

Human immunodeficiency virus and the ophthalmologist

Human immunodeficiency virus (HIV)/ acquired immune deficiency syndrome (AIDS) is one of the most feared infectious diseases of the late 20th century. It has made a profound impact on contemporary medical practice, public health priorities and every aspect of modern society. All medical practitioners must be aware of the basics of HIV/AIDS transmission, pathogenesis, clinical manifestations and the principles of management. At the dawn of the 20th century, Sir William Osler said, "To know Syphilis is to know medicine". AIDS appears to be the modern equivalent of syphilis in this regard.

The first cases of HIV/AIDS were reported in 1981 amongst a group of homosexual males in Philadelphia.¹ The first Indian case of HIV was reported in a commercial sex worker from Chennai in 1986.² Since then, HIV has made rapid inroads into our country with the trend of the pandemic shifting from the so-called high-risk groups (commercial sex workers, injection drug users, multiple sexual partners, men having sex with men) to the low-risk general population due to heterosexual transmission. The national adult prevalence of HIV disease is 0.36% with around 2.51 million people being infected with this deadly virus according to the recent National AIDS Control Organization (NACO) estimates.³ Murthy discusses the socioeconomic impact produced by HIV in India in his article in this symposium.⁴

HIV/AIDS is undoubtedly a multisystem disorder but ophthalmic disease does affect 70-80% of patients with HIV infection sometime during the natural history of their infection.⁵ Various studies have demonstrated that 40-45% of HIV-infected patients do have some or other ophthalmic manifestations when examined by an ophthalmologist.⁶ HIV can affect the eye either directly or indirectly by means of various opportunistic infections. The immunology and immunopathogenesis of HIV infection is discussed in the introductory article by Sudarshan *et al.*,⁷ in this symposium. Eye manifestations pointing towards HIV infection in an undiagnosed and otherwise asymptomatic patient include *Herpes zoster* ophthalmicus, molluscum contagiosum involving the eyelids and cotton wool spots in the retina. Cotton wool spots are reportedly the most common ophthalmoscopic finding in HIV-infected patients.⁸

There are many ophthalmic problems that a physician should rule out with the help of an ophthalmologist before initiation of antiretroviral therapy (ART). The spectrum of HIV-associated ophthalmic disease is very broad and ranges from adnexal disorders to posterior segment diseases including the optic nerve and the optic tract.⁸ Diseases of the adnexa include *Herpes Zoster* ophthalmicus, conjunctival molluscum contagiosum and involvement in exfoliative dermatitis such as Steven-Johnson syndrome. Anterior segment disorders comprise *Herpes* keratitis, candidial keratitis, syphilis and uveitis (either primary or secondary such as in the setting of reactive arthritis). A detailed review of various anterior segment disorders in HIV infection is presented in the following symposium by Biswas *et al.*⁹

Non-infectious posterior segment manifestations include HIV-retinopathy, cotton-wool spots, hemorrhages and telangiectasias affecting the retina, and optic disc atrophy. Infectious posterior segment disorders include the sight-threatening *Cytomegalovirus* ocular disease, *Toxoplasma* retinochoroiditis, *Candida* endophthalmitis, tubercular choroiditis, *Cryptococcal* or *Pneumocystis* choroiditis and acute retinal necrosis. A review of various posterior segment manifestations along with very useful illustrations will be found in Bankar's article in this issue.¹⁰

Due to the potentially devastating and rapid course of retinal opportunistic infections, all persons with HIV disease should undergo routine baseline ophthalmologic evaluations. Any HIV-infected person who experiences ocular symptoms also should receive prompt and competent ophthalmologic care as a delay in therapy can lead to irreversible visual loss. In patients with early-stage HIV disease (CD4 count >300 cells/ μ L), ocular syndromes associated with immunosuppression are uncommon. Nonetheless, eye infections associated with sexually transmitted diseases (STDs) such as *Herpes simplex* virus, *Gonorrhoea*, and *Chlamydia* may be more common in HIV-infected persons; therefore, clinicians should screen for HIV in the presence of these infections. Patients become more susceptible to cytomegalovirus (CMV) disease, particularly when their CD4 count drops below 50 cells/ μ L. These patients need to be educated regarding the retinal symptoms in addition to the need for regular ophthalmologic examinations. A close coordination is thus required between the referring physician and the ophthalmologist for the optimal treatment of any given patient.

Ophthalmologists also play a pivotal role in the diagnosis and management of many eye conditions in the setting of HIV infection. Placement of an intraocular ganciclovir implant by an experienced ophthalmologist achieves higher intraocular levels of ganciclovir than systemic therapy alone and reduces the chances of relapse of CMV ocular disease.¹¹ Surgical reattachment of the retinal detachment occurring secondary to CMV disease often helps to restore the vision, at least partially. Fortunately, the advent of combination ART has resulted in a welcome decline in the incidence of this disease. Antiretroviral therapy also prevents CMV relapse. Indeed, it appears that patients with treated CMV retinitis may safely discontinue anti-CMV therapy if their CD4 counts rise to greater than 100 cells/ μ L.¹² Kempen,¹³ in his article in this symposium, discusses various antiretroviral drugs approved for use and broad perspectives of the medical management of HIV infection with the help of highly active antiretroviral therapy (HAART).

The eye is also the one of the victims of drug-related adverse reactions. Drugs like rifabutin, especially when combined with azole antifungal agents can induce uveitis. Cidofovir used in some cases of CMV retinitis is also associated with uveitis and reduction in intraocular pressure.

In the era of the availability of potent ART through government as well as private sectors, today's ophthalmologists need to be aware of immune reconstitution inflammatory syndromes. Uveitis occurs on this basis after initiation of ART and tends to involve the vitreous, macula and optic nerve and occasionally goes on to form cataracts and epiretinal membranes. Eye evaluation including fundoscopy is thus an integral part of routine follow-up of patients on ART. Impact of HAART on ophthalmic manifestations is aptly dealt with in the article by Venkatesh *et al.*,¹⁴ in this issue.

Occupational exposure to HIV is a significant health hazard for the treating clinicians including the eye surgeons. Exposure to patient's blood or other infectious secretions may occur in the setting of outpatient management or operation theaters. The need for universal precautions including gloves and protective eyewear cannot be overemphasized. In addition to appropriate preventive measures, there is also a compelling need of having an access to the post-exposure prophylaxis (PEP) drugs in the operation theaters, hospital casualty and the intensive care unit. The PEP drugs are highly effective in preventing occupational transmission, provided that the PEP therapy is initiated as quickly as possible (preferably within 1-2 h of exposure).

An improved communication between the two broad specialties of HIV medicine and ophthalmology will definitely go a long way in the battle against this dreadful disease.

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