

# The effects of systemic disease and medication on the eye

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# The Ophthalmic Patient

Acute and chronic

Across the age continuum

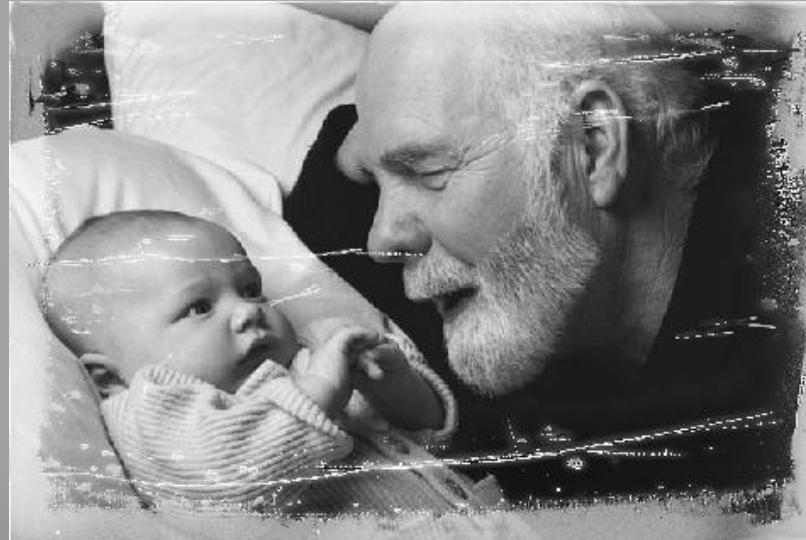
None, temporary or permanent visual impairment

Birth

- Blepharitis,
- Conjunctivitis
- Keratitis
- Corneal dystrophies
- Anterior Uveitis
- Cataracts
- Squint
- Congenital conditions

Older Age

- PVD
- Retinal Detachment
- Glaucoma
- Trauma
- AMD
- Diabetes
- Tumours
- Neuro ophthalmic



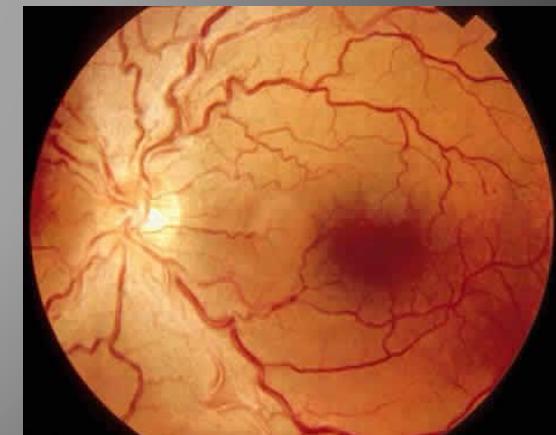
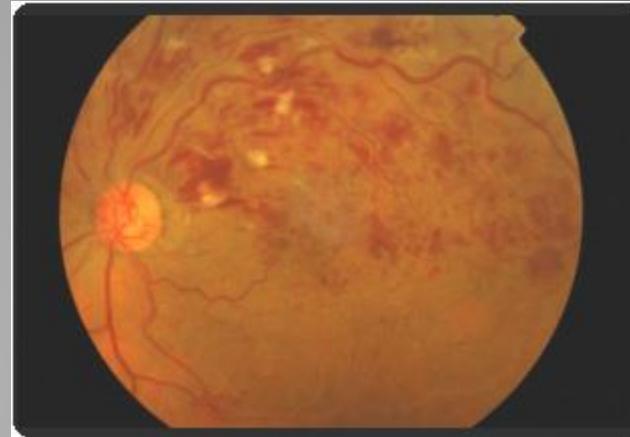
# Blepharitis

- ▶ Inflammation of eye lids and eyelash follicles
  - ▶ Chronic
  - ▶ Worse with oily skin, dandruff and dry eyes
  - ▶ Uncomfortable/ irritable
- 
- ▶ Healthy diet/ Omega 3 helps
  - ▶ Lid hygiene
  - ▶ Lubricants
  - ▶ Stop smoking
  - ▶ Avoid saturated fats/transfats



# Hypertension

- ▶ Central Retinal Vein Occlusion RVO
- ▶ Branch RVO
- ▶ Hemi RVO
- ▶ Central Retinal Artery Occlusion
- ▶ Tortuous vessels

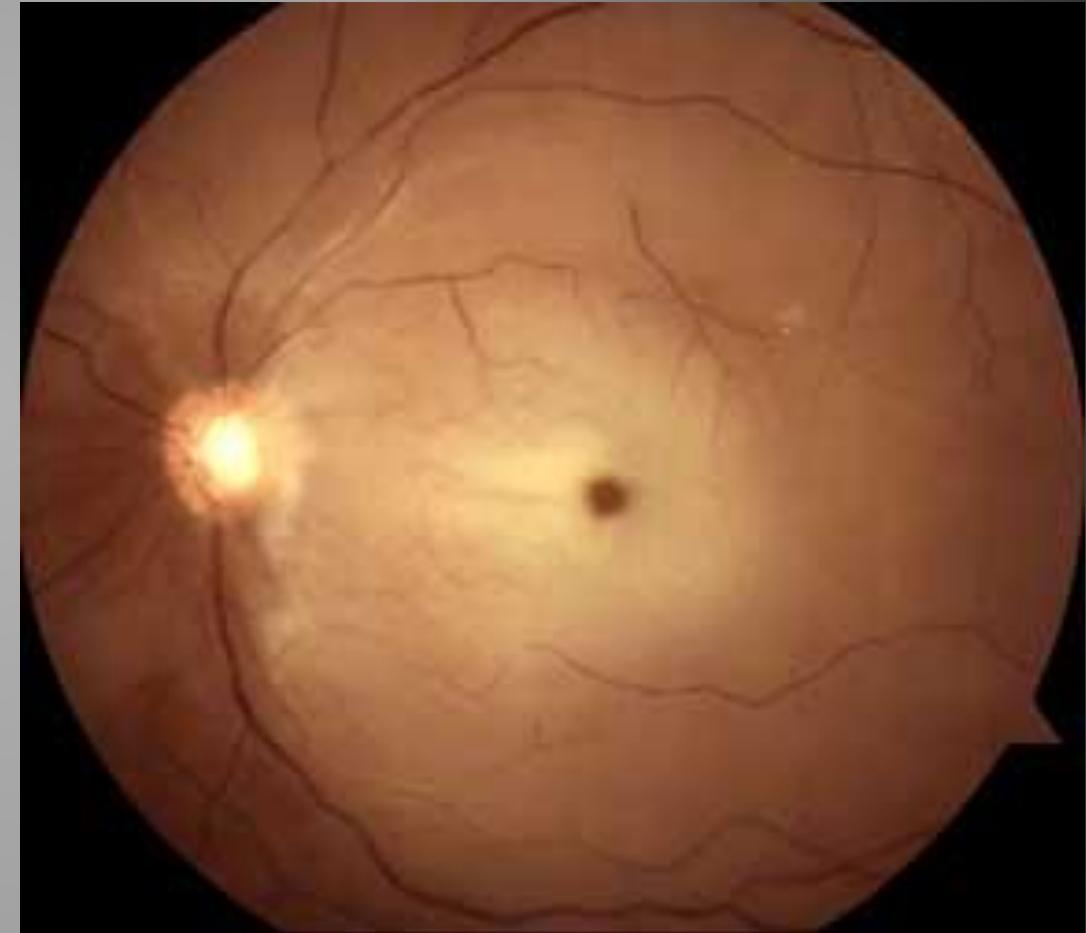


# Amarosis Fugax

- ▶ Retinal TIA
- ▶ Transient attack lasting 30 secs or longer
- ▶ Patient sees gray or no colour
- ▶ Full neuro exam
- ▶ BP, HR
- ▶ BSL
- ▶ ECG
- ▶ Bloods FBC, U&E glucose, CRP, ESR

# Central retinal artery occlusion (CRAO)

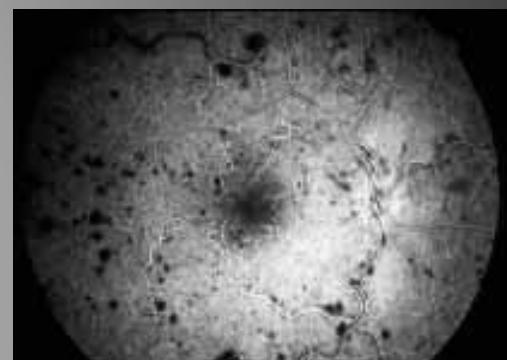
- ▶ Sudden loss vision
  - ▶ Unlikely to return
  - ▶ End organ damage like stroke
  - ▶ Retinal damage occurs within 90 mins
  - ▶ Potentially life threatening underlying disease
- 
- ▶ Can be hypertensive related. GCA
  - ▶ Check BP, BSL, ESR, CRP, ECG
  - ▶ Cardiovascular risk factors



# Central retinal vein occlusion (CRVO)

- ▶ Sudden unilateral vision loss
- ▶ VA CF or worse
- ▶ Marked RAPD in ischaemic CRVO
- ▶ Mild RAPD in non ischaemic
- ▶ NI CRVO better prognosis
- ▶ Ischaemia can lead to Neovascularisation
- ▶ BP, BSL, Lipids, FBC, ESR,

Non ischaemic CRVO



▶ Ischaemic CRVO



# Uveitis

- ▶ Anterior presents
- ▶ Pain,  
circumcorneal  
injection,  
photophobia
- ▶ Posterior  
presents
- ▶ Blurred vision,  
floaters,
- ▶ Systems review
- ▶ Genito urinary – bladder  
ulcers
- ▶ GI tract – bowel
- ▶ Skin - rashes, nodules
- ▶ Respiratory – cough  
fevers
- ▶ Mouth – ulcers
- ▶ Hearing
- ▶ Neuro – headache,

# Systemic causes

## Non-granulomatous

- ▶ Idiopathic
- ▶ HLA B27+ve
- ▶ Ankylosing Spondylitis
- ▶ Reiters syndrome
- ▶ Inflammatory bowel disease
- ▶ Psoriatic arthritis
- ▶ Lyme disease
- ▶ Bechets disease
- ▶ TINU syndrome
- ▶ CMV, HZV, HSV

## Granulomatous

- ▶ Sarcoidosis
- ▶ Syphilis
- ▶ TB
- ▶ Systemic Lupus Erythematosus
- ▶ Brucellosis
- ▶ Leprosy

# scleritis

## Anterior scleritis

- Non necrotising
    - ▶ –Diffuse
    - ▶ – Nodular
  - Necrotising
    - ▶ – With inflammation
    - ▶ – without inflammation –  
(scleromalacia perforans)
- Steroids – topical, oral  
NSAIDS – topical, oral  
Subconjunctival triamcinolone

- ▶ Systemic associations
- ▶ Rheumatoid arthritis
- ▶ Wegeners Granulomatosis
- ▶ Systemic Lupus erythematosus
- ▶ Relapsing polychondritis
- ▶ Polyarteritis nodosa
- ▶ Polymyositis and dermatomyositis
- ▶ Churg-Strauss syndrome

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# Medication SE

## Why is the eye susceptible

- ▶ Rich blood supply
- ▶ Relatively small mass
- ▶ Reach ocular structures via limbal, uveal or retinal vasculature
- ▶ Inflammation increases permeability of blood – ocular barrier.

# Multiple groups of medications

- ▶ Cardiovascular
- ▶ Endocrine
- ▶ Central Nervous System
- ▶ Endocrine
- ▶ Anti malarial/arthritic
- ▶ Bone disorder
- ▶ Allergy
- ▶ Dermatological
- ▶ GI tract
- ▶ Aids related medication
- ▶ Anti tubercular
- ▶ Musclo skeletal
- ▶ Muscle relaxants
- ▶ Neoplastic treatments
- ▶ Obstetric and Gynae
- ▶ Pain medications
- ▶ Drug Dependence
- ▶ Respiratory
- ▶ Urogenital

# Amioderone/Potassium Channel blocker

- ▶ Used in treatment of cardiac arrhythmias
  - ▶ Ocular SE dose dependent but common
  - ▶ Superficial punctate opacities
  - ▶ Whorl like keratopathy
  - ▶ Yellow brown deposits in conjunctiva
  - ▶ Cataract formation
  - ▶ Optic Neuropathy –most severe.
  - ▶ Can cause photophobia, blue green rings, halos around lights and blurred vision
- ▶ Vortex Keratopathy
  - ▶ Optic Neuropathy

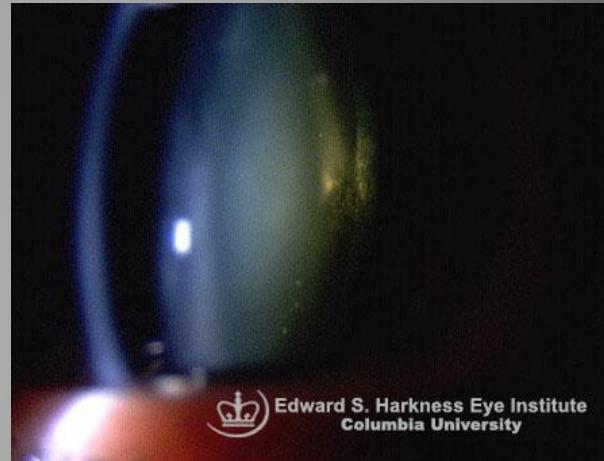


# Beta blockers

- ▶ Used in HTN
- ▶ Post MI
- ▶ Angina
- ▶ Migraine prophylaxis
- ▶ ↓tear secretion
- ▶ ↓perfusion of optic nerve head
- ▶ ↓IOP
  
- ▶ Atenolol
- ▶ Metoprolol
- ▶ Propanolol

# Endocrine

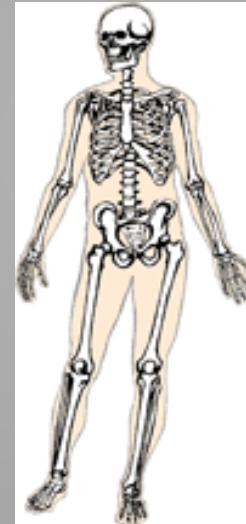
- ▶ Corticosteroids- used in inflammatory and allergic conditions and for Adrenal insufficiency
- ▶ Methylprednisolone
- ▶ Prednisone
- ▶ Hydrocortisone
- ▶ Posterior sub capsular cataracts
- ▶ ↑IOP- Reduction of aqueous outflow
- ▶ Delayed corneal wound healing



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# Bone Disorder Agents

- ▶ Used for osteoporosis, hypercalcaemia of malignancy, metastatic bone pain, Paget's disease
- ▶ Aldronate (Fosamax)
- ▶ Zoledronate infusion (Aclasta)



- ▶ Blurred vision, Conjunctival irritation
- ▶ Increased lacrimation
- ▶ Scleritis/episcleritis
- ▶ Also rarely can cause uveitis, conjunctivitis,

## Anti Hyperlipidaemia

## ACE inhibitors

- ▶ Lipid lowering

Atorvastin/Lipitor

- ▶ Ocular SE in less than 2%
- ▶ Dry eye
- ▶ Blurred vision
- ▶ Haemorrhages
- ▶ Increased IOP

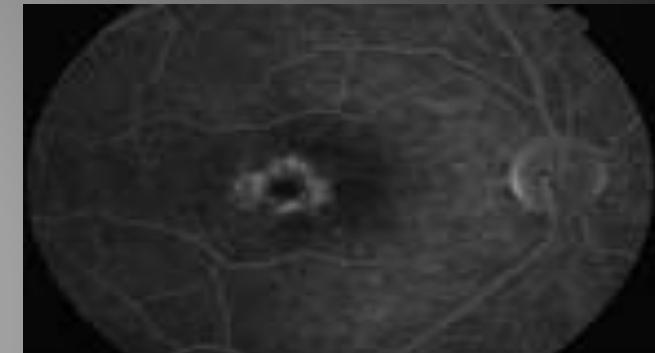
- ▶ Used in management of HTN, CHF, diabetic nephropathy

- ▶ Decreased VA
- ▶ Conjunctivitis
- ▶ Subconjunctival and retinal haemorrhages
- ▶ Angioedema of eye and orbit

# Anti malarial/Arthritic

- ▶ Hydroxychloroquine (Plaquenil)
  - Used in treatment of RA and Lupus
- ▶ Tests- VA, 10-2, Ishihara IOP, photos, ERG when needed.
- ▶ Continues to progress after discontinuation
- ▶ Chloroquine
  - Anti malarial
  - Greater chance of ocular damage

- ▶ Bulls eye maculopathy



- ▶ Visual field loss
- ▶ Decreased colour and contrast sensitivity
- ▶ Colour vision changes
- ▶ Excreted in tear film – dry eye and contact lens intolerance

# Anti Tubercular Agents

- ▶ Ethambutol
- ▶ Isoniazid
- ▶ Dose and time dependent
  - ▶ Colour vision changes
  - ▶ Visual field defects
  - ▶ Unilateral or bilateral optic neuritis

# Respiratory tract agents

- ▶ Used for broncho dilation and relief of bronchospasm
- ▶ Combivent
- ▶ Atrovent
- ▶ Symbicort
- ▶ Mydriasis,
- ▶ Blurring of vision,
- ▶ Increased intraocular pressure,
- ▶ Narrow-angle glaucoma
- ▶ Eye pain on exposure to medication

# Dermatologic Medications

- ▶ Acne agents – Roaccutane
- ▶ Secreted in tears
  - ▶ Blepharoconjunctivitis
  - ▶ Dry eyes
  - ▶ Transient blurred vision
  - ▶ ↓meibomian gland dysfunction
  - ▶ May contribute to contact lens related drying
  - ▶ Decreased night vision

# Neoplastic Agents

- ▶ Tamoxifen
- ▶ Anti estrogen therapy used in breast CA
- ▶ Can cause crystalline retinopathy, vortex keratopathy, macula oedema with ↓VA

## Interferon

Used for Hep C, MS

Retinal cotton wool spots  
Visual disturbance  
Ischaemic retinopathy

- ▶ Methotrexate
- ▶ Can cause conjunctivitis, eye discomfort, blurred vision and serious visual changes of unknown aetiology

## Cyclophosphamide

Chemotherapy agent  
Anti rejection agent

Causes dry eye  
May need lubricants, punctual plugs

# Eye Drops

- ▶ Eye drops are a medication
- ▶ Can have systemic side effects
  - e.g. Timolol (contraindicated in asthma)
  - Brimondine (contraindication on MAIO's)
  - Oral Acetazolamide – can affect U + E's. – nausea, tingling fingers
- ▶ Punctual occlusion important

[http://www.bpac.org.nz/BPJ/2007/December/docs/bpj10\\_eye\\_pages\\_8-13.pdf](http://www.bpac.org.nz/BPJ/2007/December/docs/bpj10_eye_pages_8-13.pdf)