

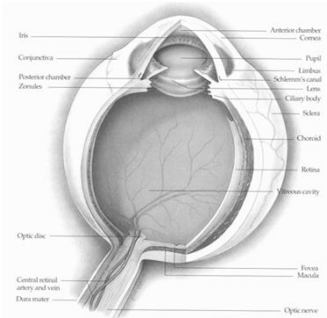
Diagnosis and Management of Common Eye Problems

Diagnosis and Management of Common Eye Problems

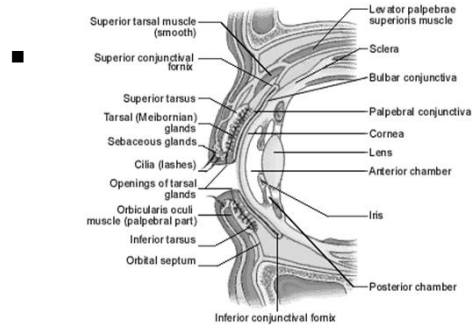
Fernando Vega, MD

Review of Ocular Anatomy

Picture taken from Basic Ophthalmology for Medical Students and Primary Care Residents published by the American Academy of Ophthalmology

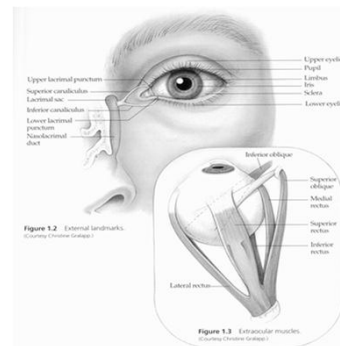


Eyelid anatomy



Lacrimal system and eye musculature

Picture taken from Basic Ophthalmology for Medical Students and Primary Care Residents published by the American Academy of Ophthalmology



Red Eye Disorders: An Anatomical Approach

- Lids
- Orbit
- Lacrimal System
- Conjunctivitis
- Cornea
- Anterior Chamber

Diagnosis and Management of Common Eye Problems

Red Eye Disorders:

What is not in the scope of Red Eye

- Loss of Vision
- Vitreous Floaters
- Vitreous detachment
- Retinal detachment

Possible Causes of a Red Eye

- Trauma
- Chemicals
- Infection
- Allergy
- Chronic Irritation
- Systemic Infections

Symptoms can help determine the diagnosis

<u>Symptom</u>	<u>Cause</u>
Itching	allergy
Scratchiness/ burning	lid, conjunctival, corneal disorders, including foreign body, trichiasis, dry eye
Localized lid tenderness	Hordeolum, Chalazion

Symptoms Continued

<u>Symptom</u>	<u>Cause</u>
Deep, intense pain	Corneal abrasions, scleritis
Photophobia	Iritis, acute glaucoma, sinusitis
Halo Vision	Corneal abrasions, iritis, acute glaucoma corneal edema (acute glaucoma, contact lens overwear)

Diagnostic steps to evaluate the patient with the red eye

- Check visual acuity
- Inspect pattern of redness
- Detect presence or absence of conjunctival discharge: purulent vs serous
- Inspect cornea for opacities or irregularities
- Stain cornea with fluorescein

Diagnostic steps continued

- Estimate depth of anterior chamber
- Look for irregularities in pupil size or reaction
- Look for proptosis (protrusion of the globe), lid malfunction or limitations of eye movement

Diagnosis and Management of Common Eye Problems

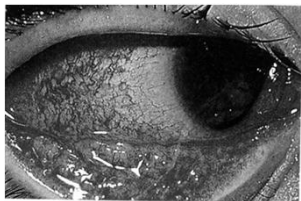
How to interpret findings

- Decreased visual acuity suggests a serious ocular disease. Not seen in simple conjunctivitis unless there is corneal involvement.
 - ◆ Blurred vision that improves with blinking suggests discharge or mucous on the ocular surface

Pattern of Redness

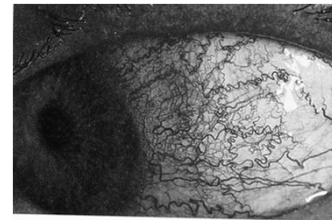
Conjunctival hyperemia: engorgement of more superficial vessels. Nonspecific sign.

Picture taken from Basic Ophthalmology for Medical Students and Primary Care Residents published by the American Academy of Ophthalmology



Ciliary flush: injection of deep conjunctival vessels and episcleral vessels surrounding the cornea. Seen in iritis (inflammation in the anterior chamber) or acute glaucoma. Not seen in simple conjunctivitis

Picture taken from Basic Ophthalmology for Medical Students and Primary Care Residents published by the American Academy of Ophthalmology



Red Eye



Conjunctiva

- Conjunctivitis
- Ophthalmia neonatorum
- Subconjunctival hemorrhage
- Dry Eyes (keratoconjunctivitis sicca)

Conjunctivitis

- Nonspecific term for inflammation and erythema of the conjunctiva.
- Several causes:
 - ◆ Bacterial
 - ◆ Viral
 - ◆ Allergic
 - ◆ Chemical

Conjunctivitis Contd

- History and symptoms can help determine the etiology
- Correct diagnosis has direct implications for treatment and possible spread to close contacts

Conjunctivitis - Discharge

<u>Discharge</u>	<u>Cause</u>
Purulent	Bacteria
Clear	Viral
White mucous	Allergies

Conjunctivitis

- Infectious
 - ◆ Bacterial
 - ◆ Viral
 - ◆ Parasitic
 - ◆ Mycotic
- Noninfectious
 - ◆ Persistent irritation (dry eye, refractive error)
 - ◆ Allergic
 - ◆ Toxic (irritants: smoke, dust)

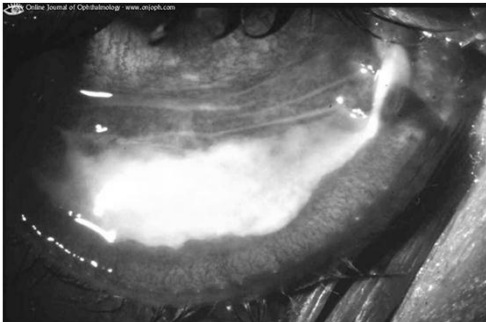
Historical Clues

- Itching
- Unilateral vs. Bilateral
- Pain, photophobia, blurred vision
- Recent URI
- Prescription, OTC medications, contact lenses
- Discharge

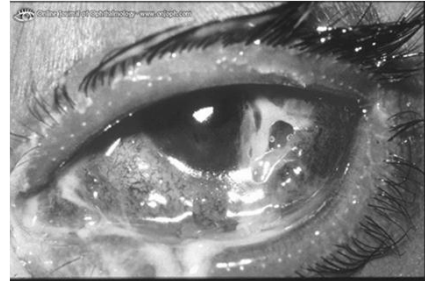
Discharge in Conjunctivitis

<u>Etiology</u>	<u>Serous</u>	<u>Mucoid</u>	<u>Mucopurulent</u>	<u>Purulent</u>
Viral	+	-	-	-
Chlamydial	-	+	+	-
Bacterial	-	-	-	+
Allergic	+	+	-	-
Toxic	+	+	+	-

Bacterial Conjunctivitis



What's wrong with this picture?



Bacterial Conjunctivitis

- Dx based on clinical picture
 - ◆ History of burning, irritation, tearing
 - ◆ Usually unilateral
 - ◆ Hyperemia
 - ◆ Purulent discharge
 - ◆ Mild eyelid edema
 - ◆ Eyelids sticking on awakening
 - ◆ Cultures unnecessary unless very rapid progression

Bacterial Conjunctivitis

- Treatment:
 - ◆ Self limited
 - ◆ Treatment decreases morbidity and duration
 - ◆ Treatment decreases risk of local or distal consequences
 - ◆ Topical antibiotic ointment / solution

Bacterial Conjunctivitis

- Erythromycin
- Bacitracin-polymyxin B ointment (Polysporin)
- Aminoglycosides: gentamicin (Garamycin), tobramycin (Tobrex) and neomycin
- Tetracycline and chloramphenicol (Chloromycetin)
- Fluoroquinolones available for eyes!

Viral Conjunctivitis

- AKA epidemic keratoconjunctivitis
- AKA öpinkeyö
- Most frequent
- VERY contagious ö direct contact
- Adenovirus 18 or 19
- Acute red eye, watery, mucoid discharge, lacrimation, tender preauricular LN
- Occasional itching, photophobia, foreign-body sensation
- History of antecedent URI

Allergic Conjunctivitis



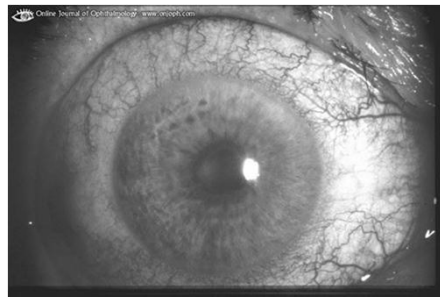
Vernal Conjunctivitis



Allergic Conjunctivitis

- Seasonal, itching, associated nasal symptoms.
- Treat with cool compresses, systemic antihistamines, local antihistamines or mast cell stabilizers, local NSAIDs. If severe, brief course of topical steroid drops.

Conjunctivitis vs. Uveitis



Bacterial Conjunctivitis

- Erythema of conjunctiva
- Purulent discharge
- May be monocular (one eye) or binocular (both eyes)
- Hemophilus may cause hemorrhage on the conjunctiva and occasionally the lids

Bacterial conjunctivitis: note the purulent discharge and conjunctival hyperemia

Picture taken from Basic Ophthalmology for Medical Students and Primary Care Residents published by the American Academy of Ophthalmology



Diagnosis and Management of Common Eye Problems

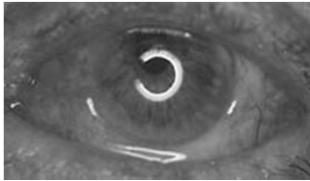
Viral Conjunctivitis

- Adenovirus
 - ◆ May be associated with systemic viral infections
- Herpetic
- Picornavirus and enterovirus type 70 cause a hemorrhagic conjunctivitis

Viral conjunctivitis - symptoms

- Often bilateral
- Often with diffuse, marked hyperemia
- Watery discharge
- Chemosis (swelling of conjunctiva)
- Some itching and foreign body sensation
- Preauricular adenopathy
- URI, sore throat, fever common

Viral conjunctivitis: note the diffuse redness and watery discharge



Viral conjunctivitis - treatment

- Cold compresses
- Good hygiene ó wash hands, do not share wash cloths, pillows, towels etc.
- Topical treatment for symptom relief only (will not shorten the course of the disease)
 - ◆ Patanol, Zaditor, Acular, Artificial tears
- No role for topical antibiotics

Viral conjunctivitis - complications

- Usually resolves without sequelae
- May be associated with corneal infiltrates that can decrease vision
- Pseudomembranes on conjunctival surfaces of lids ó seem with eversion of lids and require removal with a dry Q-tip. May refer to ophthalmologist for this urgently if uncomfortable doing this in the office

Viral Conjunctivitis - Herpetic

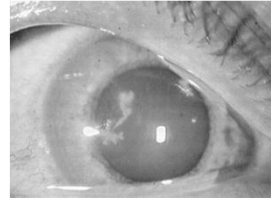
- Profuse watery discharge
- May have eyelid margin ulcers and vesicles
- Corneal involvement may result in permanent scarring and visual loss
- Urgent referral to ophthalmologist for treatment with topical antivirals

Diagnosis and Management of Common Eye Problems

Herpes Keratitis

- Corneal involvement usually preceded by conjunctival involvement
- Herpes simplex
- Herpes zoster
- Corneal Dendrite
- Do not use steroid drops!
- Aggressive treatment with antivirals, may need debridement

Typical dendritic lesion of herpetic keratitis stained with fluorescein



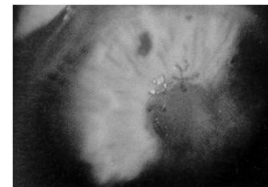
Herpetic lid lesions from Herpes Simplex virus

Picture from Section 6 of the Basic and Clinical Science Course published by the Foundation of the American Academy of Ophthalmology

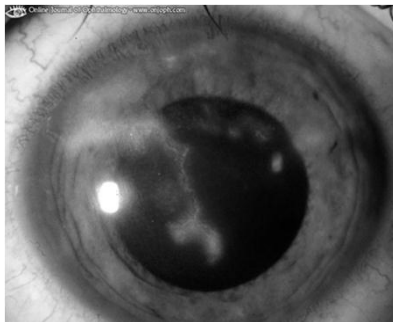


Typical herpetic corneal lesion stained with rose bengal. Note the branching (dendritic) pattern.

Picture from Section 6 of the Basic and Clinical Science Course published by the Foundation of the American Academy of Ophthalmology



Herpes Keratitis



Herpes Keratitis



Diagnosis and Management of Common Eye Problems

Herpetic Keratitis: complications and prognosis

- Recurrent process
- Corneal scarring is common and leads to visual loss

Allergic Conjunctivitis

- Associated with hay fever, asthma, eczema
- Often bilateral and seasonal
- Milder conjunctival hyperemia
- Chemosis
- Itching (primary symptom)
- Not contagious, children may return to school

Allergic conjunctivitis: note the conjunctival erythema but no watery discharge



Allergic conjunctivitis - treatment

- Cold compresses
- Topical antihistamines (Livostin, Patamol)
- Topical non-steroidals (Acular)
- Topical mast cell stabilizers (Alomide)
 - ◆ Not effective until after one week of use

Ophthalmia Neonatorum (Special Case for Newborns)

- Chemical
- Gonococcal
- Chlamydial
- Herpetic

Chemical conjunctivitis

- Onset: first 24 hours
- Cause: silver nitrate (90%)
- Signs & Sxs: bilateral, mild eyelid edema, clear discharge, conjunctival injection
- Treatment: supportive, spontaneous resolution in a few days

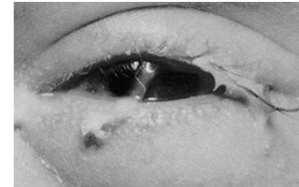
Diagnosis and Management of Common Eye Problems

Gonococcal conjunctivitis

- Onset: 48 hours
- Cause: *Neisseria gonorrhoea* via birth canal
- Signs & Sxs: severe, purulent discharge, chemosis, eyelid edema
- Dx: gram stain
- Treatment: systemic ceftriaxone or Pen G, topical erythromycin and irrigation

Gonococcal conjunctivitis ó note the copious amounts of purulent discharge

Picture from Section 6 of the Basic and Clinical Science Course published by the Foundation of the American Academy of Ophthalmology



Chlamydial conjunctivitis

- Onset: 4 to 7 days
- Cause:
- Signs & Sxs: more indolent, eyelid edema, pseudomembrane formation
- Dx: Giemsa-stained conj swabbings, fluorescent antibody staining
- Treatment: topical and oral erythromycin
- Treat parents as well

Iritis or Uveitis

- Inflammation of the anterior segment of the eye
- May be idiopathic, secondary to trauma, or associated with a systemic disease

Iritis ó signs/symptoms

- Ciliary flush
- Photophobia (light sensitivity)
- Miotic pupil (pupil is smaller on affected side)
- Keratic precipitates
- Usually not associated with tearing or discharge

Iritis - treatment

- Steroids ó may be topical, injected below the conjunctiva or tenon \emptyset , or oral depending on cause and severity of iritis
- Cycloplegia ó use of cycloplegic drop to dilate pupil. This will decrease movement of iris thus aiding with pain and help prevent scarring of iris to the lens

Iritis - referral

- Should be referred on an urgent basis to an ophthalmologist for treatment and follow-up

Dry Eyes

- Associated with:
 - ◆ Aging
 - ◆ Sjogren's syndrome
 - ◆ Rheumatoid arthritis
 - ◆ Stevens-Johnson syndrome
 - ◆ Systemic medications

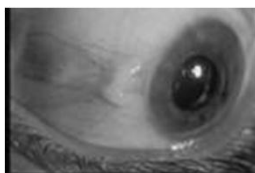
Dry eyes - treatment

- Artificial tear drops may be used as needed
- May refer to an ophthalmologist on non-urgent basis if no relief

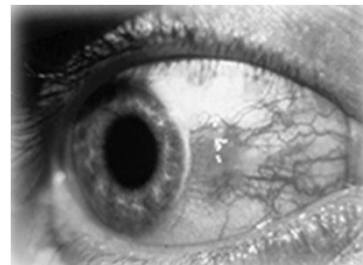
Pinguecula



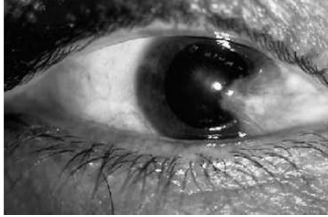
Pinguecula



Pinguecula



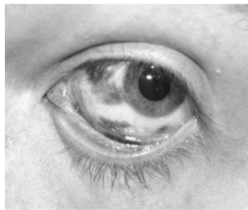
Pterygium



Subconjunctival Hemorrhage or Scleral Hemorrhage

- Bleeding into the potential space between the conjunctiva and sclera
- Usually resolve without sequelae and require no treatment
- May be due to trauma, associated with conjunctivitis, coughing, sneezing
- No need for referral

Subconjunctival hemorrhage



Subconjunctival hemorrhage



Subconjunctival hemorrhage



Orbital Disease

- Preseptal cellulitis
- Orbital cellulitis

Differentiation between preseptal and orbital cellulitis is important because treatment, prognosis, and complications are different

Preseptal Cellulitis

- Infection of the eyelids and soft tissue structures anterior to the orbital septum
- May be due to skin infection, trauma, upper respiratory illness or sinus infection

Preseptal Cellulitis - Symptoms

- Mild to very severe eyelid edema
- Eyelid erythema
- Normal ocular motility
- Normal pupil exam
- Mild systemic signs (fever, preauricular and submandibular adenopathy)

Preseptal Cellulitis - Evaluation

- Swab drainage if present for gram stain and culture
- CBC
- Blood cultures in more severe cases
- CT scan of orbit to assess the paranasal sinuses, posterior extension into the orbit, and presence of subperiosteal or orbital abscesses

Preseptal Cellulitis - treatment

- Systemic antibiotics
- The younger the patient and the more severe the disease the more likely to initiate inpatient treatment (IV antibiotics)

Orbital Cellulitis

- Infectious process posterior to the orbital septum that affects orbital contents
- Medical emergency !!!!
- Requires combined efforts of pediatrician, ophthalmologist and often otolaryngologist for management

Diagnosis and Management of Common Eye Problems

Orbital Cellulitis - Causes

- Bacterial infection of the adjacent paranasal sinuses, particularly the ethmoids
- Infants may develop secondary to dacryocystitis

Orbital Cellulitis ó Signs and Symptoms

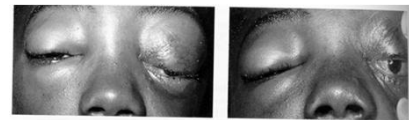
- Redness and swelling of lids
- Impaired motility often with pain on eye movement
- Proptosis
- Decreased vision
- Afferent pupillary defect
- Optic disc edema

Orbital Cellulitis: Note the marked lid swelling and erythema



Orbital Cellulitis: Note the periorbital edema and erythema and the chemosis (conjunctival swelling)

Picture from Section 6 of the Basic and Clinical Science Course published by the Foundation of the American Academy of Ophthalmology



Orbital Cellulitis Management

- Hospitalization
- Ophthalmology consult (urgent)
- Blood culture
- Orbital CT scan
- IV antibiotics

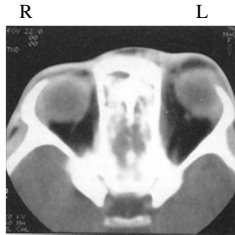
Orbital Cellulitis Complications

- Optic nerve damage (permanent visual loss)
- Meningitis in 1.9% of cases as infection may spread through the valveless orbital veins
- Subperiosteal abscess
- Cavernous sinus thrombosis

Diagnosis and Management of Common Eye Problems

Subperiosteal abscess of the left orbit. Note the dome shaped elevation of the periosteum along the left medial orbital wall.

Picture from Section 6 of the Basic and Clinical Science Course published by the Foundation of the American Academy of Ophthalmology



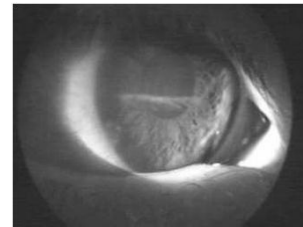
Cornea

- Corneal Abrasions
- Corneal Foreign Bodies
- Corneal Ulcers
- Herpetic Keratitis
- Chemical Burns

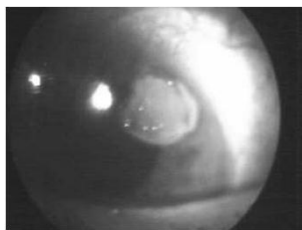
Corneal Abrasions

- Often a history of trauma or getting something in the eye or contact lens wear
- Symptoms:
 - ◆ Pain, photophobia (light sensitivity), redness, tearing, blurred vision
 - ◆ Usually monocular

Corneal Abrasions



Corneal Abrasions



Corneal Abrasions - Diagnosis

- Application of fluorescein dye into the eye and viewing with a cobalt blue light. Abrasion will appear green.
- Application of a topical anesthetic (Alcaine) will aid with exam if available

Diagnosis and Management of Common Eye Problems

Corneal Abrasions - treatment

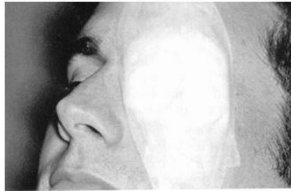
- Small abrasions will heal within 24 hours, larger abrasions take longer
- May patch with a topical antibiotic ointment for 24 hours (patch aids for comfort so that lid does not constantly pass across abrasion, not practical in younger children)
- Prescribe topical antibiotic ointment or drop
- Patient should be followed daily or every other day until healed
- May refer to ophthalmologist for the next day follow up

Patching technique

- Instill either an antibiotic ointment or drop into the eye
- Instruct the patient to close both eyes
- Place two eye pads over the affected eye (may fold the bottom pad in half to apply more pressure)
- Tape firmly in place so that patient can not open lids beneath patch
- The patch should be removed in 24 hours

Pressure patch applied to left eye

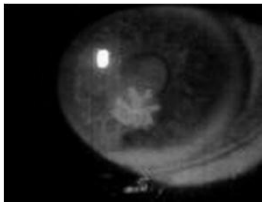
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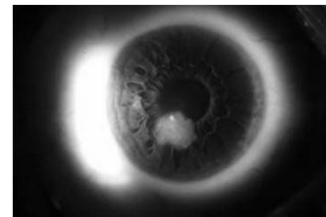
Corneal Ulcer

- A localized infection of the cornea
- Usually bacterial, but may be fungal or protozoan (ameoba)
- Requires emergent referral to an ophthalmologist

Corneal Ulcer

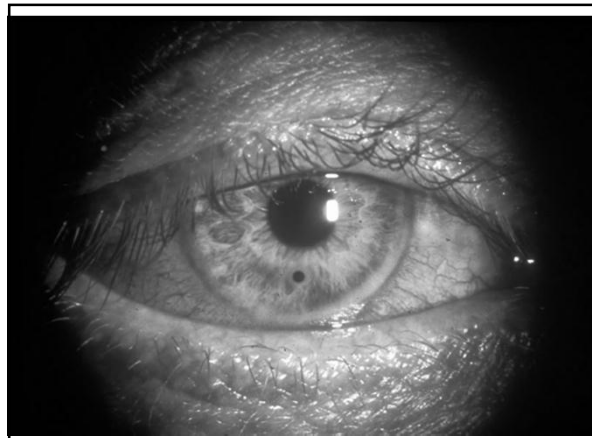


Corneal Ulcer

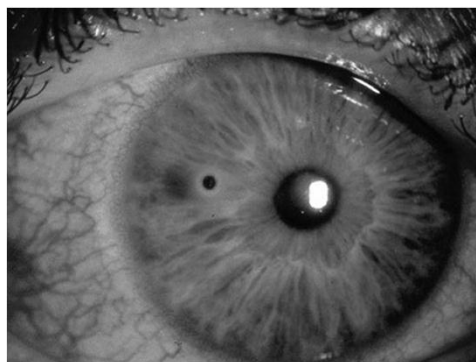
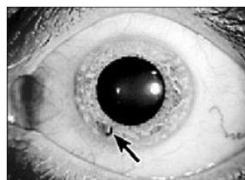


Corneal Foreign Body

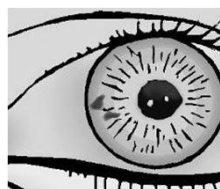
- Usually easy to treat in the office
- Use a topic anaesthetic and 22 guage needle
- Special circumstances
 - ◆ Iron filing ó rust rings



Corneal Foreign Body



Corneal Foreign Body



Proparacaine vs. Tetracaine

- | | |
|------------------------------|-----------------------------|
| Proparacaine =
Ophthaine® | Tetracaine =
Pontocaine® |
| ■ Less irritating | ■ Stings a lot |
| ■ Onset 20 sec | ■ Onset 1 min |
| ■ Lasts 10 - 15 min | ■ Lasts 15 - 20 min |
| ■ \$15 / bottle | |

Both 0.5% solution

Patch vs. No Patch

- Six studies
- Pain: no difference in 4, patching worse in 2
- Complications: no difference
- Recommendation: let patient decide which feels better

Flynn CA. J Fam Pract 1998 Oct;47(4):264-70

Antibiotic Eyedrops

- Routine use controversial
- Several available, no advantage
- Sulfacetamide (\$8 / 15cc) = Sulamyd® = Bleph-10® (\$21 / 5cc)
- Trimethoprim / polymyxin B (\$14 / 10cc) = Polytrim® (\$34 / 10cc)

Antibiotic Eyedrops

- Tobramycin (\$8) = Tobrex® (\$35)
- Gentamicin (\$10) = Garamycin® (\$25)
- Norfloxacin = Chibroxin (\$25)
- Ciprofloxacin = Ciloxan® (\$41)

All costs for 5 cc bottle

Which Antibiotic Drop?

- Slowest healing: tobramycin, gentamicin
- Worst cornea effect: tobramycin, gentamicin
- No significant difference between control solution and any active drop

Stern GA. Arch Ophthalmol 101(4):644, 1983

Pearls

- Scratch from contact lens: use antibiotics
 - ◆ Infection, ulcers common
 - ◆ Cover Gram-negatives, especially pseudomonas
- Avoid neomycin (Neosporin®): many people allergic



NSAID Eyedrops

- Decrease cyclooxygenase activity → lower prostaglandin precursor → less prostaglandin synthesis
- NSAID + soft contact may give symptomatic relief, preserve binocular vision

Saltz JJ. J Refract Corneal Surg 1994 Nov-Dec; 10(6): 640-6

NSAID Eyedrops

- Diclofenac = Voltaren® (\$48/5ml)
- Ketorolac 0.5% = Acular® (\$45)
\$9 / ml =
\$270 / ounce =
\$2160 / cup =
\$9000 / liter
\$37,854 / gallon



Cycloplegics / Mydriatics

- Cycloplegic paralyzes ciliary muscles that adjust lens shape
 - ◆ Relieves photophobia, pain
- Mydriatic causes pupil to dilate
 - ◆ Can cause acute narrow angle closure



Cycloplegics / Mydriatics

- | | |
|---|---|
| <p>Homatropine</p> <ul style="list-style-type: none"> ■ Mydriasis: 10 - 30 minutes ■ Cycloplegia: 30 - 90 minutes ■ Lasts up to 48 hours ■ Useful for patient with dark iris | <p>Cyclopentolate (Cyclogyl®)</p> <ul style="list-style-type: none"> ■ Mydriasis: 30 - 60 minutes ■ Cycloplegia: 25 - 75 minutes ■ Lasts up to 24 hours |
|---|---|

What Works Best?

- 401 patients with corneal abrasions
- Lubrication vs. homatropine vs. NSAID drops vs. homatropine plus NSAID drops
- All outcomes: no difference among any groups

Carley F. J. Acad Emerg Med 18(4):273,2001

Class	Color
Anti-infective	Tan
Anti-inflammatory / steroid	Pink
Mydriatic and cycloplegic	Red
Nonsteroidal anti-inflammatory	Gray
Miotic	Green
Beta-blocker	Yellow
Beta-blocker combination	Dark blue
Adrenergic agonist	Purple
Carbonic anhydrase inhibitor	Orange
Prostaglandin analogue	Turquoise

Corneal Ulcer: Signs/Symptoms

- Pain
- Photophobia
- Foreign body sensation
- Conjunctival hyperemia
- White opacity on the cornea
- Anterior chamber inflammation (iritis)
- May have associated hypopyon (pus in the anterior chamber)

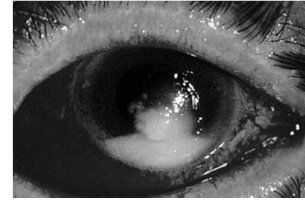
Diagnosis and Management of Common Eye Problems

Corneal Ulcer

- Patient may have history of trauma or contact lens wear
- Always suspect fungal infection if trauma is with vegetative matter i.e. tree branch

Corneal Ulcer: note the white lesion on the central cornea, the hypopyon (pus in the anterior chamber), and the conjunctival hyperemia

Picture taken from Basic Ophthalmology for Medical Students and Primary Care Residents published by the American Academy of Ophthalmology



Corneal Ulcer: treatment

- If ulcer severe, patient monocular (only has one seeing eye), or patient young may require hospitalization
- Intensive topical antibiotic therapy with broad spectrum antibiotic (i.e. Ocuflax, Ciloxan, fortified Keflex)
- Corneal cultures and gram stain

Corneal Ulcers: complications

- corneal scarring and permanent visual loss
- corneal perforation requiring emergent surgical intervention

Chemical Injuries

Chemical Injury

- Range from mild inflammation to severe damage with loss of the eye
- Most important chemicals are strong acids and bases

Alkaline Injuries

- Penetrate ocular tissues rapidly and produce intense ocular reactions
- Damage widespread, uncontrolled, and progressive
- Often results in epithelial loss, corneal opacification, scarring, severe dry eye, cataract, glaucoma and blindness

Chemical Injury: Treatment

- The single most important step in management is complete and copious irrigation of the eye
- Treatment should be instituted within minutes
- A true ocular emergency!!!!

Ocular Irrigation

- Instill a drop of topical anesthetic if available (proparacaine)
- Use eye irrigation solutions and normal saline IV drip
- Squeeze copious amounts of solution into the eye and direct towards the temple, away from the unaffected eye
- Irrigate under the lids

Chemical Injury: Treatment

- After several minutes of irrigation, check the pH of the eye by placing litmus paper into the inferior fornix
- If the pH is not neutral resume irrigation until pH neutralized
- Recheck pH 30 minutes after neutralization as pH can rise again after irrigation stopped

Chemical Injury: Treatment

- Remove any visible particulate matter
- Requires emergent referral to an ophthalmologist; however, commence irrigation prior to calling the ophthalmologist

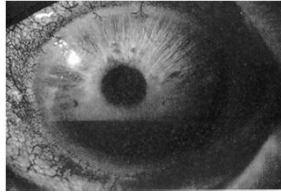
Hyphema

- Blood in the anterior chamber
- Usually associated with trauma
- Requires emergent referral to an ophthalmologist for treatment

Diagnosis and Management of Common Eye Problems

Hyphema ó note the layered blood in the anterior chamber

Picture taken from Basic Ophthalmology for Medical Students and Primary Care Residents published by the American Academy of Ophthalmology



Hyphema - treatment

- Strict bedrest
- Topical steroids
- Topical cycloplegic agents
- Admit to hospital if young or concerned about follow-up or compliance
- Need daily exams for 5 days including measurement of intraocular pressure
- Sickle-cell prep (patients with sickle cell trait need more aggressive management of elevated intraocular pressures)

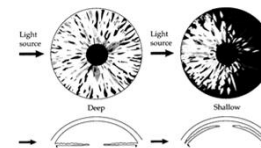
Pupillary abnormalities

- In iritis spasm of the iris sphincter muscles may cause the pupil to be smaller in the affected eye or may be distorted due to inflammatory adhesions.
- Pupil is fixed and mid-dilated in acute angle closure glaucoma
- The pupil is unaffected in conjunctivitis

Anterior Chamber Depth Estimation

Picture taken from Basic Ophthalmology for Medical Students and Primary Care Residents published by the American Academy of Ophthalmology

1. Shine a light from the temporal side of the head across the front of the eye parallel to the plane of the iris.
2. Look at the nasal aspect of the iris. If two thirds or more of the nasal iris is in shadow, the chamber is probably shallow and the angle narrow.



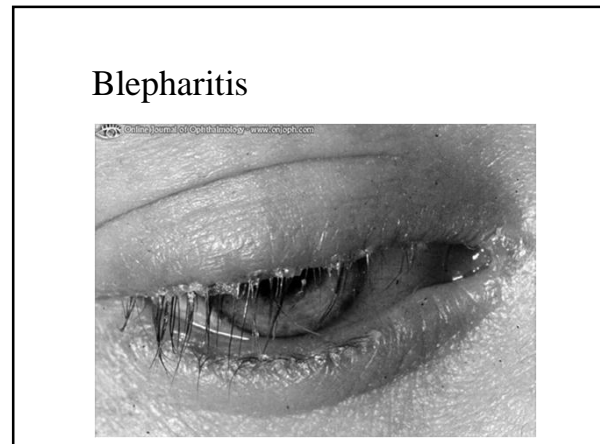
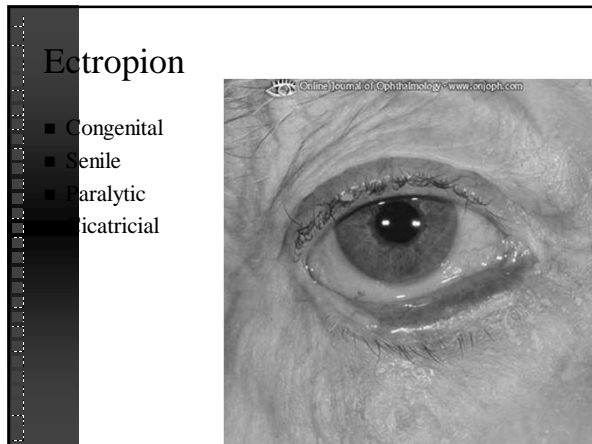
Try to compare the anterior chamber depth of the two eyes

A narrow anterior chamber suggests angle closure glaucoma

Angle closure glaucoma is unusual in children, but may be seen in children with retinopathy of prematurity

Lid Disorders

- Ectropion
- Blepharitis
- Chalazion
- Hordeolum



Blepharitis

- Refers to any inflammation of the eyelid
- In general refers to a mixed blepharitis
 - ◆ With flakes and oily secretions on lid edges
 - ◆ Caused by a combination of factors
 - ◆ Hypersensitivity to staphylococcal infection of the lids
 - ◆ Glandular hypersecretion
- Treat with warm moist towel compresses

Hordeolum/Chalazion

- Usually begins as diffuse swelling followed by localization of a nodule to the lid margin
- Hordeolum ó staphylococcal infection of the glands of Zeis
- Chalazion ó obstruction of the meibomian glands

Hordeolum/Chalazion Treatment

- In children surgical excision often requires a general anesthetic in the operating room; therefore, extended trials of conservative therapy are warranted
- Treatment includes warm compresses and topical antibiotic drops or ointment four times a day. Antibiotics should be continued for 3-4 days after spontaneous rupture to prevent recurrence

Hordeolum/Chalazion Treatment Contd

- Lesions present for more than a month seldom resolve spontaneously and should be referred to an ophthalmologist on a non-urgent basis if no resolution with conservative management
- Systemic antibiotics should only be used if the hordeolum or chalazion becomes secondarily infected

Diagnosis and Management of Common Eye Problems

The nodule on the patient's right upper lid is a chalazion.



Chalazion



Chalazion

- Focal, chronic granulomatous inflammation of the eyelid caused by obstruction of a Meibomian gland
- Treat by excision using chalazion clamp
- May recur

Hordeolum



Hordeolum



Hordeolum

- Painful, acute, staphylococcal infection of the Meibomian or Zeis glands
- Has central core of pus
- External and internal
- Treat with antibiotic ointment and dry heat

What is this?



Xanthelasma



Xanthelasma

- Lipoprotein deposits in the eyelids
- Often an indicator of underlying lipid disorder
- Cosmetic significance
- May be removed, but recur

What is the name of this?



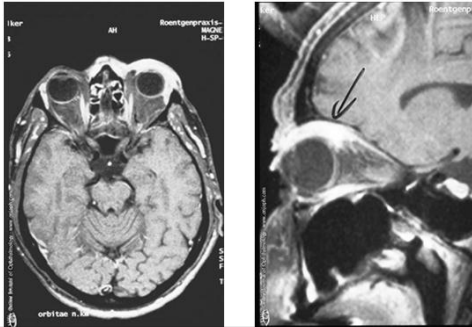
Dacryocystitis

- Inflammation of the lacrimal sac
- Usually caused by obstruction of nasolacrimal duct with subsequent infection
- Unilateral
- Treat with pus drainage (stab incision), local and systemic antibiotics
- Definitive treatment: fistula of lacrimal sac and nasal cavity (dacryocystorhinostomy)

Dacryoadenitis



Dacryoadenitis



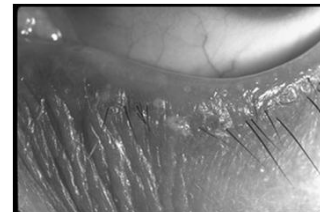
Dacryoadenitis

- Acute painful swelling, ptosis of lid, edema of the conjunctiva due to lacrimal gland inflammation
- Often infectious: pneumococci, staphylococci, occasionally streptococci
- Chronic form: longer DDx
- Treat acutely with moist heat and local antibiotics.

Blepharitis

- Chronic inflammation of the lid margin
- Types: staphylococcal or seborrheic
- Symptoms: foreign-body sensation, burning, matting
- May predispose to chalazia, blepharoconjunctivitis, loss of lashes

Blepharitis: note the crusting in the lashes and the thickened lid margin



Blepharitis Treatment

- Warm compresses
- Lid scrubs with 50/50 mixture of nonirritating shampoo (Johnson and Johnson's baby shampoo) and water daily
- Antibiotic ointment at bedtime for 2-3 weeks (Bacitracin or erythromycin)
- Resistant cases can be referred to the ophthalmologist on a non-urgent basis

Blepharitis

- In general, blepharitis is not curable only controllable and exacerbations are common

Diagnosis and Management of Common Eye Problems

Nasolacrimal Duct (NLD) Obstruction: Congenital

- Normal baseline lacrimation increases over the first 2 to 3 weeks of life therefore NLD obstructions may not be evident until the child is 3 weeks old
- Usually due to failure of membranous valve of Hasner to regress
- Up to 90% will spontaneously resolve without treatment (75% in the first six months of life)

Symptoms

- One or both eyes appear moist
- Tears overflow and stream down the cheek
- Chronic or intermittent infections
- Crusting of eyelashes
- Periocular skin red and irritated

Treatment

- Topical antibiotics (use pm yellow or green discharge, may use polytrim drops or erythromycin ointment)
- Lacrimal sac massage (apply digital pressure over the lacrimal sac and then pull finger down the side of the nose)
- Probe and irrigation
 - ◆ Attempt to rupture the membranous valve of Hasner
- Silicone intubation
 - ◆ Recommended after no response to two probings or child over 1 year of age

When to refer

- Children with suspected NLD obstructions should be referred to an ophthalmologist at 9 months of age if no resolution. Children under 1 year of age may be offered the option of an in office probing which can avoid general anesthesia.

NLD obstruction of the right eye. Note the overflow tearing and the mucous on the lashes without redness of the conjunctiva.

Picture from Section 6 of the Basic and Clinical Science Course published by the Foundation of the American Academy of Ophthalmology



Congenital Dacryocystocele

- Blue, cyst like mass below medial canthal tendon
- Nasolacrimal sac and duct distended with fluid
- Upper and lower duct obstructions
- Frequent secondary infections

Dacryosystocele treatment

- Small percentage spontaneously decompress
- Digital massage of lacrimal sac and topical antibiotics
- Nasolacrimal duct probing with or without systemic antibiotics

Congenital Dacryocystocele of the right eye. Note the elevation and bluish coloration of the skin.

Picture from Section 6 of the Basic and Clinical Science Course published by the Foundation of the American Academy of Ophthalmology



Dacryocystitis

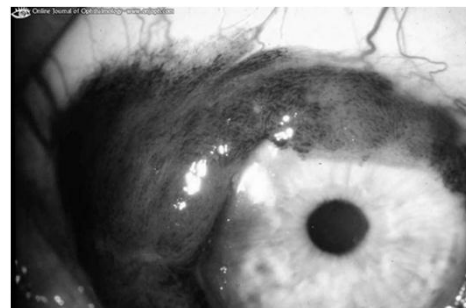


Ocular Growths

Benign ó Pigmented Nevus



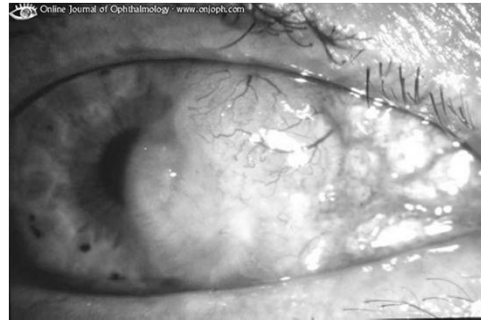
Tumors - Melanoma



Benign - Pterygium



Tumors - SCC



Trauma

- Trauma accounts for 5% of the blind registrations annually
- 65% under 30 year old age group
- Males to females 6:1
- 95% caused by carelessness
- Routine eye protection

Levas Eye Institute Ophthalmology Tutorials:
http://www.lei.org.au/~leiweb/teaching/undergrad/Ocular_trauma/ocular_trauma0.htm

Trauma

- Motor vehicle accidents
- Sport - 22% of ocular trauma hospital admissions
- Industrial - 44% of ocular trauma hospital admissions
- Assault
- Domestic injuries and child abuse
- Self inflicted - Often mentally disturbed people
- War

Trauma

- **Superficial** including chemical
- **Blunt** (contusion) injury
- **Perforating** may include intraocular foreign body

Trauma ó First Aid

- Hold open eyelids
- Irrigate with water
- Carefully remove coarse particles
- Topical anesthesia ó not for taking home!
- Evert eyelids and inspect under slit lamp
- Give systemic pain meds if needed

Trauma - Pearls

- Take history, document pre-injury status
- Always consider the possibility of ocular penetration or the presence of a foreign body
- If penetrating trauma is suspected avoid direct pressure on the globe
- If an intraocular foreign body is suspected radiologic studies may be necessary

Trauma ó Blunt

- Always consider the possibility of injury to the globe, the eyelids and the orbit
- Damage can occur from:
 - ◆ The site of impact (coup injury)
 - ◆ Shock wave traversing the eye and causing damage on the other side (contra coup)

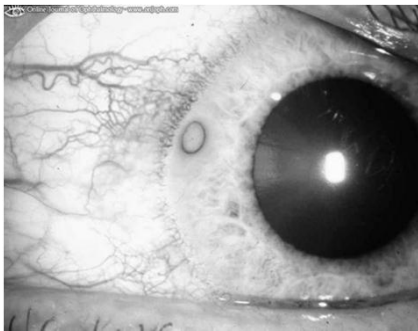
Trauma ó Blunt

- Check
 - ◆ ocular motility
 - ◆ intraocular pressure
 - ◆ vision

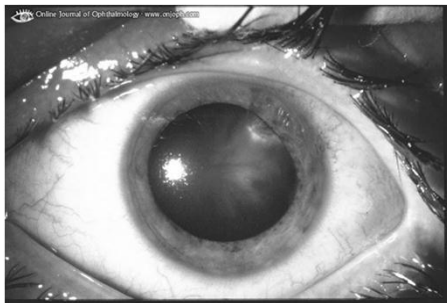
Trauma - Foreign Body



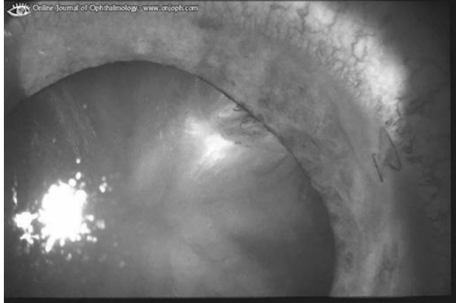
Trauma ó Foreign Body



What is wrong?



Foreign Body - Penetration



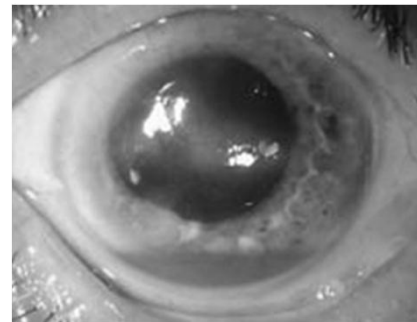
Foreign Body ó Iris Prolapse



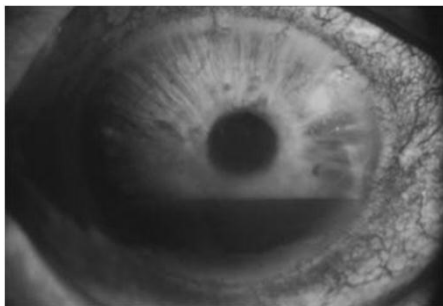
Foreign Body

- Evert upper lid
- Must be extracted
 - ◆ Rust rings in cornea
 - ◆ Retinal damage from free radicals

Trauma - Hyphema



Trauma - Hyphema

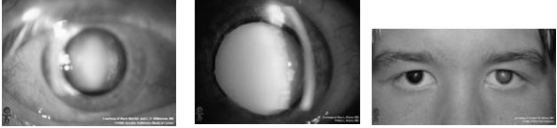


Trauma ó Hyphema

- Set patient upright to allow settling
- Will resolve by itself
- May cause corneal staining
- Check for increased intraocular pressure

COMMON NON-URGENT PROBLEMS

Cataracts



- Clouding of lens (*problem of the elderly*)
- Non-urgent referral for surgery
- Children (< 12 y) should have urgent referral because they are at risk for amblyopia & strabismus (*lazy eye*)

DIAGNOSES THAT CANNOT BE MISSED

What's the Diagnosis?

- 25 yr old male computer analyst with 1 week history of bilateral blurry vision also complains of:
 - ◆ Increased urinary & frequency
 - ◆ Increased thirst

DIABETES MELLITUS

What's the Diagnosis?


65 yr old female with 2-week history of right-sided headache also complains of:

- ◆ transient vision blurring X 2
- ◆ jaw claudication
- ◆ scalp tenderness
- ◆ anterior neck pain

**TEMPORAL ARTERITIS
(GIANT CELL ARTERITIS)**

Temporal Arteritis*****

- Inflammation of the branches of carotid (medium-sized arteries)
- Thickening of media leads to lumen narrowing
-> ischemic PAIN & vision loss
- **Dx:** elevated ESR
elevated CRP
positive TA BIOPSY
- **Rx:** Prednisone PO (Biopsy must be done within 10 days of starting steroids)



Spot Diagnosis?



**PROPTOSIS
THYROID ORBITOPATHY
(GRAVES)**

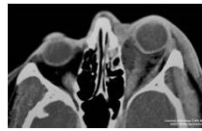
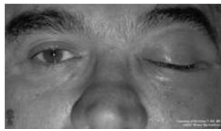
What's the Diagnosis?

35 yr old female with 2-week history of blurry vision of the right eye, also c/o:

- ◆ pain with eye movement
- ◆ Occasional tingling of extremities
- ◆ Decreased colour vision
- ◆ + RAPD in right eye

OPTIC NEURITIS (MS)

Spot Diagnosis?



- **Orbital Cellulitis (soft tissue orbit infection)**
 - ◆ Most common source is Sinusitis
 - ◆ Pain with eye movement
 - ◆ If no pain with eye movement → preseptal cellulitis
 - ◆ Rx with IV ABX; consult ophtho

What's the Diagnosis?

70 yr old male with 3-day history of:

- ◆ Flashing lights
- ◆ Floaters and cobweb sensation
- ◆ No curtain sensation

**POSTERIOR VITREOUS DETACHMENT
THINK OF RETINAL TEAR OR
DETACHMENT IF CURTAIN SENSATION
IS THERE**

What's the Diagnosis?

45 yr old male with 4 hour history of:

- ◆ Severe right eye pain
- ◆ Severe redness and hazy cornea
- ◆ Profound nausea and projectile vomiting
- ◆ Recently had eyes dilated at optometrist a few hours earlier

ANGLE-CLOSURE GLAUCOMA****

(refer to ophthalmology for immediate laser management and IOP lowering Rx)

Spot Diagnosis?



PAPILLEDEMA ****

Papilledema

- Sign of increased ICP (usually **mass/blood**)
- Your job is to:
 - ◆ Organize **CT scan** of the head to rule out mass effect (tumor/blood)
 - ◆ **Lumbar Puncture** if CT normal (consult neurology for this)
 - ◆ If CT scan is normal and the LP is normal (ie. no meningitis) but there is only increased ICP -> **Benign Intracranial Hypertension** (common in obese females, 20-40 years old)

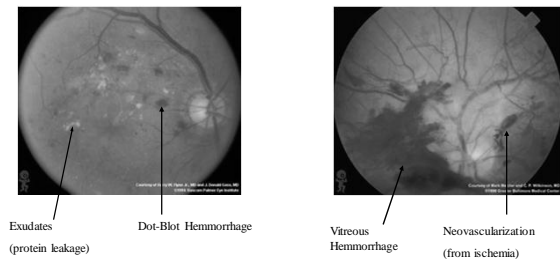
COMMON RETINAL PROBLEMS

RED & WHITE stuff in the Retina

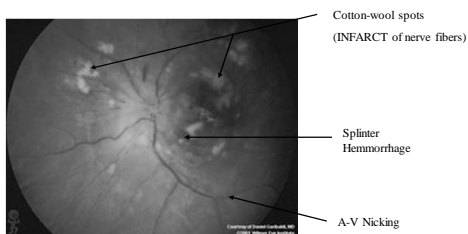
- First of all, Don't freak out!!
- You should think of:
 - ◆ **Diabetes**
 - ◆ **Hypertension**
 - ◆ **Age-Related Macular Degeneration**
 - ◆ Over 60 year old
 - ◆ Red & White in the **MACULA** only

Diabetic Retinopathy

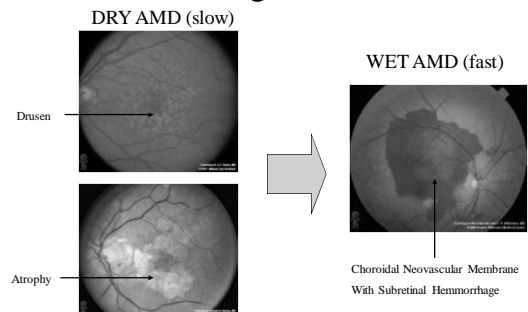
- Non-proliferative → Proliferative



Hypertensive Retinopathy



Age-Related Macular Degeneration



Retinal Detachment

- Often occurs with trauma, diabetes, connective tissue disorders, aging and other retinopathies
- Symptoms: blurred vision, flashes of light, floating spots, colored curtains
- Painless disorder but needs attention
- Treatment: laser, cryosurgery

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Vitreous Detachment

- Like a bunch of windshield wipers
 - ◆ No flashes
 - ◆ No colored curtains
- Happens only once per eye

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Retinoblastoma

- Hereditary malignant tumor of the eye occurring during infancy and childhood
- If left untreated, the condition is fatal
- Treatment: enucleation, radiation, and chemotherapy

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Color Blindness

- Ability to see color diminishes with age due to yellowing of lens
- Inherited
- Most common affects ability to distinguish between red and green
- No cure

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