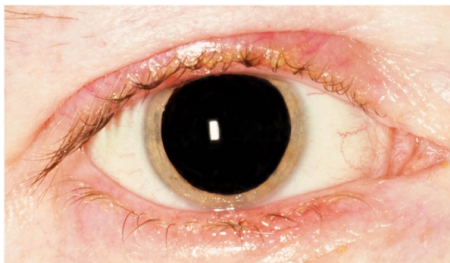


Is it a Tonic Pupil?

Valérie Biousse, MD

Neuro-Ophthalmology. Emory Eye Center

Emory University. Atlanta, GA. USA



Disclosures



- No relevant disclosures
- Consultant for GenSight Biologics

Anisocoria

Big Pupil Problem

vs.

Small Pupil Problem



Physiologic Anisocoria

- 10-20% of population has 0.4mm of anisocoria
- Normal light, near and dark reactions

Light

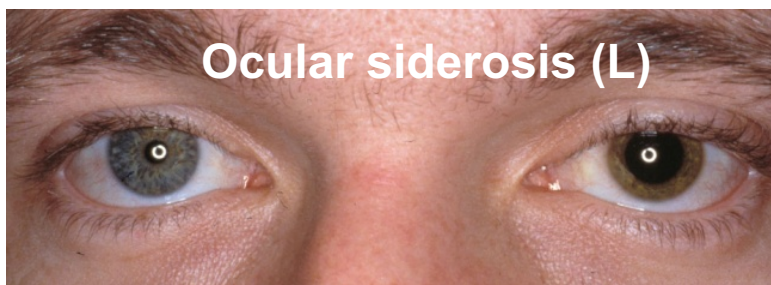
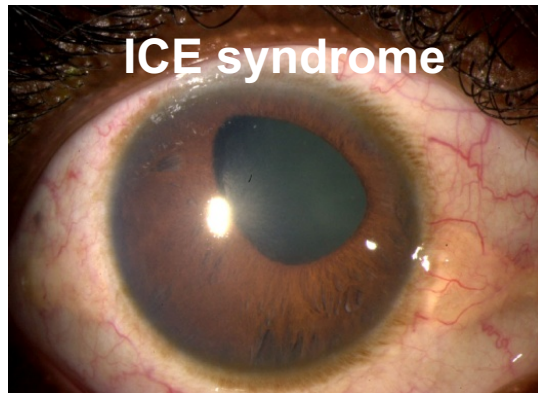
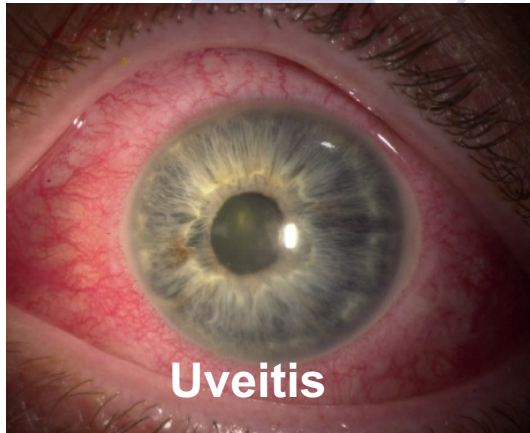


Dark



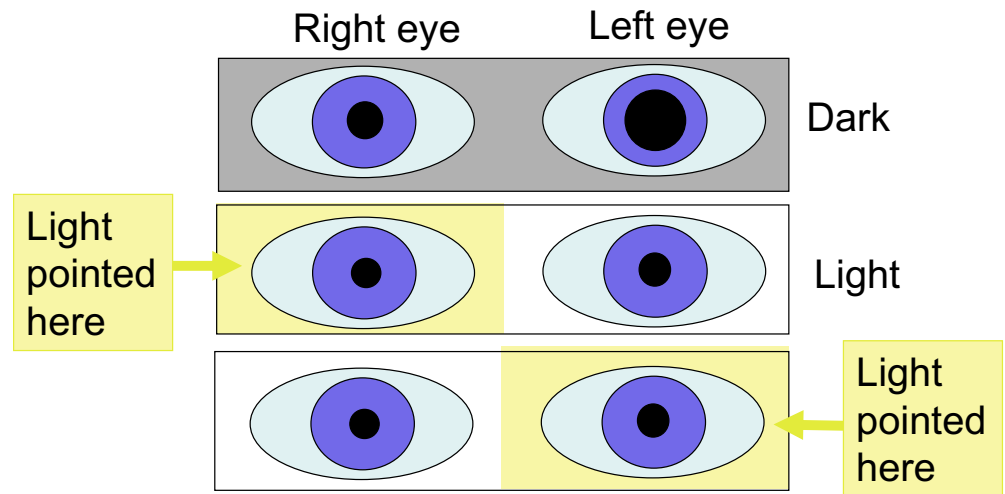
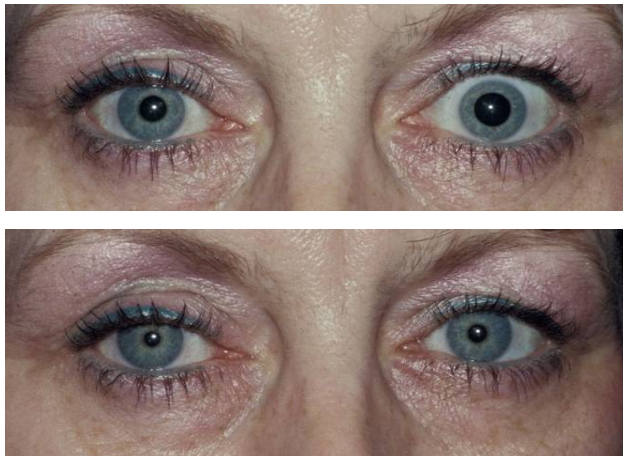
Anisocoria. Ocular causes





The small pupil is abnormal

- The anisocoria is greater in the dark than in the light
 - Poor pupillary dilation on the abnormal side
 - Abnormality of the sympathetic system.



Horner Syndrome

- Abnormality of the sympathetic system

Dark



Light



Congenital Horner Syndrome

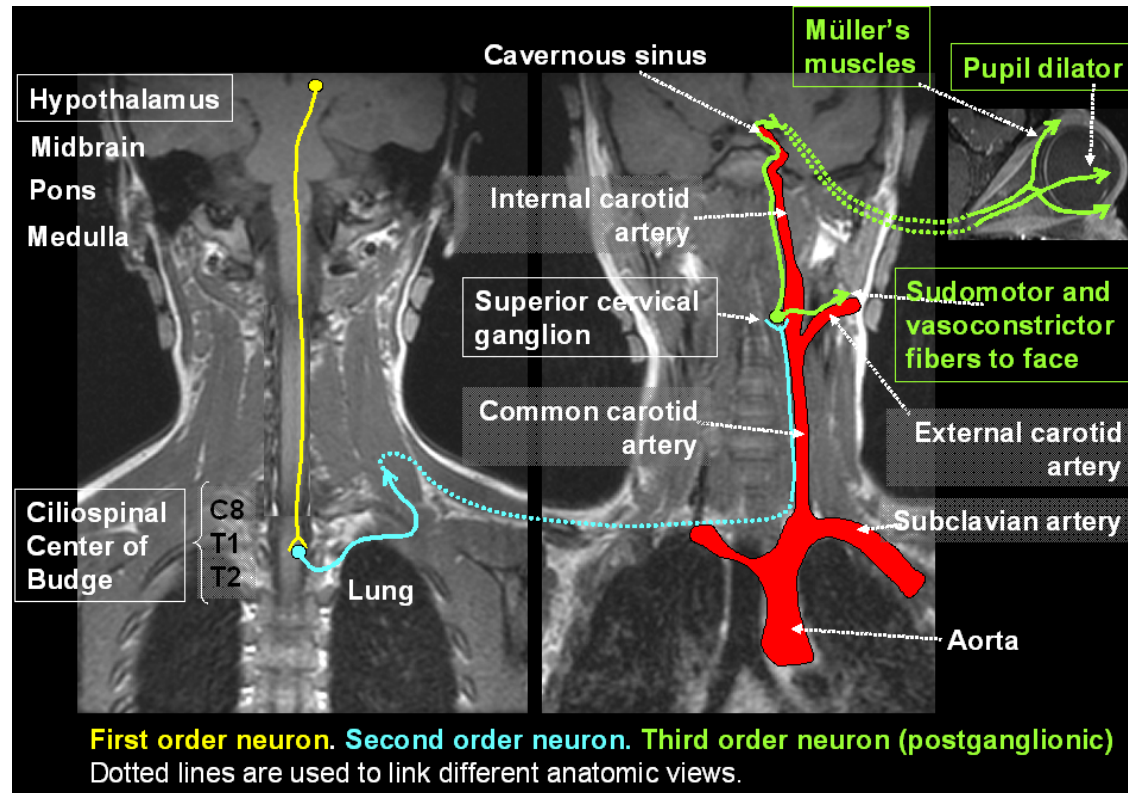


Horner's Syndrome: Localization

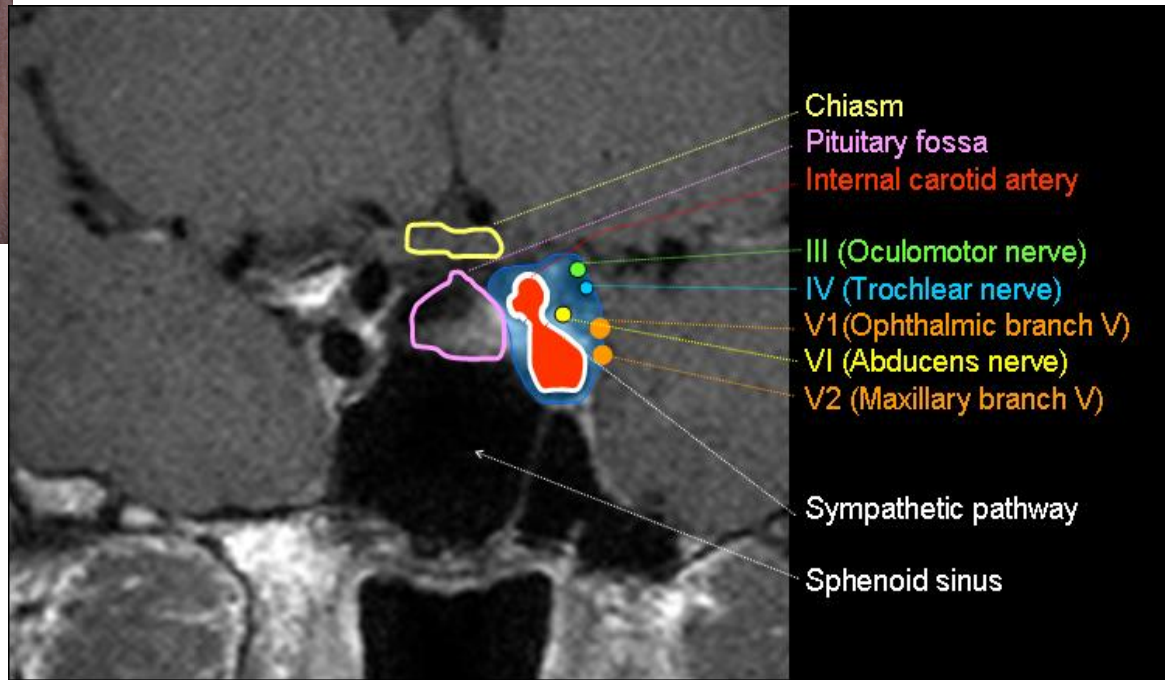
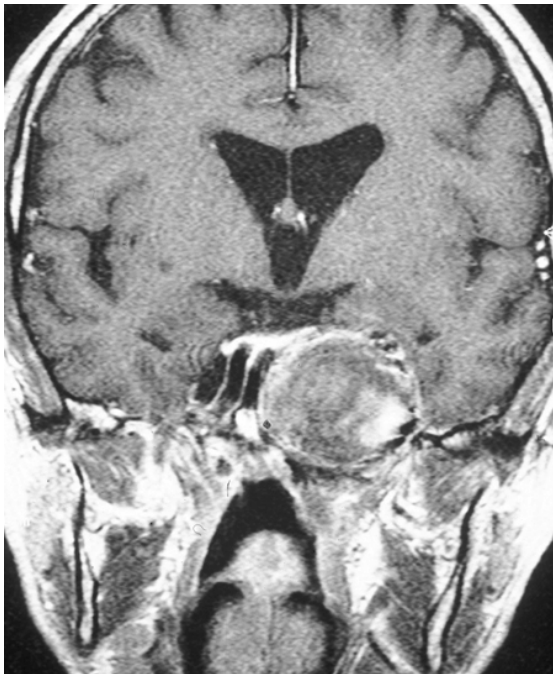
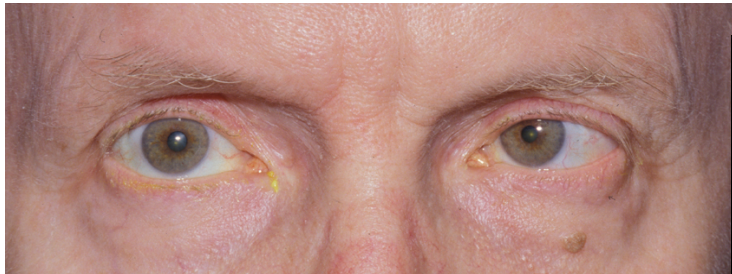
1: 1st order neuron:
brainstem/ spine

2: 2nd order neuron:
brachial plexus/ lung
apex

3: 3rd order neuron:
carotid dissection

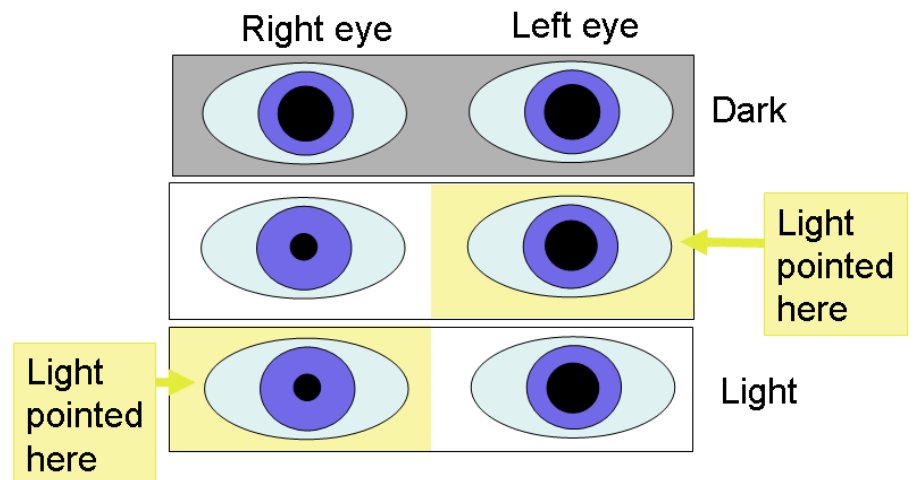
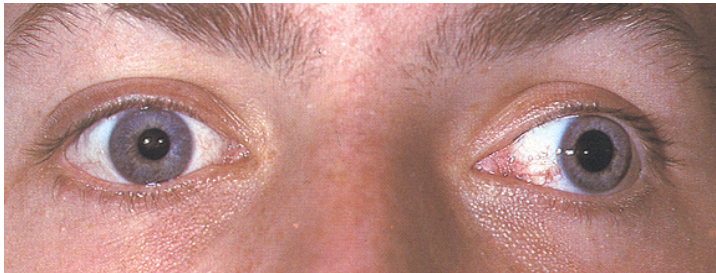


Horner + V1th = Cavernous Sinus



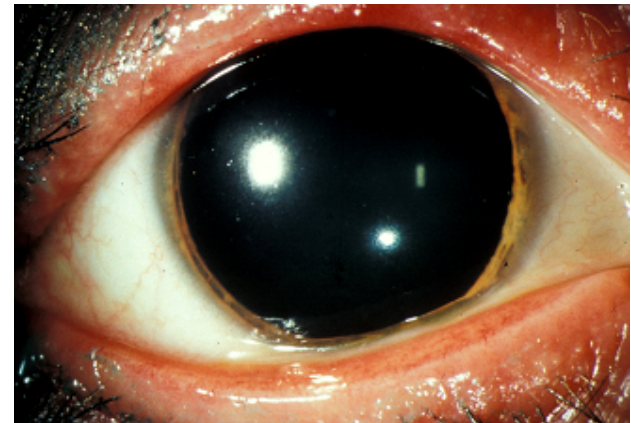
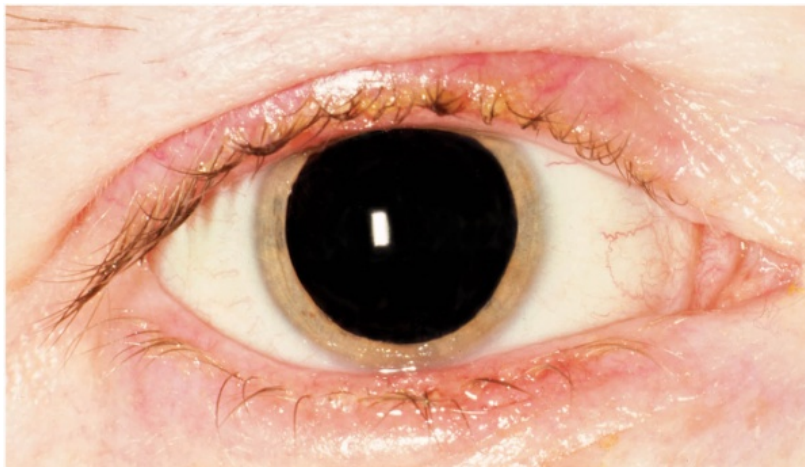
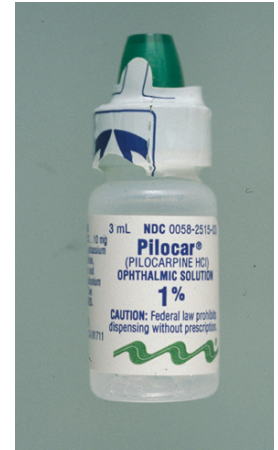
The big pupil is abnormal

- The anisocoria is greater in the light than in the dark
 - Poor pupillary constriction on the abnormal side
 - Abnormality of the parasympathetic system.



Pharmacologic Mydriasis

- Very large pupil
- Does not react to light or near
- Poor constriction with Pilocarpine 1%



Pharmacologic Mydriasis

Sphincter blockers

- Belladonna alkaloids
- Atropine
- Scopolamine
- Tropicamide
- Cyclopentolate
- Anticholinergic inhalants
- Gentamycin
- Lidocaine



Pharmacologic Mydriasis

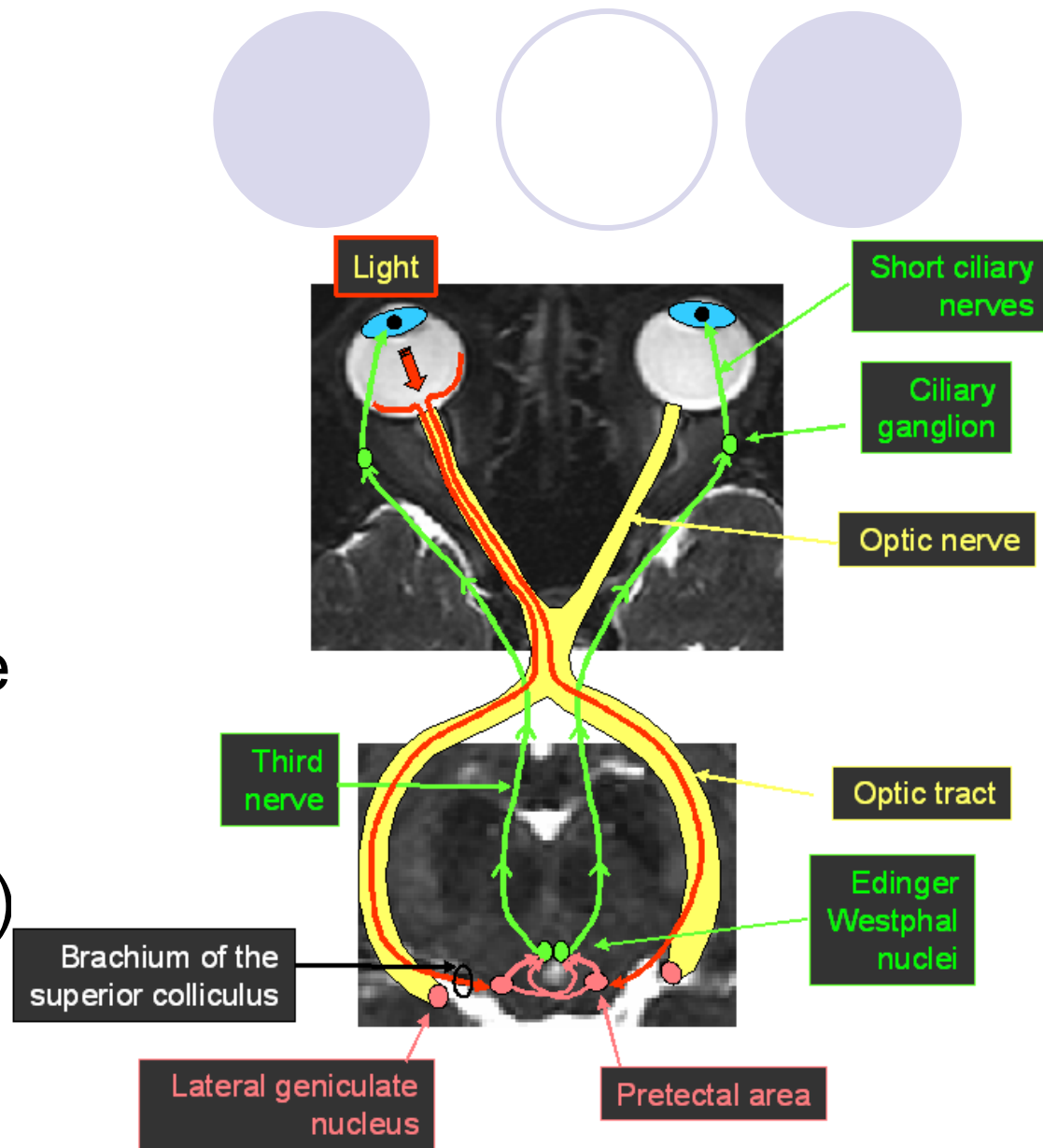
Dilator Stimulators

- Epinephrine
- Phenylephrine
- Ephedrine
- Hydroxyamphetamine
- Cocaine
- Ocular decongestants
- Adrenergic inhalants

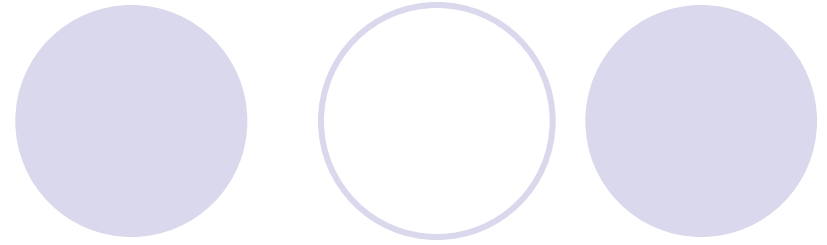


Tonic Pupil

- Initially large, irregular, tonic redilation
- Good near response
- Sensitivity to dilute pilocarpine (0.125%)



Tonic Pupil



- Light response



- Near response



Tonic Pupil

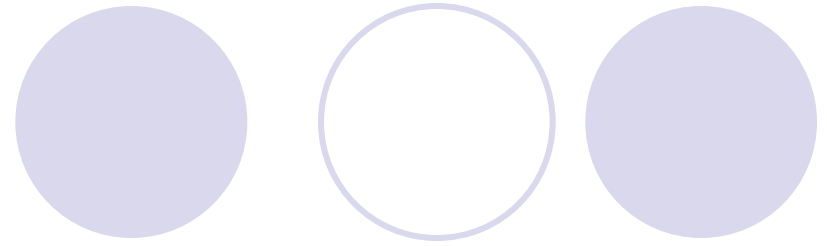
- Light response



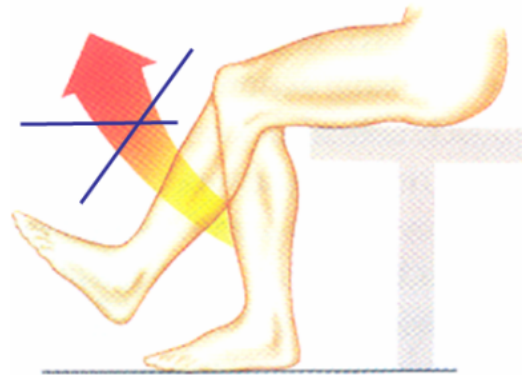
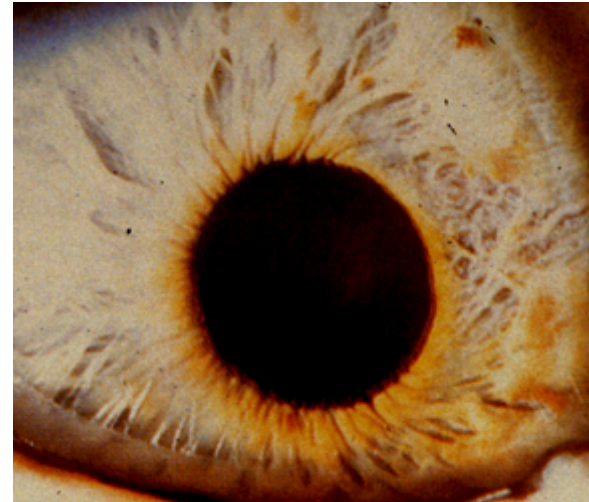
- Dilute pilo



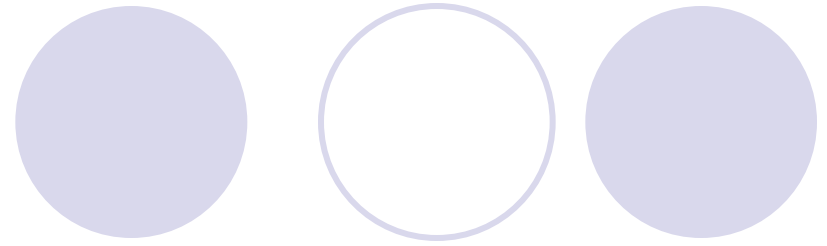
Tonic Pupil



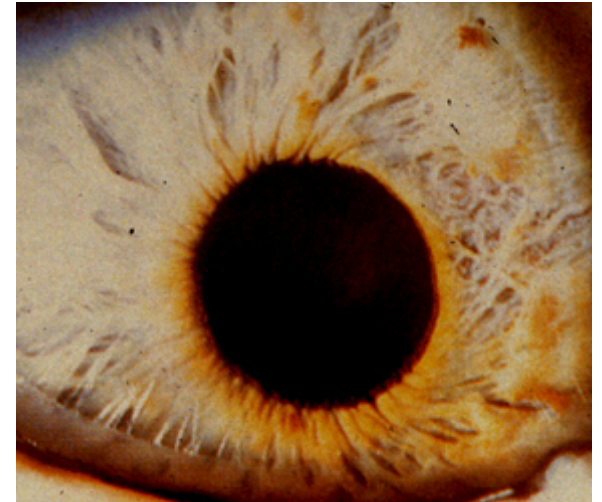
- Sectoral paralysis, segmental contraction
- Loss of pupillary ruff
- Vermiform movements of iris



Tonic Pupil

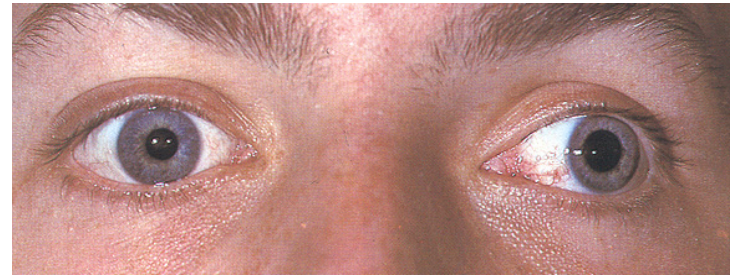


- Usually no cause
 - Diabetes
 - Viral infection (zoster, HIV)
 - Syphilis
 - Local orbital process
- If isolated, no workup

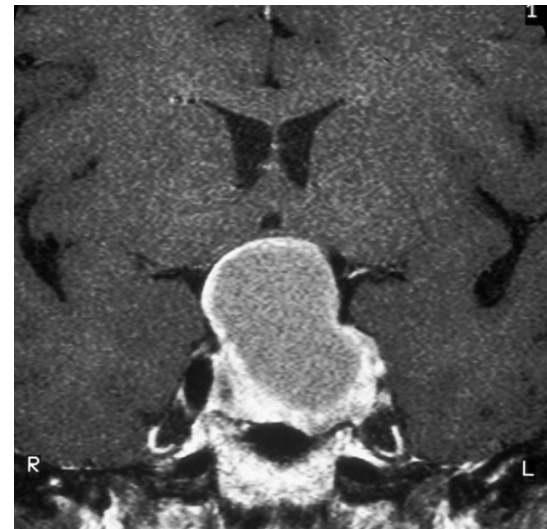
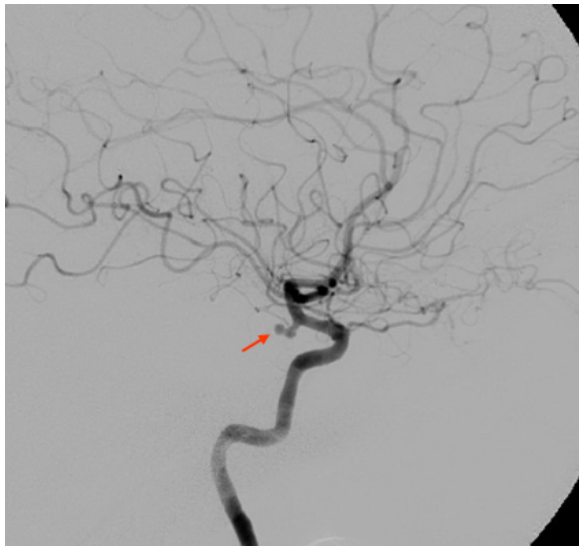
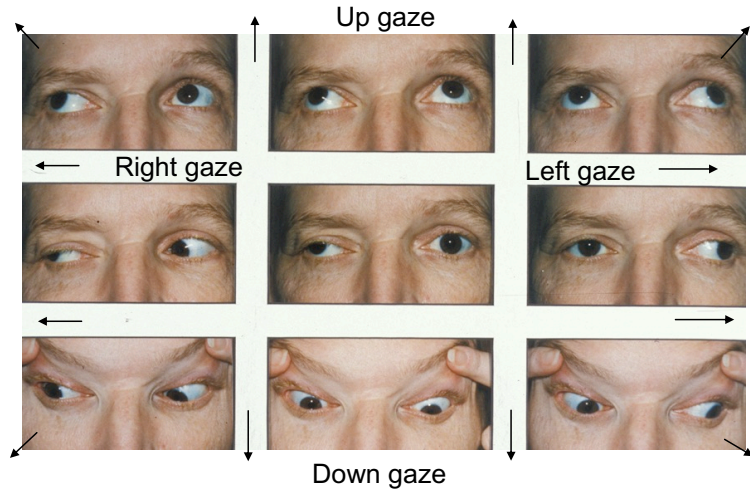


Third Nerve Palsy

- Dilated pupil
- Poorly reactive to light
- Always with ptosis/diplopia



PCOM Aneurysm / Pituitary Apoplexy



Anisocoria :Remember

- **No anisocoria w/ afferent defect**
- **Carotid dissection (Horner)**
- **Posterior communicating artery aneurysm and pituitary apoplexy (Illrd n. palsy)**



