

OCULAR MANIFESTATIONS OF HIV/AIDS

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Almost 70% of untreated AIDS patients will develop ocular manifestations, more than half of which are associated with ocular inflammation or uveitis. It is the aim of this article to highlight the common and important conditions that the practitioner might come across.

The practice of the ophthalmologist who looks after people with HIV has changed.

The widespread use of highly active antiretroviral therapy (HAART) has reduced the incidence of cytomegalovirus (CMV) retinitis as well as other opportunistic infections. It must be remembered that iatrogenic complications also arise, e.g. colour vision impairment by zidovudine and uveitis associated with cidofovir and rifabutin.

For convenience, we can group the conditions into surface disorders, neuro-ophthalmological complications, vascular manifestations and uveitis.

SURFACE PATHOLOGY

HERPES ZOSTER

Herpes zoster has become a prominent marker for HIV infection (Fig. 1). Traditionally this condition affects patients older than 60 years. With HIV, we are seeing patients younger than 45 years. The disease tends to be very aggressive, with prominent crusting and neuralgia. The CD4+ count is usually 75 - 150 cells/ μ l.



Fig. 1. Herpes zoster.

Treatment consists of oral valaciclovir (Zelitrex) for 10 days as well as topical mupirocin (Bactroban) ointment for the scabs. It is vital not to let the lesions dry out, as this can lead to cicatrisation and lid disorders such as entropion with resultant corneal scarring. Pain can be debilitating and is alleviated by topical EMLA cream, capsacain and oral carbamazepine (Tegretol).

Uveitis and an accompanying rise in intraocular pressure are seen in up to 40% of patients. Referral to an ophthalmologist is prudent to avoid complications.

Herpetic ulcers of the cornea in HIV-infected patients tend to be peripheral rather than central, and to be large dendritic ulcers. Treatment is with acyclovir (Zovirax) ointment 5 times a day, and patients should be monitored for uveitis.

KAPOSI'S SARCOMA

These blue-black vascular tumours can affect the eyelids or conjunctiva. Treatment is necessary for large, sight-threatening lesions and is normally accomplished by cryotherapy.

MOLLUSCUM CONTAGIOSUM

Lesions are multiple and large, and accumulate on the lids. Cryotherapy is used to treat clinically significant lesions.

SQUAMOUS CARCINOMA OF THE CONJUNCTIVA

Squamous carcinoma of the conjunctiva has rapidly become a new marker for HIV in young patients (Figs 2 and 3). Typically they are younger than 40 years, whereas the normal age for appearance of this tumour is 65 years.

The spectrum of disease extends from pterygium through dysplasia to carcinoma *in situ*. Typical lesions are raised, with large feeder blood vessels and uneven, rough surfaces. Pigmentation is common.

Treatment involves careful excision using Moh's micrographic technique. It is important not to breach the corneal Bruch's membrane as this can lead to local recurrence. Adjuvant therapies include mitomycin antimetabolite, radiotherapy and enucleation of eyes if



Fig. 2. Squamous carcinoma of the conjunctiva.



Fig. 3. Neglected squamous carcinoma.

there is local invasion. Spread to adjacent tissues requires exenteration of the orbital contents.

VASCULOPATHY

Vasculopathy takes the form of a microangiopathy that manifests as cottonwool spots in the retina. It occurs in 50 - 70% of AIDS patients and can look like early diabetic retinopathy. Small dot haemorrhages are common.

These lesions usually resolve spontaneously and can be confused with early CMV retinitis.

NEURO-OPHTHALMOLOGICAL PATHOLOGY

Neuro-ophthalmological disease includes optic neuritis, papilloedema, cranial nerve palsies and visual field deficits due to intracranial disease such as toxoplasmosis and

cryptococcosis. Optic neuritis is treated by antivirals and corticosteroids according to severity. Causative organisms are often not isolated, leading to the hypothesis that HIV itself causes optic neuritis.

UVEITIS

Necrotising retinitis is caused by CMV, varicella and herpes zoster. CMV is the most common, and usually occurs with a CD4+ count of less than 50 cells/ μ l.

Other causes of uveitis include :

- Toxoplasmosis (10% of HIV patients). Can be single or multiple white foci with overlying vitritis.
- Lymphoma with infiltrates.
- Endogenous endophthalmitis in intravenous drug users, leading to retinal abscess.
- Bilateral multifocal choroiditis caused by *Pneumocystis carinii* or cryptococcus. This tends to occur as an epiphenomenon of systemic/central nervous system disease.

CMV retinitis can have various appearances (Figs 4 and 5). The traditional description of 'cottage cheese and ketchup' with haemorrhages can follow an indolent or granular appearance. The leading edge of the lesion can assume a 'brushfire' appearance around the necrotic, pale retina (Fig. 6). Sheathing of the vessels can produce a spectacular



Fig. 4. Early CMV along vascular arcade.



Fig. 5. Established CMV with retinal oedema.



Fig. 6. 'Brushfire' edge of CMV retinitis.

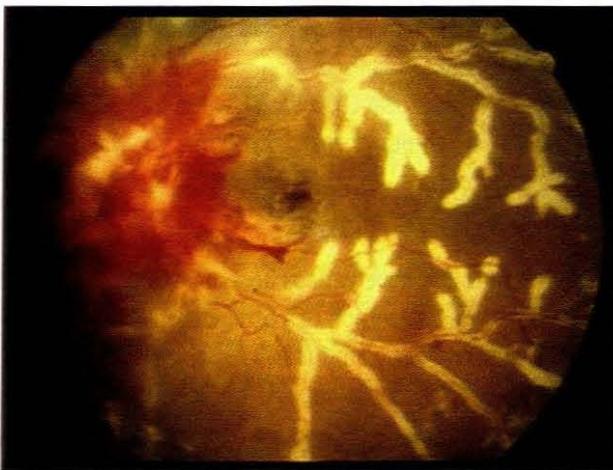


Fig. 7. 'Frosted-branch' angiitis.



Fig. 8. Healed CMV with retinal atrophy and pigmentation.

'frosted-branch angiitis' (Fig. 7). In response to treatment, the active white border turns grey (Fig. 8). Haemorrhages can persist for months. Fibrosis and pigmentation are common in healed lesions.

On HAART, patients with previously quiescent disease can experience the phenomenon of immune-recovery uveitis. This usually occurs after elevation of the CD4+ count above 60 cells/ μ l. No concurrent relapse of CMV retinitis is noted.

Vitreous haze, retinal and optic nerve oedema and formation of epiretinal membranes are noted. Treatment is with periocular and systemic steroids.

Various agents have been used to treat CMV retinitis.

Intravenous agents have the advantage of treating both eyes and systemic disease. These include:

- Foscarnet – daily dose with side-effects of nausea (40%) and renal impairment.
- Cidofovir – induction and then weekly. Complications are uveitis and hypotony.
- Ganciclovir – induction and then daily 5 times a week. This can cause bone-marrow suppression.

Relapse of disease within months is common on IV treatment.

Ganciclovir implants have proven effective but carry the risk of haemorrhage and retinal detachment (12%) and need to be replaced every 6 – 8 months.

Intravitreal ganciclovir injections (Fig. 9) have proved very effective in the South African setting where HAART is still not freely available. These are cheap (20 treatments per vial of ganciclovir) and after the initial twice-weekly induction are given weekly and then every 2 weeks. The addition of oral ganciclovir improves the outcome.



Fig. 9. Intravitreal ganciclovir injection.

Recent studies have shown that it may not be necessary to continue CMV therapy in patients on HAART. Normally, without immune restitution or maintenance therapy CMV retinitis relapses within 3 weeks. In patients on HAART, relapses occur up to 6 months. After this period, if the CD4+ count is above 50 cells/ μ l, the patient can be monitored without CMV therapy.

After 18 months on HAART, if there has been no recurrence of CMV it is highly unlikely to recur even if the CD4+ count does not rise above 100 cells/ μ l, however, can lead to recurrence.

REFERENCES

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