Ocular manifestations of HIV disease

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What is the incidence of eye involvement in HIV?

1. 10 – 15%
2. 30 – 35%
3. 50 – 55%
4. 70 – 75%
Ocular manifestations

- Incidence
  - 70% - 75% of patients with HIV/AIDS will develop ocular disease sometime during the course of their illness
  - It may be the first sign

- Etiology
  - Microvasculopathy
  - Opportunistic infections
  - Neoplasms
  - Immune dysregulation (autoimmune and hyperallergic diseases)
Ocular manifestations

- Presentation
  - External (orbital and adnexal) manifestations
  - Anterior segment manifestations
  - Posterior segment manifestations
  - Neuro–ophthalmic manifestations
# Ocular manifestations correlating with immune status and stage of HIV infection

<table>
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<tr>
<th>CD4</th>
<th>EXTERNAL EYE</th>
<th>ANTERIOR SEGMENT</th>
<th>POST SEGMENT</th>
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<tr>
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<td>Stevens-Johnson Syndrome</td>
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<td>Hypertrichosis</td>
<td>Childhood arthritis and uveitis</td>
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<td>Blepharitis</td>
<td>Herpes simplex</td>
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<td>Keratitis</td>
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<td>Kaposi’s sarcoma</td>
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<td>Molluscum contagiosum</td>
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<td>0-200</td>
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<td>HIV Retinopathy</td>
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<td>Toxoplasmosis</td>
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External eye manifestations

- Allergic conjunctivitis
- Dry eyes (sicca)
- Blepharitis
- Trichomegaly/hypertrichosis
- Molluscum contagiosum
- HZO
- Ocular surface squamous neoplasia (OSSN)
- Kaposi’s Sarcoma
- Orbital cellulitis
- Orbital lymphoma
Allergic conjunctivitis

- Uncomfortable, red, itchy and sticky eyes
- Similar to vernal conjunctivitis
- Onset at older age
- Stringy discharge
- Mostly responds to weak steroid drops eg fluoromethalone but may need systemic treatment
- Recurs
Dry eyes (sicca syndrome)

- Burning uncomfortable red eyes
- Due to destruction of lacrimal gland tissue or lid infections or secondary to Stevens-Johnson syndrome
- Treat with artificial tears
Blepharitis

- Common
- Often associated with recurrent Meibomian cysts
- Lid hygiene, lid scrubs and hot compresses
- Antibiotic ointment
Trichomegaly/hypertrichosis

- Exaggerated eyelash growth
- Unknown cause but likely autoimmune
Molluscum contagiosum

- DNA virus of pox virus family
- Small elevation with central umbilicus
- Often multiple and bilateral in AIDS
- Treatment:
  - Surgical excision
  - Curettage
  - Cryotherapy
What is the most common ocular malignancy in HIV?

1. Kaposi sarcoma
2. Lymphoma (intraocular)
3. Lymphoma (orbital)
4. Ocular surface squamous neoplasia (OSSN)
Ocular Surface Squamous Neoplasia (OSSN)

- Patients <50yrs ± 50% are HIV +ve
- Spectrum
  - Mild dysplasia
  - Moderate dysplasia
  - Severe dysplasia
  - Carcinoma-in-situ (CIS)
  - Invasive squamous carcinoma
OSSN

- More aggressive in HIV disease
- Elevated, well-demarcated grey to red gelatinous mass
- Interpalpebral
- Straddles nasal or temporal limbus
- Prominent feeder vessels
- Surface keratin
- May be papilliform with tufted superficial vessels
OSSN

Locally invasive if neglected
OSSN

- **Treatment**
  - **Surgery**
    - Complete local excision with or without lamellar dissection into sclera or corneal stroma
    - Enucleation of eye or exenteration of orbit if neglected and invading eye or orbit
  - **MMC 0.4% tds alternate weeks x3**
Kaposi sarcoma (KS)

- ± 30% of AIDS patients
- 20% of these involve the eyelid skin or conjunctiva.
- More malignant when associated with HIV and can disseminate
- Red/purple (violaceous) subepidermal/subepithelial nodule
- Flat to elevated
KS

- Treatment
  - Local
    - Radiotherapy (8Gy)
    - Cryotherapy
    - Surgical excision
    - Intralesional vinblastin
  - Systemic
    - Cytotoxic chemotherapy
    - Immunotherapy (alpha-interferon)
Orbital disease

- Fortunately rare
- Ptosis or proptosis may occur due to:
  - Infections
  - Inflammation
  - Neoplasms
  - of the paranasal sinuses and orbital tissues
Anterior segment manifestations

- Stevens-Johnson syndrome
- Uveitis associated with arthritis in children
- Anterior uveitis in adults
- Herpes Zoster Ophthalmicus (HZO)
- Herpes Simplex keratoconjunctivitis
- Keratitis
Stevens-Johnson Syndrome

- Mucocutaneous disease resulting in acute membranous conjunctivitis
- Caused by infections (HIV per se, Herpes simplex, streptococcus species) or drugs (ARVs, sulfonamides)
- Can lead to severe dry eyes, conjunctival vascularization and keratinisation
Uveitis associated with arthritis in children

- Similar to JIA, but polyarticular rather than pauciarticular, more common in males and all ANA negative
Uveitis/arthritis in children

- Following bilateral cataract surgery
Anterior uveitis in adults

- Caused by HIV per se or other viruses (Herpes or CMV) or bacteria (syphilis or TB)

- Signs and symptoms
  - Pain and redness
  - Decrease in vision
  - Mild inflammation
  - AC activity

- Treat with steroid eye drops and treat underlying infection
Herpes zoster ophthalmicus (HZO)

- Patients <40yrs usually HIV +ve
- Worse clinical course than HIV -ve
- Early or late in course of HIV disease
- Ocular involvement may be severe
HZO

- Maculo-papulo-vesicular rash in trigeminal nerve distribution
- Vesicles become pustules in 3 to 4 days, then dry and crust in 10 to 12 days
- Neuralgia in the dermatome can continue for months or years
HZO

- Ocular involvement common (>70%)
  - Hutchinson's sign (Vesicles on tip of nose)
  - Conjunctivitis
  - Keratitis
    - Dendritic
    - Neurotrophic
  - Episcleritis/Scleritis
  - Uveitis
HZO

- Secondary bacterial infection often occurs which compounds the scarring and leads to cicatриcial entropion or ectropion
- Chronic inflammation may lead to corneal vascularization, opacification, lipid keratopathy, thinning and even perforation of the cornea
HZO

**Treatment**

- Avoid dessication
- Antivirals (7 – 10 days)
  - Acyclovir (Zovirax)
    - 800mg 5x/day
- Analgesics
  - Eg Brufen (acute pain)
  - EMLA gel
- Amitriptyline at night for neuralgia
Herpes simplex

- Keratoconjunctivitis
- Keratitis
- More frequent recurrences
- Dendrites located peripherally
- Treatment:
  - Acyclovir – sometimes resistant
  - Topical acyclovir ointment 5 x dly
Keratitis

- Bacterial or fungal
- Larger and more aggressive
- Slow improvement on treatment
Posterior segment manifestations

- Cytomegalovirus Retinitis (CMVR)
- Progressive Outer Retinal Necrosis (PORN)
- Toxoplasmosis chorioretinitis
- Tuberculouss choroiditis/choroidal granulomas
- Syphilitic chorioretinitis
- Multifocal choroiditis of disseminated disease
- HIV microangiopathy (cotton-wool spots)
CMV Retinitis

- Most common cause for visual loss in AIDS.
- Typically in advanced stages of AIDS when CD4+ < 50 cells/mm³
- Full-thickness retinal necrosis
- Various patterns of infection
  - Brushfire, fulminant, indolent, perivascular, peripheral, frosted branch angiitis
CMVR is treated with intraocular ganciclovir injections. What is the frequency of injections?

1. Twice a week
2. Weekly
3. Fortnightly
4. Monthly
5. Every 2 months
Treatment

Intravitreal ganciclovir

Twice weekly for 2–3 weeks

Weekly thereafter until CD4 > 60

Then fortnightly until CD4 > 100
Progressive outer retinal necrosis (PORN)

- HSV or VZV
- Often have a history of cutaneous zoster infection, recent chicken pox infection or HSV ulcer
- Rapid progression in circumferential fashion
- Relative sparing of retinal vasculature early in the course
67% blind within 1 month – mainly due to rhegmatogenous RD

Treatment is with intravitreal GCV – excellent response

Add oral acyclovir
The rapid progression of PORN
Toxoplasmosis

- Intense, white, focal area of retinal necrosis
- Solitary, multifocal or miliary patterns
- Larger than in immunocompetent individuals and usually no preexisting scar
- Substantial inflammation
Toxoplasmosis

- Almost always has concomitant CNS involvement
- 10-40% of population has latent infection (congenital or acquired)
- Reactivation of quiescent tissue cysts in HIV – 90% brain involved, then lungs and retina
- Diagnosis on serology - IgG
Treatment

Cotrimoxazole 4 qid for 2 weeks, then 4 bd for 1 month, then 2 bd until CD4 > 300
TB choroiditis/choroidal granuloma

Infrequently seen, usually very ill patients with disseminated TB
Syphilitic chorioretinitis

- Vitritis associated with bilateral, large, solitary, placoid, pale yellow subretinal lesions with central fading.
- Stippled RPE hyperpigmentation
Multifocal choroiditis and systemic dissemination

- Cryptococcus neoformans
- Pneumocystis carinii
- Mycobacterium tuberculosis
- Atypical mycobacteria
- Combination of 2 or more
Cotton-wool spots

- NFL infarcts, part of HIV microangiopathy
- CD4+ < 50 cells/mm³
- Posterior pole or around optic disc
- Can be associated with small intraretinal haemorrhage similar to small focus CMVR
Cotton-wool spots

- Spontaneously resolve over several months
- Repeat examination in 2 weeks to distinguish between this and CMVR
Neuro-ophthalmic manifestations

- Optic Neuritis
- Cranial nerve palsies
- Papilloedema
Optic Neuritis

- Can be due to HIV disease per se
- Can be associated with Neurosyphilis, TB meningitis, Cryptococcal meningitis
- Unilateral or bilateral
- Severe decrease in vision
- As vision can be lost permanently, systemic steroids are indicated
- Do LP
Cranial nerve palsies

- Due to CNS lymphoma or CNS infections eg neurosyphilis
- Can be secondary to microvasculopathy or HIV infection per se
- Often multiple cranial nerves involved simultaneously
Papilloedema

- Secondary to:
  - Cryptococcal meningitis
  - TB meningitis
  - CNS Toxoplasmosis
  - Neurosyphilis
  - CNS Lymphoma and other intracranial tumours
Summary

- HIV/AIDS is still on the increase in South Africa and the rest of sub-Saharan Africa.
- More than 70% of patients will present to an Ophthalmologist at some stage during their illness and sometimes the Ophthalmologist will be the one to make the diagnosis of HIV.
- The ophthalmic markers of HIV infection are important for timeous referral and treatment.
CAUTION
MEN AT WORK

Women work all the time-
Men have to put up signs when they work.

THANK YOU