HIV retinopathy and immune reconstitution uveitis on CMV retinitis: A case report

Abstract

Aim:
In HIV patients with CD4+count<50cells/µL, after initiating HAART, close ophthalmological monitoring is mandatory, in order to watch for the development of IRU.

Case presentation:
A 39-year-old patient with unknown medical history consulted for blurred vision and myodesopsia. The examination found bilateral microangiopathy with temporal retinal ischemia in the right eye.
The patient was tested positive for HIV-1 with a CD4count of 43 cells/mm3. The diagnosis of HIV-microangiopathy was made, he received a prophylactic retinal argon-laser and was put on HAART.
Following the HAART, he presented decreased VA in the right eye, with in examination, a slight inflammation of the AC, moderate hyalitis, and a diffuse and confluent temporal retinal necrosis.
The diagnosis of IRU associated with CMV-retinitis was presumed.

Discussion:
The HAART increases the number of CD4-T-cells and restores immune responses against a wide variety of pathogens which reduces the incidence of opportunistic infections. However, in some patients, a dysregulated immune response after initiation of HAART leads to the immune reconstitution inflammatory disease, characterized by the paradoxical aggravation of a treated opportunistic infection or the revealing of a previously untreated subclinical infection in HIV-positive patients. The ocular manifestation of IRIS is called immune reconstitution uveitis (IRU).

IRU usually develops in patients with inactive CMV retinitis, but it can rarely occur in eyes with active CMV retinitis and occurs within the first few weeks of starting HAART.

Conclusion:
The initiation of HAART requires regular general and ophthalmological monitoring in order to recognize early IRU which is often associated with active CMV retinitis.

Key words: HIV retinopathy, CMV retinitis, immune reconstitution uveitis, HIV patients

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Introduction

During infection with the human immunodeficiency virus (HIV), all parts of the eye may be affected by inflammatory, infectious or neoplastic conditions [1].

Although posterior segment opportunistic infections are the most devastating, some pathological entities are rarely diagnosed because they are often asymptomatic such as HIV retinopathy [1].

HIV retinopathy is a non-infectious, often asymptomatic retinal vasculopathy that is accidentally diagnosed [2, 3].

Immune reconstitution uveitis (IRU) corresponds to an intraocular inflammation observed when immunity recovers after initiation of highly active antiretroviral therapy (HAART) [1]. It is more common in HIV-infected people in developed countries where HAART is accessible [4].

Through a clinical case, we tend to describe the epidemiological, clinical and therapeutic aspects of these two entities.

Case presentation

A 39-year-old patient with no known medical history consulted for visual blurring and myodesopsia of the right eye. The ophthalmological examination found bilateral visual acuity at 10/10, a calm anterior segment, clear vitreous, diffuse bilateral microangiopathy (Figures 1) with temporal retinal ischemia in the right eye (Figure 2). Biological assessment revealed a positive retroviral serology for HIV 1 with a CD4 lymphocyte count of 43 cells/mm3. The diagnosis of HIV microangiopathy was made, the patient received a prophylactic retinal argon laser and was put on HAART.

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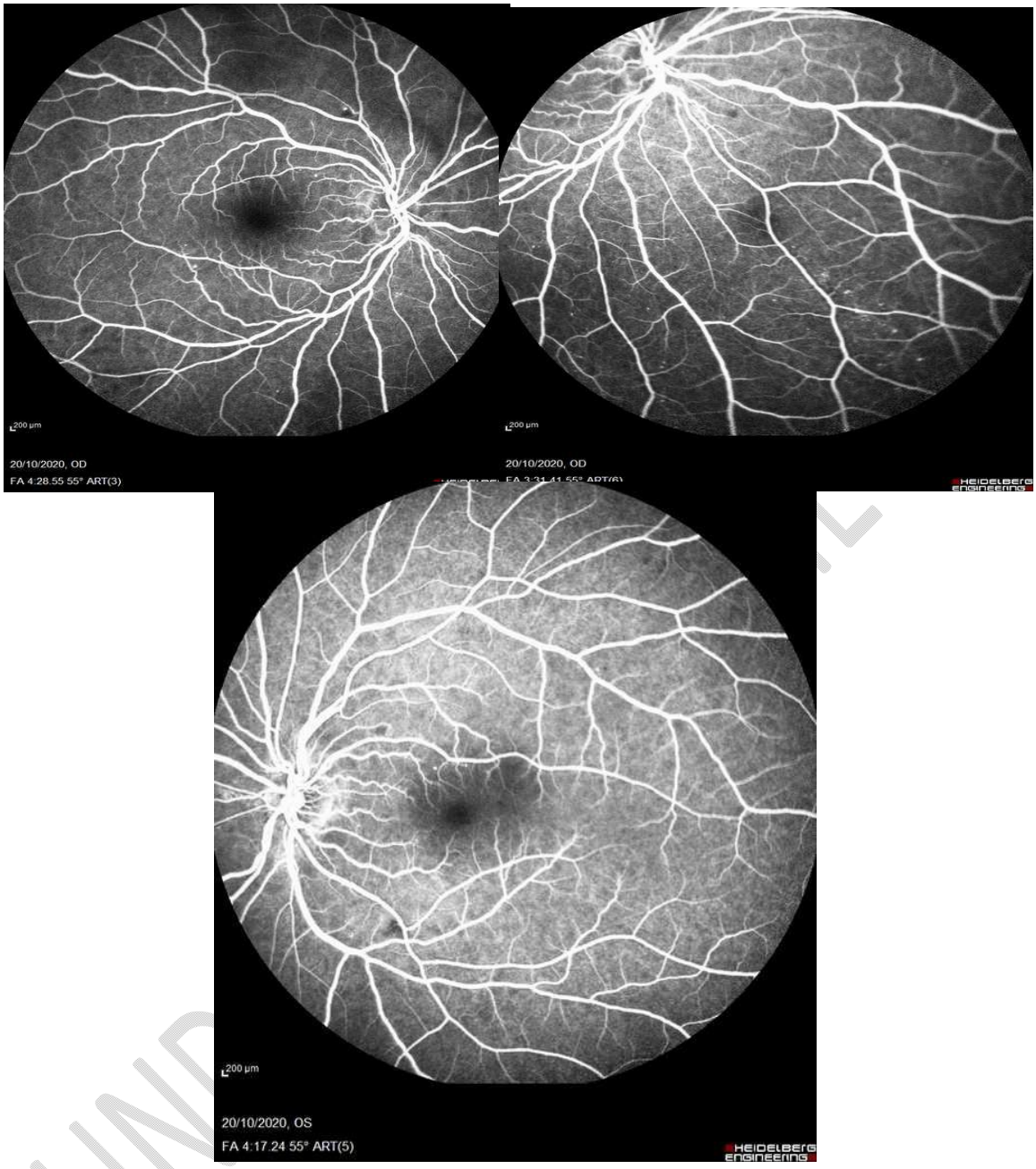

Figures 1: diffuse bilateral microangiopathy

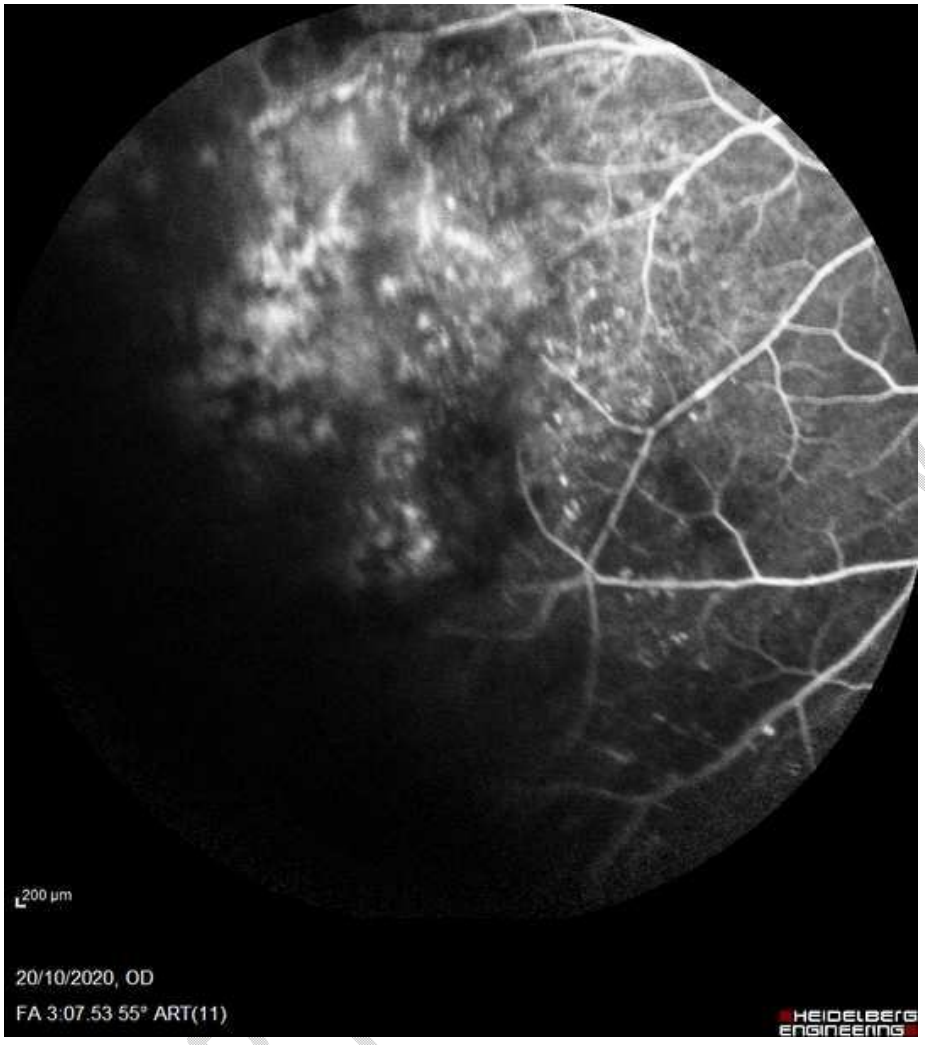

Figure 2: Temporal retinal ischemia in the right eye

The patient presented decreased visual acuity in the right eye following the HAART treatment, the best corrected visual acuity was at 6/10 on the right eye and 10/10 on the left eye.

Examination of the right eye found slight inflammation of the anterior chamber and moderate hyalitis (1+), retinal fundoscopy found diffuse and confluent temporal retinal necrosis close to the inferior retinal artery, and evolving circumferentially towards the superior temporal arcade (Figure 3).

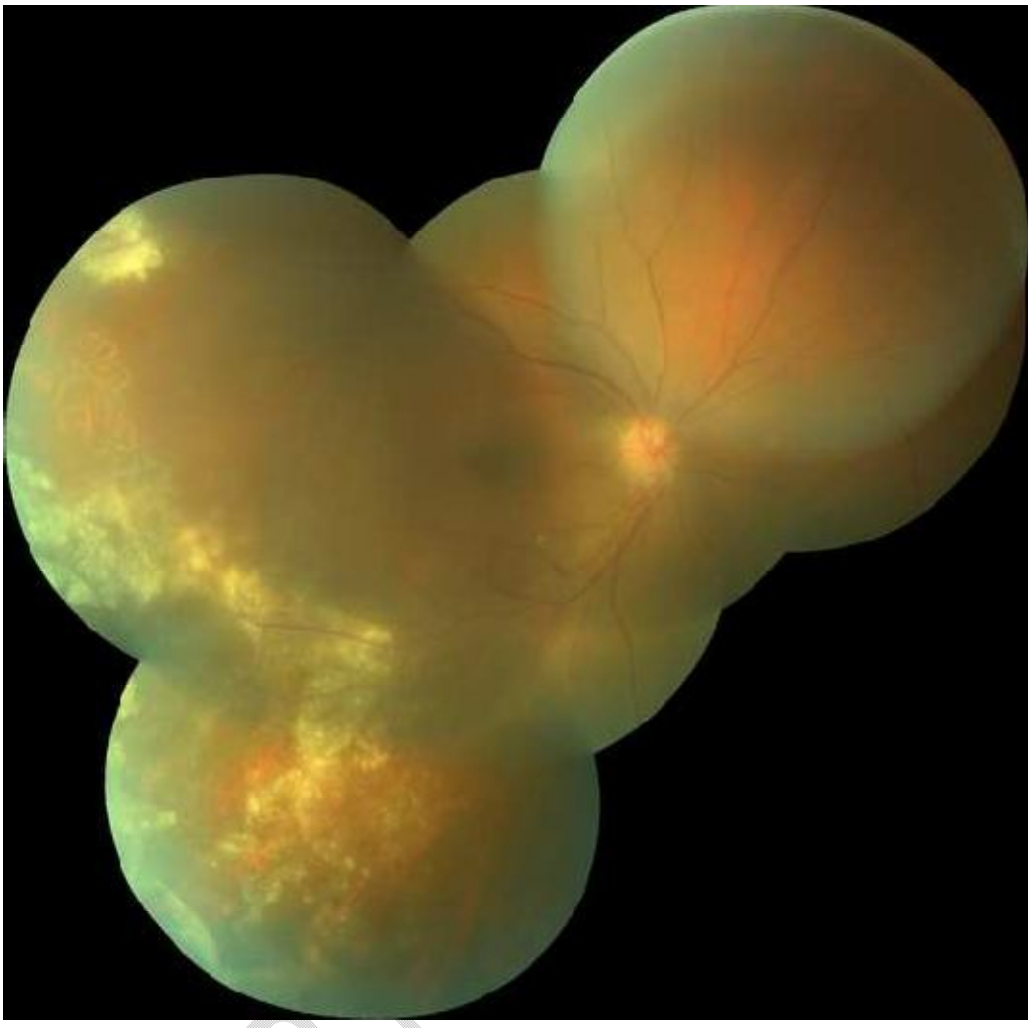

Figure 3: Diffuse and confluent temporal retinal necrosis close to the inferior retinal artery, and evolving circumferentially towards the superior temporal arcade.

Fluorescein retinal angiography confirmed areas of retinal ischemia with neovascularization (Figure 4). The diagnosis of immune reconstitution uveitis associated with CMV retinitis was presumed. PCR analysis of the vitreous sample confirmed the presence of CMV. Intravitreal injections (IVT) of 2mg of Ganciclovir were administered at a rate of 2 IVT per week, combined with oral Ganciclovir.

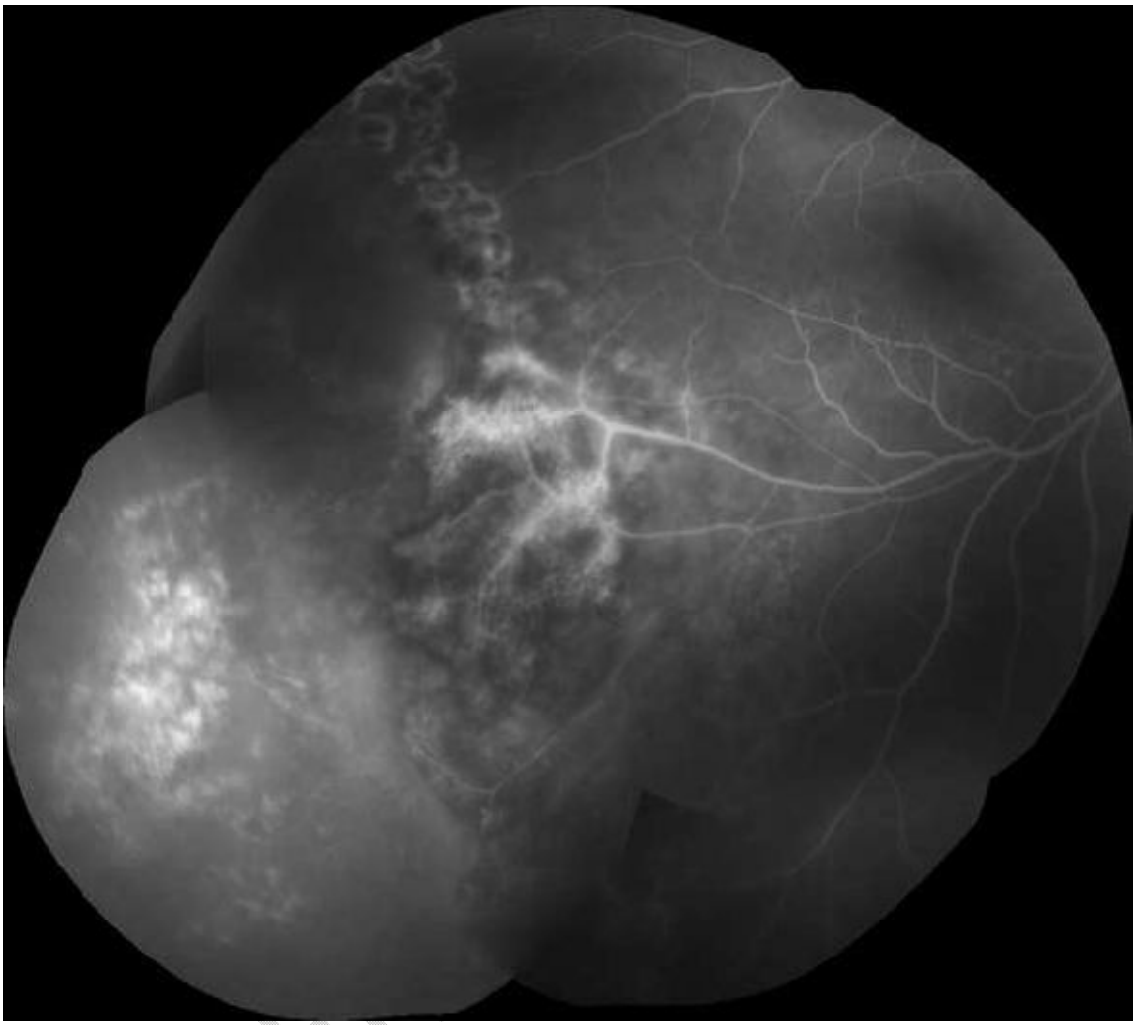

Figure 4: Fluorescein retinal angiography highlighting areas of retinal ischemia with neovascularization

Discussion

HIV-induced retinopathy was first described in AIDS patients in 1982 [6]. It occurs in 40% to 60% of untreated HIV-positive patients [3].

It is generally benign [2], rarely affects visual acuity and can regress spontaneously in six to nine weeks. Although patients may be asymptomatic, retinopathy is usually a sign of advanced HIV infection and immune deficiency, most commonly seen when the CD4 count is low, around 50 cells/mm3 [7].

HIV retinopathy is characterized by the presence of microvascular abnormalities (microangiopathy) caused by immune complex deposits, increased plasma viscosity, cytotoxic effects of the virus on the retinal vasculature and/or invasion of the vascular

endothelium by the HIV leading to retroviral endothelitis [3]. Microangiopathy in HIV infection is not specific. Clinically, it can take the form of cotton wool spots, retinal hemorrhages, intraretinal microvascular abnormalities, telangiectasia and areas of retinal ischemia [2]. Fluorescein angiography comes with great benefits in establishing the right diagnosis.

Histopathologically, retinal vascular changes are similar to diabetic retinopathy, they include loss of pericytes, presence of edematous endothelial cells, as well as thickening of basement membranes. The capillaries narrow, or become blocked leading to formation of microaneurysms, telangiectasias, decreased capillary perfusion and perifoveal lesions and then retinal ischemia [3].

Treatment is based on HAART.

The HAART in HIV-infected patients increases the number of CD4 T cells and restores immune responses against a wide variety of pathogens which reduces the incidence of opportunistic infections. However, in some patients, a dysregulated immune response after initiation of HAART leads to the immune reconstitution inflammatory disease (IRIS) phenomenon [8], which is not specific only for HIV positive patients [11].

IRIS is characterized by the paradoxical aggravation of a treated opportunistic infection or the revealing of a previously untreated subclinical infection in HIV-positive patients after initiation of a HAART. The ocular manifestation of IRIS is called immune reconstitution uveitis (IRU) [9].

Immune reconstitution uveitis (IRU) was described in 1998 as a new intraocular inflammatory disease, which develops in patients with AIDS and inactive CMV retinitis [1].

It develops in 32-38% of patients with CMV retinitis and it is the second most important cause of visual deficits in HIV-infected people in developed countries [4]. The identified risk factors are the size of CMV retinitis lesions and the use of cidofovir.

IRU usually develops in patients with inactive CMV retinitis, but it can rarely occur in eyes with active CMV retinitis and occurs within the first few weeks of starting HAART. The intraocular inflammation is more severe to what it was before the HAART protocol.

IRU mainly affects the posterior segment and is responsible of myodesopsia and moderate BAV. Inflammation is associated with increased lymphocyte count T CD4 between 50 and 100 cells / mm3 [9].

The IRU is most often clinically silent [9]. However, in some patients, severe uveitis may occur and causes ocular complications related to chronic inflammation. The most common complications are macular edema, papilledema, epiretinal membrane (MER), vitreomacular traction syndrome (TVM), retinal detachment, cataract, papillary or retinal neovascularization [1, 8, 9].

Given the range of ocular manifestations of HIV, routine ocular examinations and screening for visual loss which is usually caused by macular pathology, primarily cystoid macular edema, are recommended in patients after the introducing of HAART.

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There are no effective prevention means of IRU. however, the introduction of a HAART after the induction phase treatment for CMV retinitis, and when the latter is completely inactive and controlled, may reduce the risk of developing an IRU. But for some authors, this approach is not recommended for CMV retinitis considering the significant mortality within weeks following initial diagnosis in the absence of HAART [10]

The curative treatment of IRU depends on the site, the severity of inflammation and the presence of ocular complications, in particular macular edema [9].

If it is an isolated mild hyalitis without macular edema, monitoring is recommended because it may be short-term inflammation. In case of severe hyalitis and/or macular edema, intraocular corticosteroid therapy (IVT or sub-Tenonian) or systemic corticosteroid can be started in the absence of recurrence of CMV retinitis [9].

Some authors have suggested that continuous and aggressive anti-CMV treatment for a prolonged period after the HAART may reduce the severity of IRU [5]. this may prevent contralateral CMV retinitis and the systemic dissemination of CMV [5].

Surgical treatment may be required in patients with complications such as TVM, epiretinal membrane or cataract.

CONCLUSION

HIV retinopathy is one of the intraocular manifestations of HIV infection. It is often asymptomatic. Its presence in a patient with no medical history should suggest an HIV infection. Its management is mainly based on HAART.

The initiation of HAART requires regular general and ophthalmological monitoring in order to recognize early immune reconstitution uveitis which is often associated with active CMV retinitis.

Ethical Approval:

As per international standard or university standard written ethical approval has been collected and preserved by the author(s).

Consent

As per international standard or university standard, patients' written consent has been collected and preserved by the author(s).

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