Retinitis due to Opportunistic Infections in Iranian HIV Infected Patients

Ali Abdollahi[1], Minoo Mohraz[2], Mehrnaz Rasoulinejad[2], Mona Shariati[1], Parastou Kheirandish[2], Maryam Abdollahi[1], and Tahereh Soori[2]

[1] *Department of Ophthalmology, Farabi Eye Hospital, Tehran University of Medical Sciences, Tehran, Iran*

[2] *Department of Infectious Diseases, Imam Khomeini Hospital, Tehran University of Medical Sciences, Tehran, Iran*

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Abstract- We tried to evaluate prevalence and characteristics of Iranian HIV infected patients with retinitis due to opportunistic infections. In this cross sectional study, we evaluated 106 HIV infected patients via indirect ophthalmoscopy and slit lamp examination by 90 lens to find retinitis cases. General information and results of ophthalmologic examination were analyzed. Prevalence of retinitis due to opportunistic infections was 6.6%: cytomegalovirus (CMV) retinitis 1.88%, toxoplasmosis retinochoroiditis 1.88% and tuberculosis chorioretinitis 2.83%. CD_4 count was higher than 50 cell/µlit in both cases with CMV retinitis. Along with increasing survival in the HIV infected patients, the prevalence of complications such as ocular manifestation due to opportunistic infections are increasing and must be more considered.

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Introduction

HIV/AIDS affects millions of people worldwide. In the early stages of epidemic, eyes were affected because the CD4 T-lymphocytes count of HIV-infected patients dropped rapidly. Today, with the advent of highly active antiretroviral therapy, HIV-positive individuals live longer with a better quality of life. However, because a definite cure has not been yet found, many patients with HIV will develop ocular complications (1).

Opportunistic infections in posterior segments of eyes may be a manifestation of a generalized disease in HIV/AIDS patients. In 12% of patients uveitis is the first manifestation of HIV infection. It may be manifested as necrotizing retinitis or unifocal or multifocal choroiditis due to cytomegalovirus (CMV), tuberculosis (TB), toxoplasmosis, herpes zoster and syphilis (2).

Several studies have been performed on ocular manifestations of HIV infection in various areas in the world. They have reported different results (3-8).

Along with increasing survival in the HIV infected patients, the prevalence of complications such as ocular manifestation due to opportunistic infections are increasing. Thus, evaluation of different aspects of these complications are necessary for improving management of HIV infected patients. Therefore, we designed this study to evaluate Iranian HIV infected patients with retinitis due to opportunistic infections.

Materials and Methods

This is a cross sectional study that was carried out on 7 HIV infected cases with retinitis. These cases were selected among 106 HIV infected patients who were referred to Farabi Eye Hospital in 2008. All of them had confirmed HIV infection with western blot. After obtaining consent from the patients, demographic characteristics including gender, age, duration of HIV infection, CD_4 count, and treatment with highly active antiretroviral (HAART) were extracted with questionnaires. Then, all of them were evaluated by an ophthalmologist for detecting retinitis cases. Preliminary examination were including visual acuity, examination of external parts of eyes, evaluation of eye movements, pupil reflexes, anterior segment and fundus via indirect ophthalmoscopy and slit lamp examination by 90 lens. All of the information were collected and analyzed by SPSS-15. *P*-value less than 0.05 was considered as significant.

Corresponding Author: Tahereh Soori
Raze Hospital, Vahdat-e- Islami Square, Tehran, Iran
Tel: +98 21 55630665, Fax: +98 21 55620300, E-mail:tara_soori@yahoo.com

Results

In this study, we evaluated 106 HIV infected patients. 89 (83.96%) were male and 17 (16.03%) were female. Mean age was 36.78 ± 8.73 years and the most frequent age group was 30-39 years. Among 106 HIV infected cases, 7 (6.6%) cases with retinitis due to opportunistic infections were detected: 2 cases with CMV retinitis (1.88%), 2 cases with toxoplasmosis retinochoroiditis (1.88%) and 3 cases of TB chorioretinitis (2.83%). Two cases with TB chorioretinitis mentioned recent pulmonary TB.

Table 1 has shown general information and characteristics of studied cases with and without retinitis.

Table 1. General and demographic information of 106 HIV infected patients with and without retinitis.

		With retinitis	Without retinitis	*P*-value
Age (mean ± SD year)		33.14 ± 12.30	37.05 ± 8.43	NS
Sex (%)	Male	6 (85.71)	83 (83.83)	NS
	female	1 (14.29)	16 (16.16)	
Marital status (%)	Single	4 (57.14)	47 (47.7)	
	married	3 (42.86)	36 (36.36)	
	divorced	0 (0)	13 (13.13)	
	Widow/widower	0 (0)	3 (3.3)	
Mode of HIV transmission (%)	IV drug user	4 (57.14)	55 (55.55)	
	Blood transfusion	1 (14.28)	6 (6.06)	
	Mother to child	1 (14.28)	0 (0)	
	Sexual	1 (14.28)	13 (13.13)	
	IV drug user & sexual	0 (0)	9 (9.09)	
	IV drug user & transfusion	0 (0)	1 (1.01%)	
	IV drug user & sexual & transfusion	0 (0)	2 (2.02)	
	unknown	0 (0)	13 (13.13)	
HIV duration(month)		26.14 ± 42.22	25.85 ± 36.09	NS
CD_4 count (mean ± SD, cell/µlit)		143 ± 84	434 ± 357	*P*<001
Patients on HAART		5	37	
HAART duration (mean±SD, month)		6.36 ± 8.09	13.92 ± 14.38	
Positive laboratory tests	HCV Ab	5		
	HBS Ag	1		
	CMV Ab	2		
	Toxo Ab	2		

Table 2. Ophthalmic lesions detected by indirect ophthalmoscopy in seven HIV infected cases with retinitis due to opportunistic infections.

	Kind of retinitis	Ophthalmic lesions detected by indirect ophthalmoscopy
1	CMV retinitis	Optic neuropathy (OD)
		Full thickness retinal opacification (OD)
		Retinal necrosis (OD)
2	CMV retinitis	Hard exude (OD)
		Hemorrhages (OD)
		Full thickness retinal opacification (OD)
		Retinal necrosis (OD)
		Retinal detachment (OD)
3	Toxoplasmic retinochoroiditis	Full thickness retinal opacification (OD) (macular toxoplasmic scar formation)
4	Toxoplasmic retinochoroiditis	Full thickness retinal opacification (OD) (punched out scar at foveal area with alternate areas of hyper and hypopigmentation)
5	TB chorioretinitis	Areas of severe chorioretinal atrophy + pigment migration (OD or OS)
6	TB chorioretinitis	Focal retinitis (OD or OS)
7	TB chorioretinitis	Full thickness retinal opacification (OD)
		Retinal necrosis (OD or OS)

As shown in table 1, mean of CD_4 count was 143 ± 84 in retinitis patients. CMV retinitis cases had CD4 count of 110 and 105 cell/µlit.

Ophthalmic lesions detected by indirect ophthalmoscopy in seven HIV infected cases with retinitis have been summarized in table 2.

Discussion

Opportunistic infections in posterior segments of eyes may occurs in HIV/AIDS patients. It may be manifested as necrotizing retinitis or unifocal or multifocal choroiditis due to CMV, TB, toxoplasmosis, herpes zoster and syphilis (2). Numerous investigations have been done on ocular manifestation of HIV/AIDS patients. Causative agents differ in different regions in the world (1,3,5,7-12). In our study, among 106 HIV infected cases, 7 (6.6%) cases with retinitis due to opportunistic infections were detected: 2 cases with CMV retinitis (1.88%), 2 cases with toxoplasmosis retinochoroiditis (1.88%) and 3 cases of TB chorioretinitis (2.83%).

Our results show that prevalence of CMV retinitis has been estimated as 1.88%. This estimation is so lower than other studies. For example, in Tamara study that has been done before HAART era, the prevalence of CMV retinitis had been reported equal 37% (2). However, in another study in HAART era reported prevalence of CMV retinitis has been declined about 80% (4).

Although CMV retinitis mostly occurs in patients with CD_4 less than 50 cell/µlit, but it cannot be ruled out based on exclusively CD_4 count (13). According to our results, our CMV retinitis cases had CD_4 count of 110 and 105 cell/milt. Although some studies have shown that CMV retinitis involves both eyes in 35-52% of cases (13) but one eye was involved in both our CMV retinitis patients.

CMV retinitis mostly presented as retinal necrosis with granulated, white, perivascular areas with hemorrhage. In our study indirect ophthalmoscopy showed optic neuropathy, full thickness retinal opacification and retinal necrosis in first patient and hard exude, hemorrhages, full thickness retinal opacification, retinal necrosis and retinal detachment in the second patients with CMV retinitis.

The prevalence of ocular toxoplasmosis in our study was 1.88% and both patients were on HAART. Similarly, ocular toxoplasmosis has been reported in 1-2% in American AIDS patients while it was estimated 8% in Brazilian HIV infected patients (14). Ocular toxoplasmosis in immunecompetent patients mostly presented as reactivation of past lesions; but in immunecompromised patients primary toxoplasmosis may develops without any evidence of past chorioretinal scars and lesions are usually multifocal and bilateral (13). In our study, toxoplasmosis retinitis was detected in 2 patients. Lesions were inactive and both were unilateral and non-central. Indirect ophthalmoscopy showed scar in macula in one patient and scar in fovea in another patient.

Prevalence of ocular tuberculosis was 2.83% in our study. Tuberculosis is an important opportunistic infection in HIV infected patients in developing countries (15). In an study in 2002 in Malawia, 3% of patients with HIV/AIDS and tuberculosis had choroidal granuloma (15). In another investigation in Africa, uveitis due to tuberculosis were found in 1.6-15.6% of HIV infected patients (2). Ocular tuberculosis as an extra pulmonary tuberculosis occurred hematogenously after primary tuberculosis or is due to reactivation of inactive ocular lesions (16). In another study on ocular manifestation of HIV patients in Iran among 141 patients, 3 cases of TB chorioretinitis was reported (17). In our study, we detected three patients with TB chorioretinitis and two of them had history of pulmonary tuberculosis.

Our investigation is a descriptive study and has some limitations. Analytical studies with larger sample size is necessary for achieving more accurate results. Long-term follow up of patients with this complications help to better understanding the prognosis.

In summary, according to our investigation, prevalence of retinitis due to opportunistic infections was 6.6%: CMV retinitis 1.88%, toxoplasmosis retinochoroiditis 1.88% and TB chorioretinitis 2.83%. CD_4 count was higher than 50 cell/µlit in both cases with CMV retinitis. Along with increasing survival in the HIV infected patients, the prevalence of complications such as ocular manifestation due to opportunistic infections are increasing and must be more considered.

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