Acute Central Retinal Artery Occlusion

Rapid unilateral \textit{painless} vision loss – count fingers or light perception VA in 90\% of eyes

\textbf{Etiology:}
Arterial emboli (calcific, fibro-platelet, cholesterol)
Thrombosis from arteriosclerosis
Optic nerve drusen
Migrane
Blood dyscrasias (hypercoagulation disorders)
Trauma

\textbf{Presentations:}
Superficial retinal whitening with a “cherry red spot” in the macula
Narrowed retinal arterioles with segmentation
Cilioretinal artery may spare the macula
Relative Afferent Pupillary Defect
Optic Nerve Pallor weeks to months later

\textbf{Treatment:}
Ocular massage (digital pressure)
Vasodilation (increase CO$_2$ by breathing into a paper bag)
Lowering of intraocular pressure (Beta blocker, Diamox, etc.)
Anterior chamber paracentesis

\textbf{Systemic Testing}
Immediate Eryth. Sedimentation Rate (Westgren ESR) if px is > 55 yrs. old to rule out Giant Arteritis
Carotid Artery evaluation, blood pressure, lipid profile, blood sugar
Echocardiogram – cardiac evaluation
Fluorescein angiography

\textbf{Arteritic Anterior Ischemic Optic Neuropathy}

Must be differentiated from “Non Arteritic” Anterior Ischemic Optic Neuropathy
Sudden \textit{painless} loss of visual acuity
Females > Males (2:1 ratio)  Patients > 55 years age
Etiology:
Occlusion of the “short posterior ciliary” arteries with giant white blood cells

Presentation: Ocular
Acute painless vision loss (VA loss is usually permanent)
Pale swelling of the optic nerve head with flame shaped hemorrhages
Central retinal artery occlusion may be present
Cranial Nerve palsy (CN 3, 4, 6) may also be present

3. Presentation: Systemic
Headache, scalp, tenderness, jaw claudication, night sweats, weights loss fever, polymyalgia rheumatica depression

4. Treatment:
Immediate ESR (Westergren)
Immediate IV steroid therapy
C-reactive protein
Possible temporal artery biopsy
Severe Hypertension

Malignant hypertension defined as BP > 200 / 120

Ocular Presentation: May present with the following
Disc edema with exudation
Arterio-venous crossing changes
Nerve fiber layer infarcts (cotton wool spots)

**Macular edema**
Venous congestion
Hard Exudates often around the foveal area
Flame shaped hemorrhages

Treatment:
Blood pressure measurement
Immediate referral to emergency room or primary care doctor for lowering of the blood pressure

General Rules:
Immediate attention if BP> 110mmhg (diastolic), chest pain, difficulty breathing

**Orbital Cellulitis**

Inflammation of the orbital soft tissue posterior to the orbital septum May get direct extension to the brain – may lead to death.

**Etiology:**
Eyelid infection ( Hordeolum )
Sinus infection ( paranasal sinusitis extension in ~90% of cases)
Dental infection
Ocular trauma or surgery
Orbital infection ( dacryocystitis )
Upper Respiratory Infection
Otitis Meadia

**Presentation: Ocular**
Eyelid edema ( absence of a lid crease )
Conjunctival chemosis
Proptosis
Restricted motility – may have associated pain

**Presentation: Systemic**
Fever

**Treatment:**
Immediate referral to emergency room or to ophthalmology
Broad spectrum coverage with / IV antibiotics
MRI or orbital CT
Hospitalization

**Acute Angle Closure (1° or 2°)**

Quick rise in intraocular pressure due to blockage if the trabecular meshwork

**Presentation: Ocular**
Red eye (increase in circumlombal area)
Corneal epithelial edema
Mid-dilated sluggish pupil
Aqueous cell and flare
Shallow anterior chamber
IOP > 45 mmHg

**Presentation: Symptoms**
Halo’s around lights
Blurred vision
Eye pain
Nausea and vomiting

Treatment:

Rapidly decrease the intraocular pressure to protect the optic nerve and the trabecular meshwork
Topical beta blocker
Trusopt 2%
Iopidine
Ispsprbide
Pipocarpine 4%

**Acute Retinal Detachment**

Three types:

Detachment of the neurosensory retina from the underlying RPE

Rhegmatogenous (retinal “break”)
Exudative
Tractional

Presentation: Symptoms
Flashes
Floaters
“Curtain” over part or all of their vision
Presentation: Ocular
Elevated retina
Cells in the vitreous (pigmented)
**Possible vitreous hemorrhage**

**Treatment:**
Referral to retina specialist
Laser retinopexy
Scleral buckle
Cryotheraphy
C3F8 gas bubble as a tamponade

**Endophthalmitis**

Intraocular inflammation
Maybe post surgical, post traumatic, or endogenpous

Presentation: Symptoms
Mild to severe redness
Mild to severe pain
**Progressive decrease in visual acuity**

**Presentation: Ocular**
Eyelid edema
Large cell and flare reaction in the anterior chamber
**May or may not have an associated “hypopyon”**
Corneal edema
Vitreal cell

**Treatment:**
Immediate referral to retina speclist
EVS results – Vitrectomy if vision is worse that Hand Motion
Topical, subconj, intravitreal or systemic antibiotics
Cycloplegia ( Atropine)
Topical, subconj, intravitreal steroids

**Alkali Chemical Injury**
Chemical injury from some of the following:
Ammonia, Lye, Lime

**Presentation: Symptoms**
Mild to severe irritation and pain

Presentation: Ocular
**Chemosis**
Hyperemia
Limbal blanching
Corenal edema
Treatment:

Immediate irritation
- Corticosteriods (topical) x 2 weeks (Pred Forte 1%)
- Cycloplegia (Scopolamine)
- Control IOP
- Oral Ascorbic Acid
- Oral Tetracycline
- Topical Antibiotics
- Artificial tears / Bandages contact lens

Pupil Involve Third Nerve Ophthalmoplegia

Ophthalmoplegia caused by microvascular disease, aneurysm, neoplasm, trauma to CN3

Medical emergency if pupil is dilated (“relative” or “total”)

Presentations: Symptoms
Binocular diplopia (eye is in “down and out” position)
Pain on eye movement

Presentation: Ocular
Ptosis
Limited ocular motility
Complete or relative sparing of the pupil

Treatment:
Referral to NeurOphthalmologist
Possible MRI /CT / MRA (cerebral angiography – if aneurysm suspected)
ESR if GCA is suspected

Hyphema

Blood in the anterior chamber – from injury to peripheral iris / anterior ciliary body blood vessels
Maybe from trauma or surgery
If trauma related – must rule out globe rupture

Presentations: Ocular

Blood in the anterior chamber

Treatment:
Head elevation
Pred Forte 1% (1 or drop q2h)
Cycloplegia ( Atropine or Scopaminophen)
No aspirin – mild analgesics only (such as acetaminophen)
Lower IOP if above 25 mmHg
Aminocaproic Acid 50 mg/kg qid x 5 days may need to be added
Fox shield to protect the involved eye

Black patients should be screened for sickle cell
Rebleed may occur within 2-5 days
50% with a rebleed will have an increase in IOP