

Clinical and Therapeutic Aspects of Viral Ocular Pathology in Brazzaville

Atipo-Tsiba PW^{1,2*}, Ossibi Ibara B^{1,3}, Messe Ambia Koulimaya R², Onka V² and Eballé AO⁴

¹Faculty of Health Sciences, Marien Ngouabi University of Brazzaville, Congo

²Department of Ophthalmology, University Hospital of Brazzaville, Congo

³Department of Infectious Disease, Cameroon

⁴University of Yaoundé I, Cameroon

*Corresponding author

Atipo-Tsiba PW, Associate Professor, Department of Ophthalmology, University Hospital of Brazzaville, Faculty of Health Sciences, Marien Ngouabi University of Brazzaville, Congo

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Abstract

Introduction: Viruses can act in two ways, either by a direct pathogenic effect, or indirectly by inducing immunosuppression and favoring the action of other so-called opportunistic viruses. This survey had a double objective, describe the clinical aspects of viral ocular pathology and state its principles of treatment.

Materials and Methods: Descriptive cross-sectional study carried out over 2 years at the Ophthalmology department of the University Hospital of Brazzaville. Patients 18 years of age or older with viral ocular pathology were included. The diagnosis was made on the sole basis of anamnestic and / or clinical arguments. None of the viruses involved had been directly detected, with the exception of HIV. Biologically proven patients with a coinfection (bacteria, parasite, fungus) were excluded. HIV serology had been systematic. Four parameters were analyzed: type of virus, structures affected, pathologies diagnosed, anti viral treatments used.

Results: Two hundred twenty-five (225) patients were included. The mean age was 44 ± 2.1 years. Sex ratio was 0.8. Viruses: Adenovirus (51.1%), Herpes zoster (19.5%), HIV (18.7%), Herpes simplex (7.5%), CMV (3.2%). Main structures affected: eyelid (86.2%), chorioretin (6.4%). Main pathologies: Adenovirus conjunctivitis (61.1%), shingles (16%), primary herpes simplex infection (8%) Keratitis (6.4%), chorioretinitis (6.4%), uveitis (2.1%). Anti viral treatments used: Valaciclovir, Ganciclovir and anti retroviral.

Conclusion: Viral ocular pathology is dominated by Adenovirus conjunctivitis and infections due to 3 types of herpes viridae (Herpes zoster, Herpes simplex and CMV). These herpes viridae are generally responsible for opportunistic diseases following immunosuppression linked to HIV.

Keywords: Adenovirus, CMV, Eye, Herpes virus, HIV

Introduction

Medical virology has become particularly important in the past 30 years with the onset of the HIV / AIDS pandemic, recurrent episodes of fevers due to hemorrhagic viruses in Africa, and various outbreaks of SARS (severe acute respiratory syndrome) cases in Asia [1-3]. Once in the body, some of these viruses have an eye tropism. Their pathogenic power will then be expressed in two ways. Either by direct action, the virus is responsible for damage to the eye and its related structures. Either indirectly, the virus induces a state of immunosuppression conducive to the action of other types of so-called opportunistic viruses [4,5]. This work had a double objective, to describe the clinical aspects of the viral ocular pathology in Brazzaville and to state the principles of the antiviral treatments used.

Materials and Methods

This was a descriptive cross-sectional study carried out over a period of 2 years (January 2015 - December 2017), in the Ophthalmology department of the University Hospital of Brazzaville. All patients at least 18 years of age with viral ocular pathology were included. The diagnosis of viral ocular pathology was made on the sole basis of anamnestic and / or clinical arguments:

Adenovirus

Notion of contagion, context of seasonal epidemic, rapid evolution which begins with the eye then the second is reached in a few days, presence of locoregional lymphadenopathies

Herpes Zoster

Ophthalmic shingles with a rash following dermatoma V1, pseudodendritic keratitis, acute hypertensive anterior uveitis sometimes with iris atrophy

Herpes Simplex

Primary infection with the presence of a palpebral rash with a "bouquet of flowers" aspect, dendritic keratitis

CMV

Chorioretinitis with retinal hemorrhage giving the appearance of "Cheese on Ketchup" in a patient with HIV and having a CD4 lymphocyte count below 50/mm³

HIV

Acute retinal necrosis, generalized retinal atrophy with significant areas of detachment at the periphery

None of the viruses involved had been directly identified due to the inadequacy of our laboratories, with the exception of HIV. HIV serology has been systematically performed. In order to relate the lesions observed only to the virus in question, we had excluded patients who suffered from a bacterial, parasitic or fungal co-infection biologically proved.

Four parameters were analyzed: the type of virus, the anatomical structures affected, the pathologies diagnosed and the treatments indicated. Prevalence, arithmetic mean and standard deviation were the statistical tests used.

Results

Two hundred and twenty-five (225) patients were included. The average age was 44 ± 2.1 years [18 years - 57 years]. The sex ratio was 0.8.

Figure 1 shows the different types of viruses involved. In 37 cases (16.4%), HIV infection was responsible for immunosuppression conducive to opportunistic diseases caused by herpes zoster (30 cases) and CMV (7 cases). Figure 2 represents the structures affected during these viral infections. The different pathologies diagnosed are shown in Figure 3. Table 1 shows the different diseases and their causative virus. Table 2 shows the anti viral treatments used.

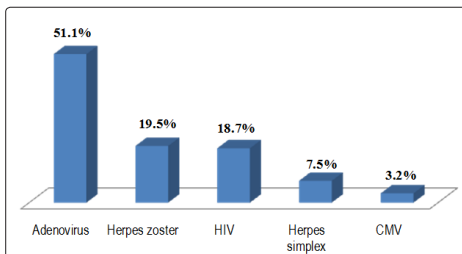


Figure 1: Viruses responsible for ocular pathology in the Ophthalmology department of the University Hospital of Brazzaville, between January 2015 and December 2017

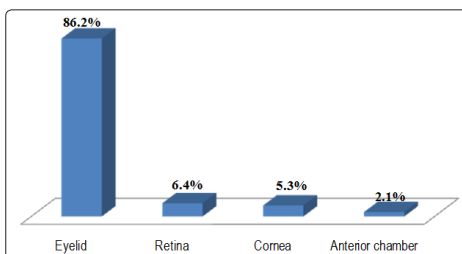


Figure 2: Eye structures affected during viral ocular pathology in the Ophthalmology department of the University Hospital of

Brazzaville, between January 2015 and December 2017.

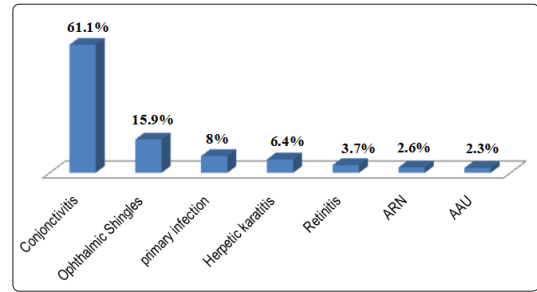


Figure 3: Eye diseases caused by viruses in the Ophthalmology department of the University Hospital of Brazzaville, between January 2015 and December 2017

Conjunctivitis: Seasonal viral conjunctivitis

Primary infection: Blepharitis due to herpetic primary infection

ARN: Acute retinal necrosis

AAU: Acute anterior uveitis

Table 1: Virus and induced eye disease in the Ophthalmology department of the University Hospital of Brazzaville, between January 2015 and December 2017

Virus	Diseases
Adenovirus	Seasonal viral conjunctivitis
Herpes zoster	Ophthalmic Shingles
Herpes simplex	Blepharitis due to herpetic primary infection
Herpes zoster, Herpes simplex	Herpetic keratitis
HIV	Acute retinal necrosis
Herpes zoster	Acute hypertensive anterior uveitis
CMV	Retinitis

Table 2: Anti viral treatments used during viral ocular pathology in the Ophthalmology department of the University Hospital of Brazzaville, between January 2015 and December 2017

Diseases	Anti viral treatments
Seasonal viral conjunctivitis	Symptomatic treatment: Indomethacin eye drops (1 drop 3X / day for 14 days + hygiene (cleaning of secretions 2 to 3 times a day)
Ophthalmic Shingles	Valaciclovir tablet: 1gX3 / day for 7 days
Blepharitis due to herpetic primary infection	Valaciclovir tablet: 500 mgX3 / day for 12 days
Herpetic keratitis	Valaciclovir tablet: 1gX3 / day for 7 days
Acute retinal necrosis	Ganciclovir : 5 mg / kg every 12 hours as an intravenous infusion + Anti retroviral treatment
Acute hypertensive anterior uveitis	Valaciclovir tablet: 1gX3 / day for 7 days
Retinitis	Ganciclovir : 5 mg / kg every 12 hours as an intravenous infusion

Discussion

Men and women are affected in similar proportions. Viral ocular pathology in Brazzaville therefore has no connection with sex. Data from the literature show that this pathology is present in all age groups [6,7]. We have chosen to limit our sample to patients aged at least 18 years. This age group corresponds to a part of the population which is predominantly sexually active. This allowed us to assess the share of HIV-related infection in the appearance of viral eye diseases in Brazzaville. This investigation was able to show that immunosuppression due to HIV to favor the reactivation of 2 viruses of the family of the herpes viridae. These were Cytomegalovirus (CMV) and Herpes zoster. These Herpes viridae are the cause of certain opportunistic diseases [4,7,8].

CMV has been responsible for severe retinitis causing irreversible blindness due to severe damage to the retina and choroid interface. Reactivation of CMV during HIV infection always reflects a state of deep immunosuppression with a CD4 cell count which is less than 50 / mm³ [4,6].

Herpes zoster has been responsible for 3 types of disease, namely, ophthalmic shingles, keratitis, and acute hypertensive anterior uveitis. It is recognized that ophthalmic shingles is often the inaugural disease of HIV/AIDS [4,9,10]. However, no direct link has yet been demonstrated between HIV-related immunosuppression and the 2 other pathologies due to Herpes zoster, notably keratitis and acute hypertensive anterior uveitis [4,11]. These two diseases can appear and have multiple recurrences in immunocompetent subjects.

In addition, the direct pathogenic effect of HIV has been implicated in the occurrence of a few cases of acute retinal necrosis diagnosed during this survey. It is true that herpes viruses can also be responsible for acute retinal necrosis [4,11]. The insufficiency of our laboratories has not made it possible to make a genomic diagnosis by PCR on vitreous samples. HIV serology being positive, the semiological aspects being very different from those of CMV retinitis, the diagnosis of acute retinal necrosis due to HIV was accepted by default in the absence of biological evidence.

Herpes simplex has been responsible for 2 types of disease, including blepharitis in the context of the primary infection of this virus and keratitis. These results can be superimposed on those of the literature [5,9,12].

Seasonal viral conjunctivitis was by far the first viral ocular pathology diagnosed. This is probably explained by the ease of spread of Adenoviruses. These viruses can be transmitted from human to human either by direct contact or through contaminated objects [13,14].

Adenovirus conjunctivitis is an almost always benign condition. Symptomatic treatment with anti-inflammatory eye drops is sufficient to relieve the patient [13-15]. Valaciclovir and Ganciclovir have been used, according to the literature, for the treatment of diseases caused by Herpes viridae [14-16]. HIV-infected patients have all been treated with anti-retrovirals as recommended by UNAIDS (seen on January 21, 2020 : <https://www.unaids.org/en>).

Conflicts of interest: None

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