Cytomegalovirus retinitis in HIV/AIDS patients

Chiotan C*, Radu L**, Serban R***, Comăcel C**, Cioboata M***, Anghel A**
**Prof. Dr. Matei Bals" National Institute of Infectious Diseases Bucharest, Department of HIV / AIDS, Office of Ophthalmology
***Ophthalmology Emergency Hospital, Bucharest

Correspondence to: Carmen Chiotan, MD
"Prof. Dr. Matei Bals" National Institute of Infectious Diseases, Bucharest, Department of HIV/AIDS, Office of Ophthalmology
1 Dr. Calistrat Grozovici Street, District 2, Bucharest, Romania
Phone: 021 201.09.80, E-mail: carmenchio@yahoo.com

Received: September 15th, 2013 – Accepted: January 29th, 2014

Abstract
Human immunodeficiency virus (HIV) has the ability to affect any organ in the body. In 70% of HIV-infected patients ocular manifestations were observed, which in the vast majority reflect the systemic disease and may be the first sign of a disseminated infection.

Aim: The purpose of this paper is to determine the prevalence and the clinical aspects of cytomegalovirus retinitis in HIV/AIDS (Acquired Immunodeficiency Syndrome) patients.

Method: The study is retrospective, conducted in the Ophthalmology Office of "Matei Bals" Infectious Diseases Hospital in Bucharest during the period August 1, 2007 - August 1, 2013. Each patient was examined thoroughly at the slit lamp biomicroscope by using a lens of 90D and a 20D lens using the indirect microscope after administration of topical mydriatics.

Results: 131 patients were followed for HIV / AIDS with posterior segment ocular involvement. 36.64% of the 131 patients having affected the posterior segment have been diagnosed with CMV retinitis.

Conclusions: Doctors should be aware of the existence of ocular damage in HIV/AIDS and to emphasize the importance of regular ophthalmologic examination of patients with HIV/AIDS.

Keywords: CMV-cytomegalovirus retinitis, HIV/AIDS

Abbreviations: HIV- human immunodeficiency virus, AIDS- acquired immunodeficiency syndrome, CMV retinitis- cytomegalovirus retinitis

Introduction

HIV / AIDS is undoubtedly a multisystemic disease, but eye diseases occur in up to 70% of the cases during the natural history of infection. The spectrum of HIV-associated ophthalmic manifestations is very broad and extends from a simple blepharitis to blindness induced CMV retinitis (cytomegalovirus retinitis) [1,3].

On June 30, 2012 there were a number of 11 189 patients of HIV/AIDS alive in Romania. This means that approximately 7,800 patients may have had the ocular manifestations of the disease [4,5].

Ophthalmic pathology in those infected with HIV is due to opportunistic infections, vascular anomalies, neoplasms, diseases induced by specific medication or neurophthalmic damage. Among these, opportunistic infections are the main cause of morbidity and ocular disease, with the highest potential for destruction in patients with AIDS [6].

Coinfection with CMV occurs in 75-85% of the patients with HIV infection, of whom, more than a half develop CMV retinitis. Despite the high incidence, there are difficulties regarding the therapeutic approach and the results can only be satisfactory even with HAART highly active treatment [2,7].

The incidence of retinal microangiopathy in patients with advanced HIV disease is related to the severity of the immunodeficiency and is a bad prognostic sign [8,9].

Cytomegalovirus retinitis is the most common ocular opportunistic infection, representing 90% of the infectious retinitis, 20-30% of the patients with AIDS develop CMV retinitis. It usually occurs in the late stages of the disease (about 18 months after the declaration of the clinical onset) in patients with a lower limit of CD4 levels of 50/mmc [10].

The ophthalmic disease usually occurs in patients presenting a clinically apparent systemic infection. It is always bilateral.

Clinical forms:
A. Edematous form

Early lesions appear as white spots, often centered on retinal vessels. They are accompanied by many hemorrhages, which is typical.

Retinal lesions cause atrophic areas, partially pigmented. They made the image “in concorda” - outside a crown micro-outbreak point to remember, a viral proliferation and the central area of the retina atrophy vessels that have the appearance of white cords. The pathognomonic appearance has the following characteristics: at the periphery small white lesions, a viral proliferation zone and the central zone with atrophic retina with vessels of white cords appearance.

B. Indolent form

It occurs in cases of relapses under the maintenance therapy – a zone of thinned retina with diffuse pigmentation through which thechoriod can be seen is described. The edge of the lesion is granulomatous, with small dots infiltrates, without hemorrhages. It is difficult to diagnose because it may appear as a scar lesion, but continues to progress slowly.

C. Perivascular form – “frosted branch angiitis”

It associates edematous retinitis with hemorrhages and tends to appear perivascularly. Periphlebitis may occur as an expression of retinitis that extends along vessels (it is not an inflammation of the vessels).

D. Optic neuropathy occurs in 4% of all cases of CMV retinitis. The prognosis is bad, with frequent loss of light perception despite conventional antiretroviral therapy.

In more than half of the patients, CMV retinitis is asymptomatic (54%), being revealed by systematic screening of the ocular fundus [9,11,12].

When present, symptoms include decreased visual acuity, floaters that translate an evolved retinitis or an early involvement of the macula or of the optic nerve.

The natural evolution represents the damage of the retina in 2-3 months. The most common complications are macular damage (with marked decrease in visual acuity), optic neuropathy, optic nerve atrophy, retinal detachment [11,12].

Methods

There were 48 patients with HIV/AIDS included in the study, who presented with CMV retinitis at the Ophthalmology Office of “Matei Bals” National Institute of Infectious Diseases Bucharest, from August 1, 2007 to August 1, 2012. No case has been taken from other authors or other hospitals of the same profile.

The study was conducted retrospectively, records of all patients presenting with HIV / AIDS who experienced posterior segment ocular disease were used for data analysis.

The examination sheet of each patient registered the age, sex, number of CD4 copies/μL at presentation, adherence to the treatment. Detailed ocular examination displays visual acuity measurement, examination of the anterior segment and posterior segment of the eye. After sampling the biological probes (blood, conjunctival discharge on sterile environment), the etiologic agent of posterior segment ocular manifestations could be established.

Visual acuity was recorded in Snellen eye chart through Snellen fractions. The examination of the ocular posterior segment included the examination of the vitreous and retina after administration of mydriasis - tropicamide 1% by using the 90D lens for the slit lamp microscope and the 20D lens for the indirect microscope for better visualization of the retinal periphery. Documentation of relevant changes at the vitreous and retinal examination was performed by fundus photography and fundus appearance diagrams.

These individual data were analyzed and results were reported in percentage or absolute numerical value.

Results

CMV retinitis that occurred in 47 patients in the group, who had CD4 count < 50/mL, maintained CMV as an opportunistic agent of the immunocompromised ones. One patient had a CD4 count of 198 copies / mL, indicating more likely that the CMV infection preceded the CD4 cell recovery.

All the patients were submitted to an examination of the anterior pole without signs of inflammation, most presented with floaters, with decreased visual acuity gradually installed.

Table 1 shows a preponderance of cases of CMV retinitis clinically manifested as edematous (60.41%), its pathognomonic appearance being an aid in the early detection of CMV retinal damage.

| Clinical form               | Number of eyes |
|----------------------------|----------------|
| Edematous form             | 29             |
| Indolent form              | 5              |
| Perivascular form          | 10             |
| Optic neuropathy           | 4              |

There were 2 cases of indolent forms which associated in the contralateral eye optic neuropathy, both of them with poor prognosis, to a total decrease of light perception despite the induction treatment that was started immediately.

20.83% of the patients had clinical signs of the perivascular form; two of these patients had bilateral involvement, but were responsive to treatment.
References

1. Ahmed I, Al E, Chang E. Ophthalmic Manifestations of HIV. In: Coffey S, Volberding PA, eds. HIV InSite Knowledge Base. San Francisco: UCSF Center for HIV Information. August 2005.

2. Mihăilescu R, Arama V, Parasciv S, Streinu-Cercel A, Otelea D, Munteanu D, Iosipenco M, Chiotan C, Bunea OE, Mărdărescu M, Radulescu M, Hristea A, Ungurianu R, Arama SS, Streinu-Cercel A, Otelea D, Munteanu D, Iosipenco M, Tudor AM, Munteanu D, Radulescu M, Luminos M, Chiotan C, Mărdărescu M. CMV infection in HIV positive patients in Romania: epidemiological particularities, interaction between HIV and CMV. Herpes. The Journal of the IHMF. oct. 2007; 14, 3, 60A.

3. Jacobson MA, Stanley H, Holtzer C, Margolis TP, Cunningham ET. Natural history and outcome of new AIDS-related cytomegalovirus retinitis diagnosed in the era of highly active antiretroviral therapy. Clin Infect Dis. 2000; 30:231-3.

4. Arama V, Mihăilescu R, Rădulescu M, Arama SS, Popescu C, Streinu-Cercel A. CMV-HIV Study group. Effect of detectable cytomegalovirus load on short-term progression of HIV-infection in newly-diagnosed Romanian HIV-infected patients. Journal of the International AIDS Society. 2013.

5. Chiotan M. Infectious Diseases. 2011.

6. Mihăilescu R, Arama V, Parasciv S, Otelea D, Streinu Cercel A, Bunea O, Mărdărescu M, Luminos M, Chiotan C,
Iosipenco M, Hristea A, Munteanu D, Rădulescu M, Popescu C, Tudor AM, Moroti R, Neaga E. Clinical and immuno-viral aspects at CMV-HIV infected patients. Clujul Medical. 2008; LXXXI – Supplement, 64-65.

8. Negruţu L. News in infection and HIV disease.

9. Regillo C. Cytomegalovirus Infection. Retina and Vitreous (Section 12: Basic and Clinical Science Course 2006-2007). San Francisco: American Academy of Ophthalmology. 2006:192-193.

10. See RF, Rao NA. Cytomegalovirus Retinitis in the Era of Combined Highly Active Antiretroviral Therapy. Ophthalmol Clin N. Am. 2002; 529-536.

11. Wiegand TW, Young LHY. Cytomegalovirus Retinitis. Int Ophthalmol Clin. 2006 Spring;46(2):91-110.

12. Kanski JJ. Clinical Ophthalmology - A systematic approach. 7th edition