An epidemic of blindness: a consequence of improved HIV care?

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As discussed by Kestelyn & Cunningham in their article (pp. 208–213) in this month's *Bulletin,* ocular complications of HIV/AIDS are common and 10–20% of HIV-infected patients can expect to lose their sight in one or both eyes as a result of cytomegalovirus (CMV) retinitis. Estimating the full epidemic potential of HIV/AIDS blindness requires an understanding of the natural history of HIV infection, in the absence or in the presence of therapy.

Mono-ocular or complete blindness resulting from HIV/AIDS is generally a disease of profound immunosuppression (CD4 T-lymphocyte counts <50 cells/mm^3), most frequently due to CMV retinitis (*1*). In the absence of treatment, survival time after diagnosis of CMV retinitis can be measured in weeks or a few months. In low-income countries, HIV/AIDS patients may not live long enough to present this complication, as other opportunistic diseases of "moderate" and "mild" immunosuppression (100–200 and 200–500 CD4 cells/mm^3, respectively), in particular tuberculosis, will lead to earlier death (*2*).

Measures aimed at treating or preventing the development of opportunistic infections associated with HIV/AIDS lead to an increased life expectancy. Such measures include the prophylactic use of trimethoprim–sulfamethoxazol (prevention of bacterial pneumonia, diarrhoea, *Pneumocystis carinii* pneumonia, and toxoplasmosis), and prophylaxis or treatment of tuberculosis or non-tuberculous mycobacterial disease. However, without the concurrent initiation of anti-retroviral therapy (ART), patients will progress in their immunodeficiency, and increase their susceptibility to complications of profound immunosuppression, including CMV retinitis or other causes of blindness. Administration of less-than-effective ART, such as mono- or bitherapy, will only provide a temporary solution to the menace of profound immunosuppression.

Where the resources are available, prevention and management of ocular opportunistic infections require systematic ocular examination by indirect ophthalmoscopy (indicated for CD4 levels < 100 cells per mm^3) to identify CMV retinitis before macular or optic nerve involvement. When CMV retinitis is diagnosed, treatment requires a complex induction–maintenance schedule of administration of ganciclovir or foscarnet through central venous access, or use of intraocular antiviral therapies (intravitreal injections or sustained-release ganciclovir implants). Concurrently, initiation of ART will allow immune recovery and the eventual discontinuation of CMV treatment (probably true for treatment of other intraocular infections) once the CD4 cell count increases above 100 cells/mm^3. However, even after appropriate treatment, long-term sequelae are common (retinal detachment, cystoid macular edema, or immune recovery uveitis). The cost of 1-year's induction–maintenance treatment of CMV retinitis is estimated to be US$ 20 000. Although such ocular disease is becoming rare in countries with full access to HIV treatment (*3*), it is clear that most of the requirements for its screening and treatment will not be fulfilled or available for the care of most patients at risk in the world. HIV/AIDS patients who become profoundly immunodeficient add to the burden of care (blindness, wasting syndrome, encephalopathy) and can become destitute.

Consideration of the natural history of HIV/AIDS and of the outcome of less than full treatment of its ocular manifestations leads to a paradox: the epidemic of blindness may hit hard in regions where HIV care progressively improves and life expectancy is prolonged. The experience in higher income countries before the availability of potent ART confirms this trend: life expectancy for patients after diagnosis of CMV retinitis increased from 2 months to 12–18 months between 1986 and 1993 due to overall improved AIDS care (*4*).

HIV/AIDS will be a major challenge for VISION 2020 — The Right to Sight, which aims to increase the number of eye-care professionals, improve accessibility to eye-care services, and develop cost-effective strategies for the prevention of blindness. ■

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Ref. No. **01-1184**

