when deciding to initiate HAART. They recommended, initiation of HAART at physicians discretion in patients with CD4 counts consistently >350 cells/μl; CD4 100–350 cells/μl: as soon as possible; CD4 <100 cells/μl: to start HAART as soon as practicable after starting TB therapy.[4]

Ocular syphilis remains one of the common cause of bacterial infection in HIV-positive patients.[5] Syphilis infection in HIV-infected men has been associated with a significant increase in the HIV viral load and a significant decrease in the CD4 cell count. Kate Buchacz *et al*. conducted an analysis in 52 HIV-infected men with primary or secondary syphilis; of which 30 (58%) were receiving antiretroviral therapy. Viral loads were found to be higher during active stage of syphilis compared with pre-syphilis levels by a mean of 0.22 RNA log10 copies/ml (P = 0.02) and were lower by a mean of 0.10 RNA log10 copies/ml (P = 0.52) after syphilis treatment. On the contrary, it was found that CD4 cell counts were lower during syphilis infection than before by a mean of −62 cells/mm3 (P = 0.04), and were higher by a mean of 33 cells/mm3 (P = 0.23) after syphilis treatment.[6] They also concluded that increases in the HIV viral load and reductions in the CD4 cell count were most substantial in men with secondary syphilis and those not receiving ART therapy. Syphilis may enhance HIV transmission via the syphilitic ulcers and by raising the HIV viral load.[7] Parthopratim Dutta Majumder *et al*. also stated in their study that primary syphilis facilitates HIV transmission and HIV may modify the natural course of syphilis, increasing the propensity of the disease to progress to neurosyphilis.[8] Since there is an overlap in risk behaviors of spread of HIV and syphilis, an integrated public health effort Is warranted to prevent new syphilis infections, and to identify and treat active syphilitic cases promptly.

Opportunistic ocular infections (OOIs) remain an important cause of blindness in the developing world among HIV-infected patients. Improvements in modern combination antiretroviral therapy (cART) has led to a progressive decline in the incidence of OOIs and mortality among patients with AIDS. cART not only has decreased the incidence of CMV retinitis, but also halted the progression of such retinitis. Although the incidence of CMV retinitis has declined overall, the incidence of ocular syphilis has increased during the cART era.[9] Moreover, in patients with HIV and MDR-TB the immunosuppression add up, which has resulted in high prevalence of presumed ocular TB in HIV/MDR-TB coinfected patients. Development of modern cART has changed the incidence of OOI and mortality rate in HIV-infected patients, particularly in immune recovery individuals. Conversely, the incidence of ocular syphilis has continuously increase since cART era. Fortunately, visual outcome is promising if early detection is introduced. Reconstitution of the immune system with effective cART and increasing accessibility of screening examinations are the key parameters for success, which will help in preventing blindness in these groups of patients.

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

S Balamurugan, Bharat Gurnani[1], Kirandeep Kaur[2]

Uvea Services, [1]Cornea Consultant, [2]Pediatric Ophthalmology Fellow, Aravind Eye Hospital and Post Graduate Institute of Ophthalmology, Pondicherry, India

Correspondence to: Dr. S Balamurugan, Consultant and HOD, Uvea Services, Aravind Eye Hospital and Post Graduate Institute of Ophthalmology, Cuddalore Main Road, Thavalukuppam, Pondicherry - 605 007, India.
E-mail: drbalamuruganms@gmail.com

References

1. Babu RB, Sudharshan S, Kumarasamy N, Therese L, Biswas J. Ocular tuberculosis in acquired immunodeficiency syndrome. Am J Ophthalmol 2006;142:413-8.
2. Mehta S, Mansoor H, Khan S, Saranchuk P, Isaakidis P. Ocular inflammatory disease and ocular tuberculosis in a cohort of patients co-infected with HIV and multidrug-resistant tuberculosis in Mumbai, India: A cross-sectional study. BMC Infect Dis 2013;13:225.
3. Guidelines on Prevention and Management of TB in PLHIV at ART Centers. New Delhi: National AIDS Control Organization, Ministry of Health and Family Welfare; 2016.
4. Pozniak AL, Coyne KM, Miller RF, Lipman MC, Freedman AR, Ormerod LP, *et al*. British HIV Association guidelines for the treatment of TB/HIV coinfection 2011. HIV Medicine 2011;12:517-24.
5. Latif N, Janani MK, Sudharshan, Selvamuthu P, Dutta Majumder P Triple trouble: A case of retinochoroiditis in a patient with syphilis, tuberculosis, and human immunodeficiency virus infection. Indian J Ophthalmol 2020;68:1995-7.
6. Buchacz K, Patel P, Taylor M, Kerndt PR, Byers RH, Holmberg SD, *et al*. Syphilis increases HIV viral load and decreases CD4 cell counts in HIV-infected patients with new syphilis infections. AIDS 2004;18:2075-9.
7. Gray RH, Wawer MJ, Brookmeyer R, Sewankambo NK, Serwadda D, Wabwire-Mangen F, *et al*. Probability of HIV-1 transmission per coital act in monogamous, heterosexual, HIV-1-discordant couples in Rakai, Uganda. Lancet 2001;357:1149-53.
8. Dutta Majumder P, Chen EJ, Shah J, Ching Wen Ho D, Biswas J, See Yin L, *et al*. Ocular syphilis: An update. Ocul Immunol Inflamm 2019;27:117-25.
9. Laovirojjanakul W, Thanathanee O. Opportunistic ocular infections in the setting of HIV. Curr Opin Ophthalmol 2018;29:558-65.

Access this article online	
Quick Response Code:	Website: www.ijo.in
	DOI: 10.4103/ijo.IJO_680_20

Cite this article as: Balamurugan S, Gurnani B, Kaur K. Commentry: Ocular coinfections in human immunodeficiency virus infection—What is so different? Indian J Ophthalmol 2020;68:1997-8.