SLOW LOSS OF VISION

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SLOW LOSS OF VISION

• Glaucoma
• Cataract
• Macular Degeneration
• Amblyopia/Strabismus

Epidemiology of Glaucoma

• Major cause of blindness
• 1% of all Americans >40 increasing to 3% in those >70
• Another 3-6% of Americans at risk
• There are multiple forms of glaucoma
• Higher risk populations:
  – Elderly (those over 65)
  – Diabetes Mellitus
  – African-Americans
  – Those with myopia
  – Family history of glaucoma
Pathophysiology of Glaucoma

• Anatomy
  – Aqueous production and outflow

• Elevated intraocular pressure is a common, but not necessary, feature

• Damage
  – Optic Atrophy/Excavation
  – Visual Field Defects

Glaucoma

• Four Clinical Presentations
  – Primary Open Angle Glaucoma
  – Primary Angle Closure Glaucoma
  – Secondary Glaucoma
  – Congenital Glaucoma
Glaucoma

- Primary Open Angle Glaucoma
  - Most common type (70% of all glaucoma cases)
  - Familial disease, hereditary
  - Bilateral
  - Caused by acquired impairment of aqueous drainage through the trabecular meshwork
  - Marked by progressive constriction of the field of vision, excavation of optic nerve head and often (but not always) elevated intraocular pressure (IOP); painless

Glaucoma

- Acute Angle Closure Glaucoma ("Narrow Angle")
  - An ophthalmic emergency
  - Rare form of disease
  - Occurs when root of iris blocks the drainage mechanism in patients with anatomically shallow anterior chambers
Glaucoma

• Congenital Glaucoma
  - Relatively rare form
  - Caused by congenitally imperfect aqueous humor drainage mechanism

• Secondary Glaucoma
  - Result of damage to drainage mechanism by other intraocular disorders, e.g., inflammation, after surgery, traumatic, diabetes
Signs and Symptoms: Primary Open Angle and Acute Angle Closure Glaucoma

- Primary Open Angle
  - Painless, usually asymptomatic, progressive visual loss
  - Sx do not usually appear until late in the disease
  - Visual Field Loss
  - Increased cupping
  - +/- increase IOP
  - Occasional early sign: decreased vision in dark or at twilight

- Acute Angle Closure
  - Onset acute
  - Severely painful, red eye with blurred vision
  - Mid-dilated, unreactive pupil
  - Steamy cornea
  - Peri-orbital pain
  - +/- nausea/vomiting
  - Halos around light
  - Increased IOP
  - Think hyperopic patients

Signs and Symptoms: Congenital and Secondary Glaucoma

- Congenital
  - Tearing
  - Photophobia
  - Enlarged eye
  - Steamy cornea
  - Increased IOP

- Secondary
  - Onset acute
  - History of ocular trauma or other ocular diseases
  - Severely painful, red eye
  - Steamy cornea
  - Peri-orbital pain
  - +/- nausea/vomiting
  - Increased IOP
Examination for Glaucoma

- Intraocular pressure
- Ophthalmoscopy
- Visual Field Testing
Management of Glaucoma

- Management of all forms involves lowering the IOP
- Treatments Include
  - Medication (drops)
  - Laser
  - Surgery
Glaucoma Medications

- Medications
  - GREEN: Parasympathomimetics
  - YELLOW, BLUE: Beta adrenergic blockers
  - ORANGE: Carbonic anhydrase inhibitors
  - PURPLE: Alpha-adrenergic agonists
  - CLEAR: Prostaglandins
  - SYSTEMIC (pills): Acetazolamide

Glaucoma Laser Treatment

- Trabeculoplasty
  - for open angle glaucoma

- Iridotomy
  - for angle closure glaucoma
Glaucoma Surgical Treatment

- Trabeculectomy
  - With and without antimetabolites
  - Seton valves
- Ciliary body destruction
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Cataract

- Definition
  - An opacity in the normally transparent focusing lens of the eye that, as it becomes denser, interferes with clear site
- Causes
  - Most common: aging
  - Less common: intraocular diseases, trauma, medications, and metabolic, endocrine, or congenital abnormalities
Cataract: Epidemiology

- Most common cause of visual loss in the adult population
- By age 65, >90% of all people have cataracts
- May develop at any age (essential to detect in neonatal period to prevent amblyopia)

Cataract: Management

- Treatment is surgical removal
  - Surgery is often deferred until decreased vision interferes with patient’s ability to perform ADL
  - Surgery not deferred for above reasons:
    - In neonates
    - When the cataract interferes with the diagnosis or treatment of other ocular diseases, e.g., diabetes mellitus or a tumor
    - When the cataract causes other eye diseases, e.g., uveitis or glaucoma

Cataract: Management

- Surgical removal
  - Most cataract surgery is done on an outpatient basis
  - Only the lens and anterior capsule are removed
  - After cataract removal eye is aphakic and optical power is restored by an intraocular lens, an eyeglass lens, or a contact lens
  - Visual acuity is restored to precataract levels in more than 99% of uncomplicated cases.
Complications

• Complications (rare):
  – Retinal detachment
  – Macular edema
  – Chronic Uveitis
  – Keratopathy

CATARACT SURGERY

• Let’s go to the videotape

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Slow Loss of Vision

• Age-Related Macular Degeneration (AMD)
  – Etiology
    • older age, women, family history, RPE atrophy
  – Exam
    • drusen-hyaline degeneration of RPE
    • break in Bruch’s
    • choroidal vessels bleed
    • NO APD

• Age-Related Macular Degeneration (AMD)
  – Symptoms
    • gradual/rapid loss of vision
    • metamorphopsia-Amsler grid
    • scotomata
    • no APD

• Age-Related Macular Degeneration (AMD)
  – Treatment
    • vitamins A, C, E, zinc
    • delays progression
    • fluorescein angiogram
    • laser
    • newer modalities of laser, intravitreal steroids, anti-angiogenesis agents
**Slow Loss of Vision**

- Age-Related Macular Degeneration (AMD)
  - Keys
    - will not go totally blind
    - 20/400 endpoint
    - use of low vision aids

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**Slow Loss of Vision**

- Amblyopia
  - “lazy eye”
  - suppression of vision in 2% of people
  - onset prior to age 7
- Strabismus
  - misaligned eyes, “crossed, wandering eyes”
  - affects 4% of children
  - esotropia—inward turning
  - exotropia—outward turning
Slow Loss of Vision

- Amblyopia
  - Block in normal visual development
  - Lack of binocular mapping of the environment
  - Decrease synapses within lateral geniculate body (even atrophy)
  - Lack of alignment of eyes
  - Lack of fusion, decrease stereovision

Slow Loss of Vision

- Amblyopia
  - Decreased vision, usually since birth
  - Strabismus (misalignment of eyes)
  - Visual preference, head tilt

Slow Loss of Vision

- Amblyopia/Strabismus
  - Esotropia-in-turning eyes
  - Exotropia-out-turning eyes
Slow Loss of Vision

- Amblyopia/Strabismus
- Treatment
  - Correct refractive error/glasses
  - Treat ocular disease – cataracts
  - Occlusion
  - Surgery - move eye muscles

Slow Loss of Vision

- Amblyopia/Strabismus
  - Preventable cause of blindness
  - Critical period
  - Risk until age 10

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