### Ophthalmology

#### Anatomy
- **Blood supply** – central retinal artery from ophthalmic artery from internal carotid artery
- **Conjunctiva** – bulbar covers sclera, palpebral covers posterior surface of the lids
- **Extraocular muscles** – 4 rectus, 2 oblique
  - CN 6 – lateral muscles (abduct)
  - CN 4 – superior oblique (down & medial)
  - CN 3 – everything else (medial, inferior, superior, inferior oblique)
- **Eyelids** – open with CN 3, close with CN 7
- **Hyperopia** (farsightedness) – can’t see near
- **Myopia** (nearsightedness) – can’t see far
- **Entropion** – inward turning of the lower lid
- **Ectropion** – outward turning of lid
- **Bitemporal hemianopia**
- **Orbital cellulitis**
- **Central Vein Occlusions**
- **Optic disk swelling.**
- **Optic Neuritis**

#### Glaucoma
- **Acute Angle-Closure Glaucoma** – rapid onset of severe pain & profound visual loss with “halos around lights.”
- **Pupillary dilation/mydriasis**
- **Atropine, anticholinergics, sympatho agents, antidepressants.**
- **Sx:** red eye, steamy cornea, moderate dilated pupil, nonreactive to light, high pressure in eye.
- **Tx:** IV acetazolamide, laser therapy (iridoplasty) to prevent visual loss.
- **Chronic Glaucoma** – gradual bilateral loss of peripheral vision leading to tunnel vision with usually elevated intraocular pressure.
- **Rx:** gtt: (prostaglandin analogs, B-blockers, topical carbonic anhydrase inhibitors), Laser therapy

#### Pediatrics
- **Strabismus** – misalignment of eyes, check with cover/uncover test.
- **Esotropia**
- **Exotropia**
- **Refractive errors**
- **Myopia**
- **Hyperopia**
- **Amaurosis fugax**

### Clinical Medicine

#### Infectious Disease
- **Hordeolum (Sty)** – eyelid abscess.
- **Chalazion** – granulomatous inflammation of meibomian gland.
- **Blepharitis** – inflam condition of lid margins due to staph or seborrheic.
- **Dacryocystitis** – inflam of lacrimal sac due to obstruction.
- **Orbital cellulitis** – preseptal cellulitis, most common cause of proptosis in children.

#### Conjonctivitis
- **Hyperemia**
- **Bacterial** – purulent = Neisseria gonorrhoeae, *Staph* aureus, *Strep* pneumoniae
- **Chlamydia** – blindind trachoma.
- **Viral** – follicular conjunctivitis with fever, sore throat and preauricular adenopathy.
- **Allergic**
- **Cataract**
- **Macular degeneration** – leading cause of permanent visual loss in elderly.

#### Geriatrics
- **Cataract** – lens opacity, leading cause of blindness.
- **Macular degeneration** – leading cause of permanent visual loss in elderly.
- **Retinal detachment** – acute eye loss of vision or curtain spreading across field.
- **Hyphema**
- **Blowout fracture** – facial trauma causing herniation of orbital contents into the maxillary antrum.

#### History & Physical Exam
- **PE:** Vision (Snellen/wall chart) → Inspection → light response (direct/consensual = PERRLA) → Eye alignment (Light or Cover test) → EOM → tonometry (pressures) → direct ophthalmoscopy (red reflex, fundus exam) → lid eversion
- **Pearls**
  - **Proptosis** – Grave’s Disease (Hyperthyroidism)
  - **Small pupil** – Horner Syndrome (meiosis, ptosis, anhidrosis), neurosyphilis
  - **Marcus Gunn pupil** – weak direct light response but stronger consensual light response (opposite of normal) due to optic nerve lesion

#### Rhabdomyosarcoma
- Most common primary malignant tumor

#### Abbreviations:
- **E:** etiology, **RF:** risk factors, **Sx:** signs/symptoms, **Tx:** treatment, **Dx:** diagnostics, **abx:** antibiotics