



Neuro-ophthalmology

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Pupils: Introduction

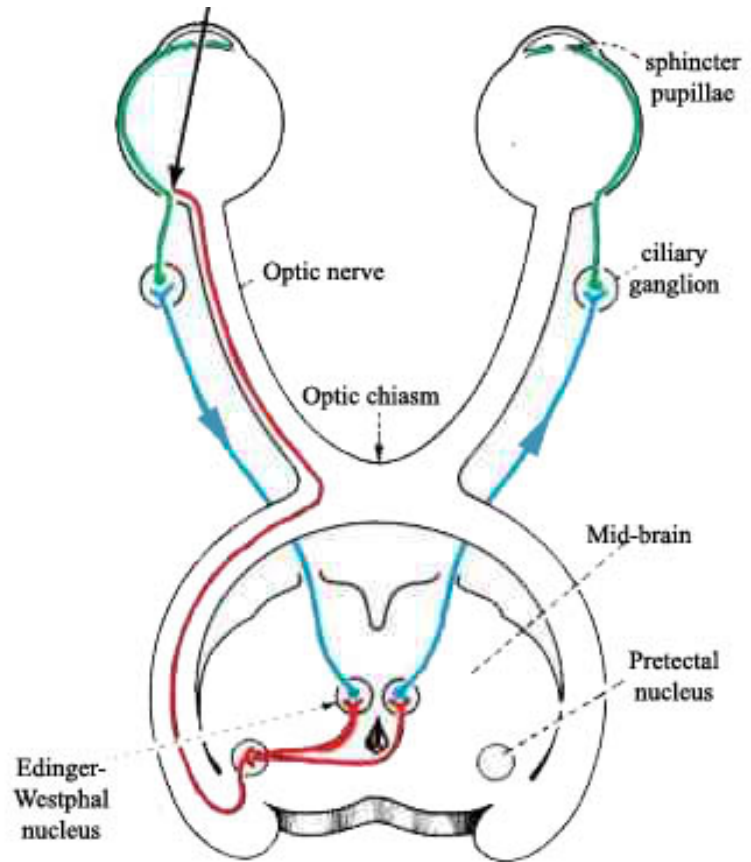
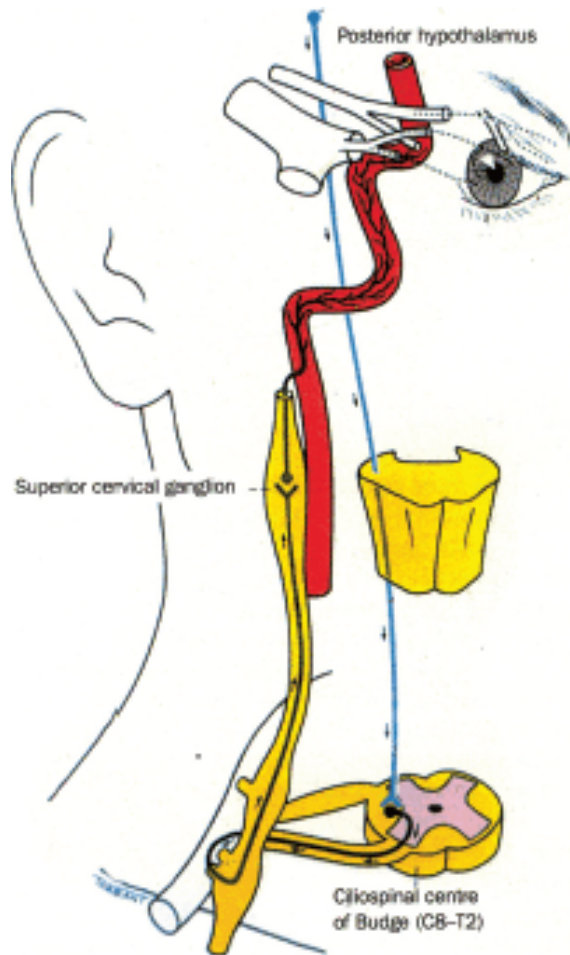


Pupillary disorders

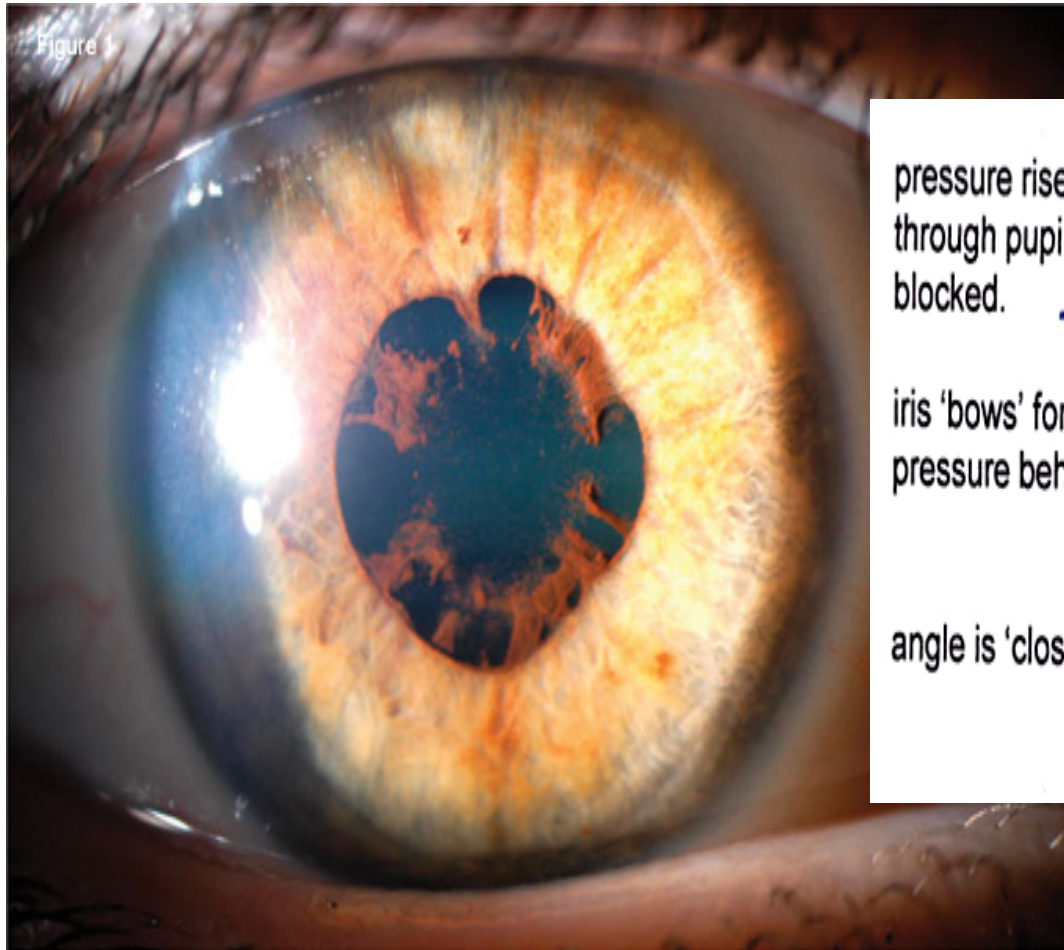


- Ocular disease
- Disorders of the controlling neurological pathway
- Pharmacological action

Anatomy



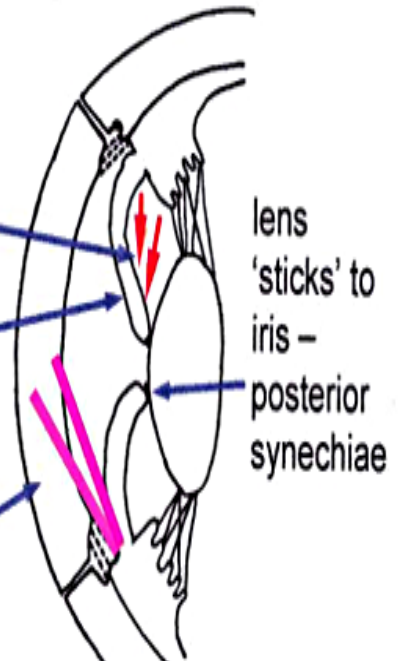
Ocular causes of pupillary abnormality



pressure rises as flow through pupil is reduced or blocked.

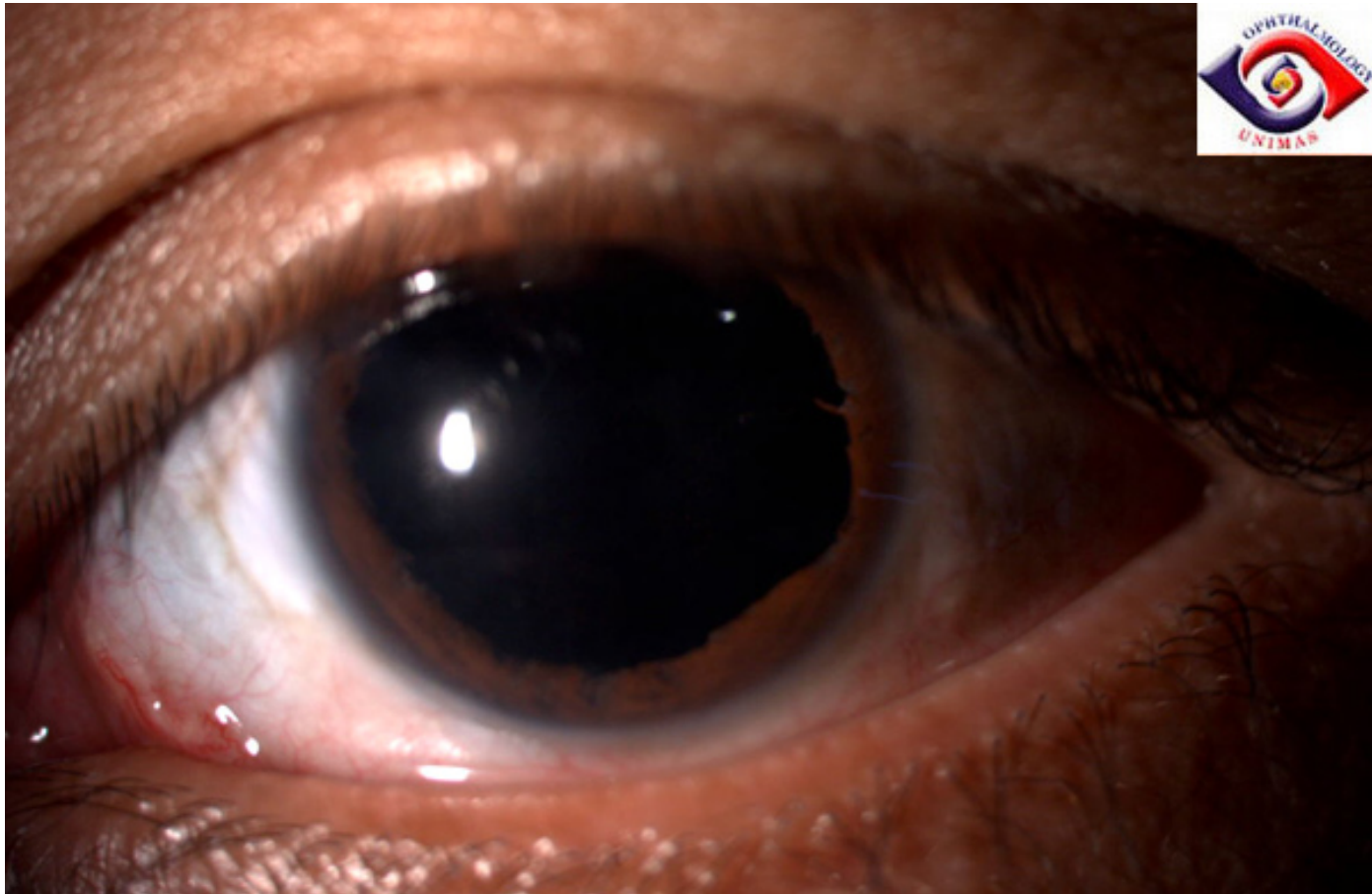
iris 'bows' forward under the pressure behind it.

angle is 'closed' or narrowed



Ocular causes of pupillary abnormality

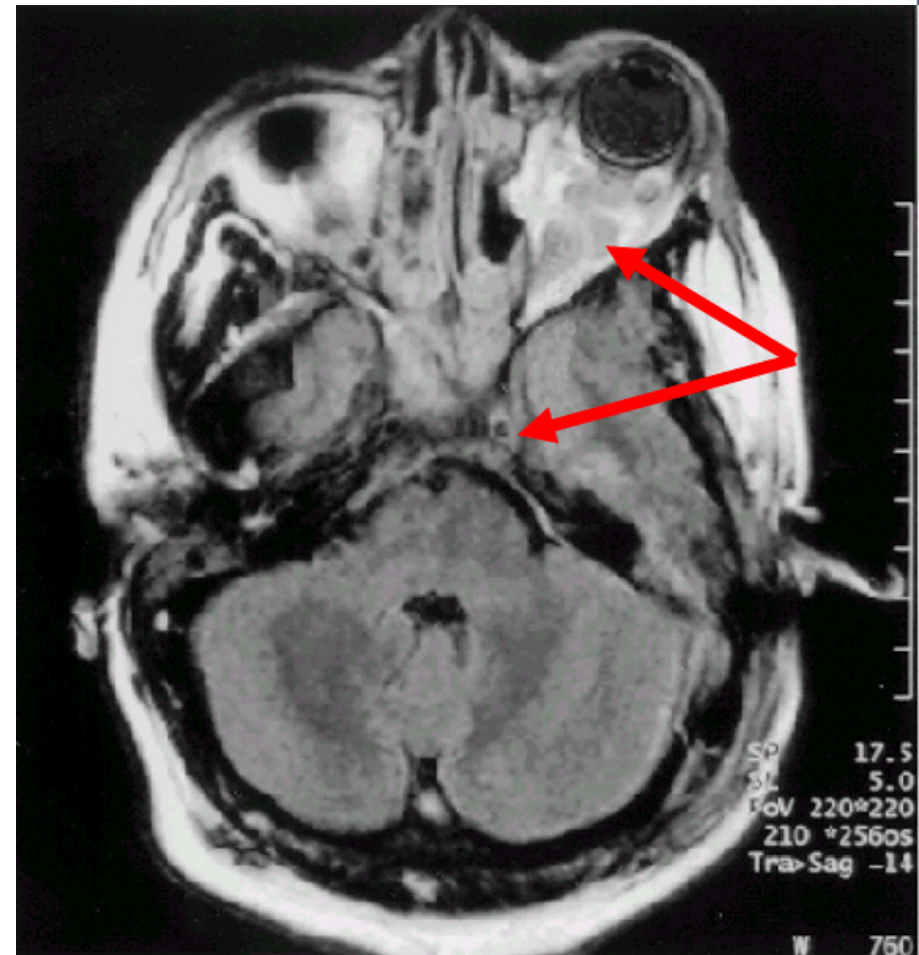
LOF



Neurological causes of an abnormal pupil

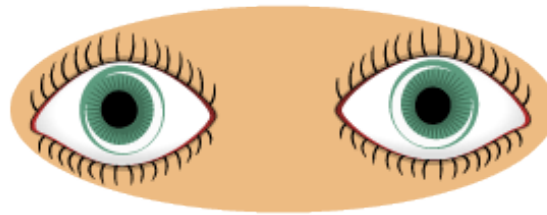


Pathogenesis of Horner's

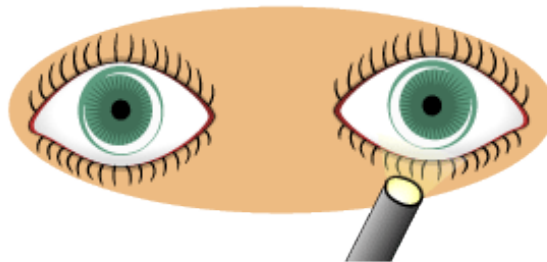


RAPD

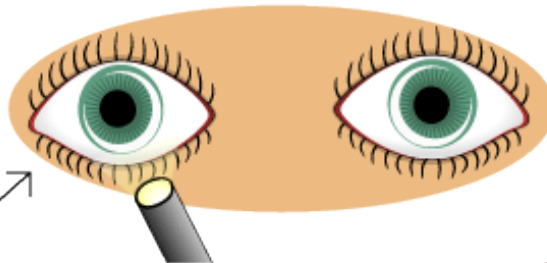
No Light



Normal
Response
to Light



Positive
RAPD of
Right Eye



Adie's pupil



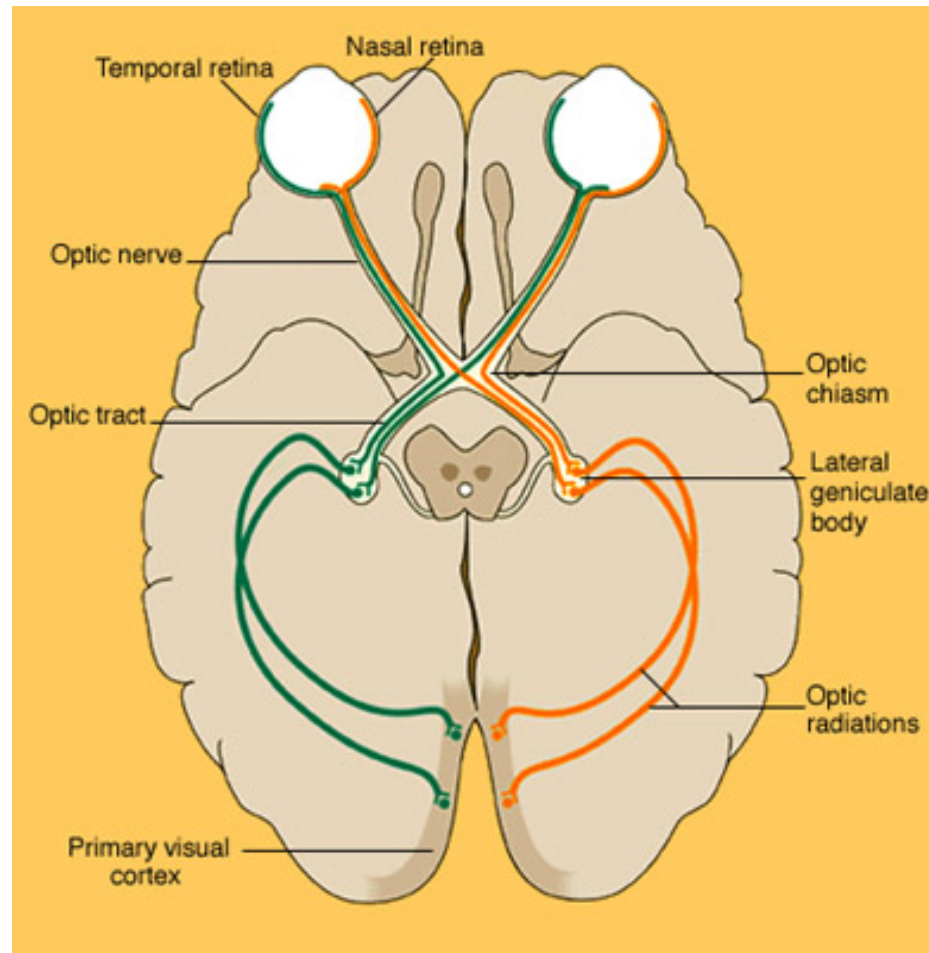
Argyll Robertson Pupil



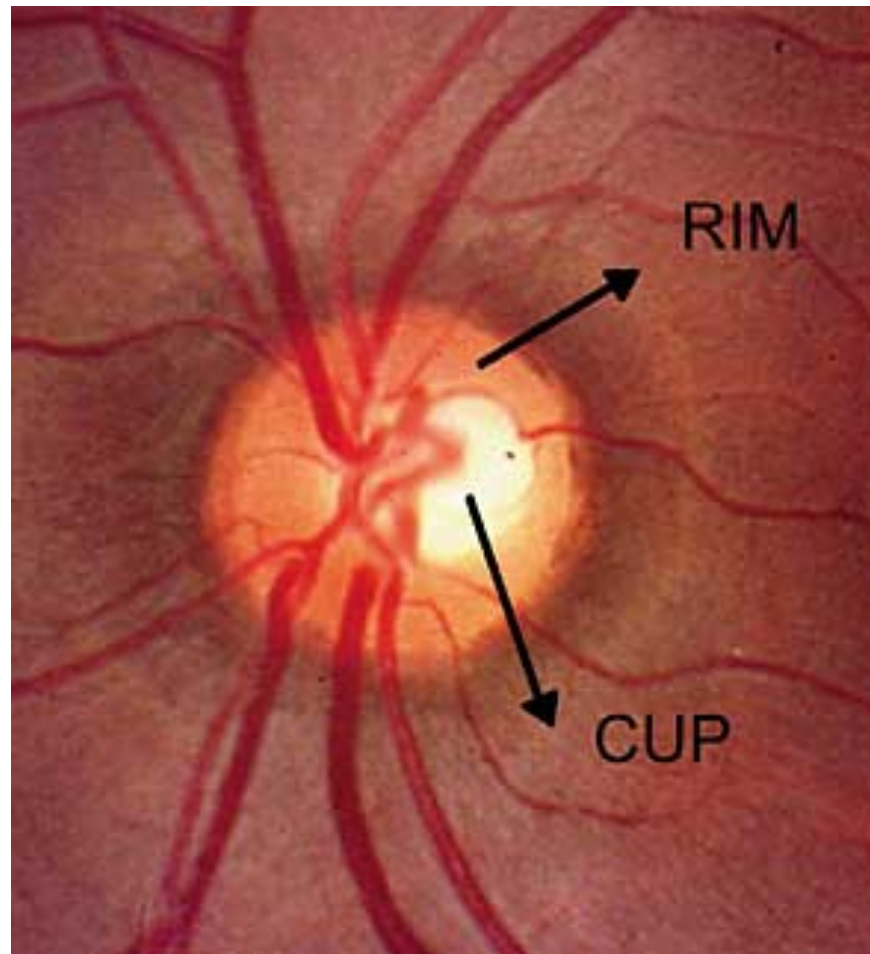
Other causes



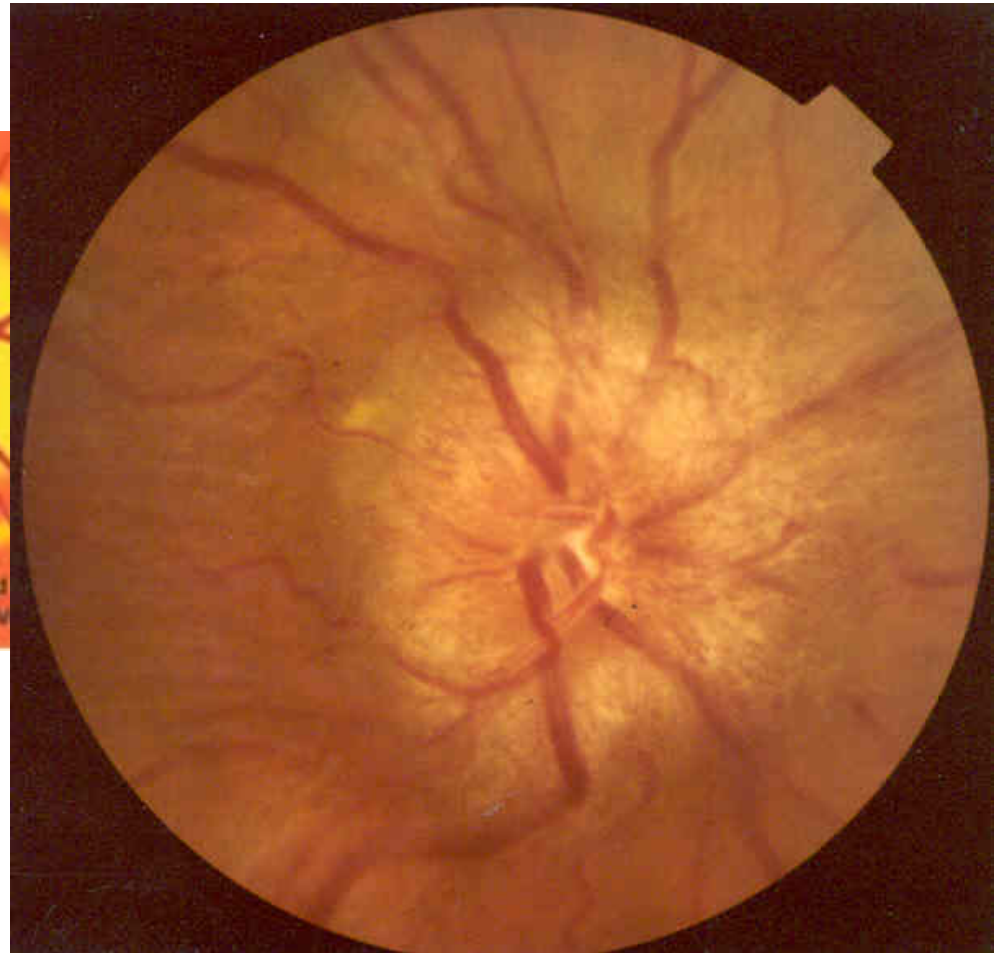
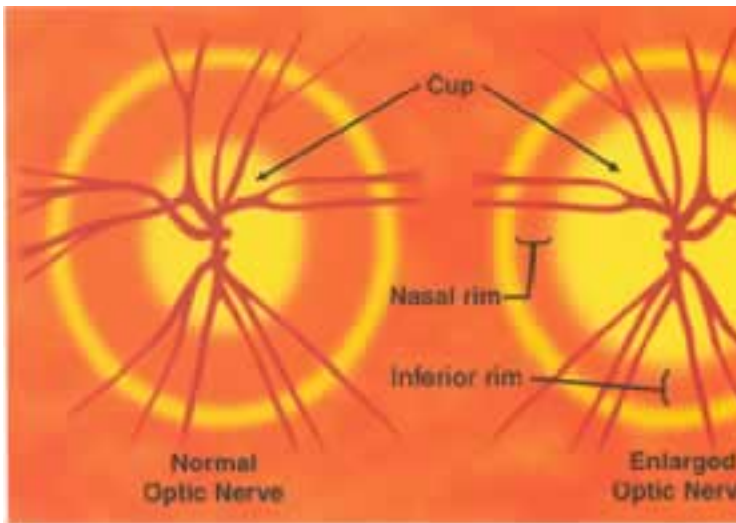
Visual pathway: Introduction



Optic nerve



Swollen optic disc



Differential diagnosis



- Raised intracranial pressure

- Space-occupying lesion

- Papillitis (optic neuritis)

- Accelerated (malignant) hypertension

- Ischaemic optic neuropathy

- Central retinal vein occlusion



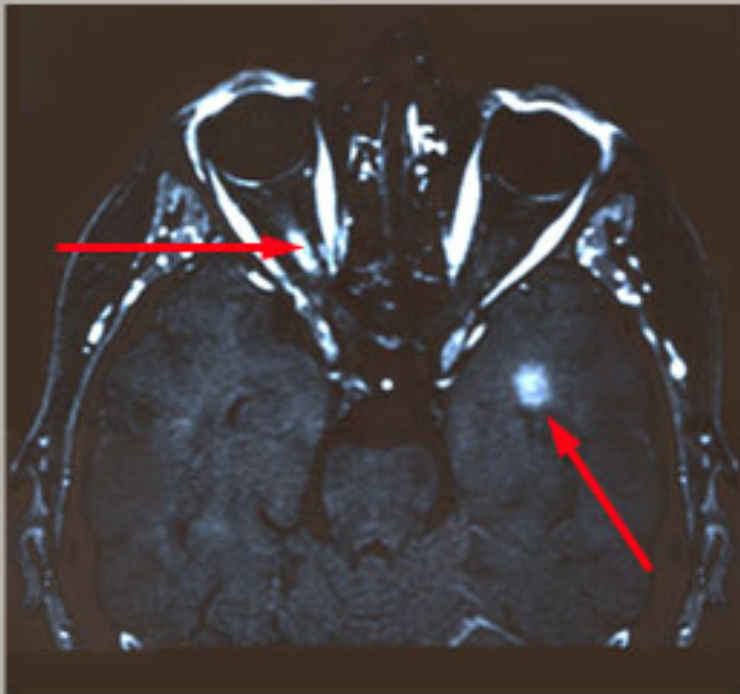
Raised ICP



Raised ICP



Optic neuritis



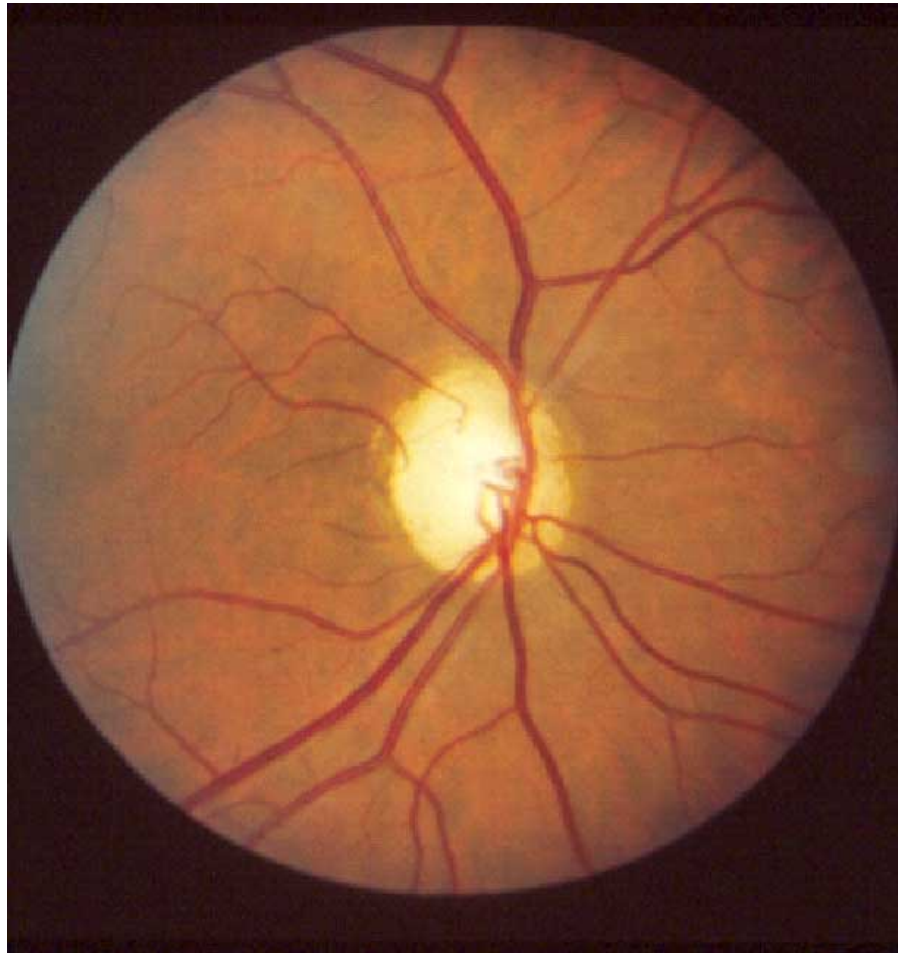
This MRI scan from a patient with acute optic neuritis. This MRI scan shows enhancement of involved area in optic nerve (left top arrow).

A second area of contrast enhancement is seen in the contralateral lobe (right lower arrow).

Ischaemic optic neuropathy



Optic atrophy



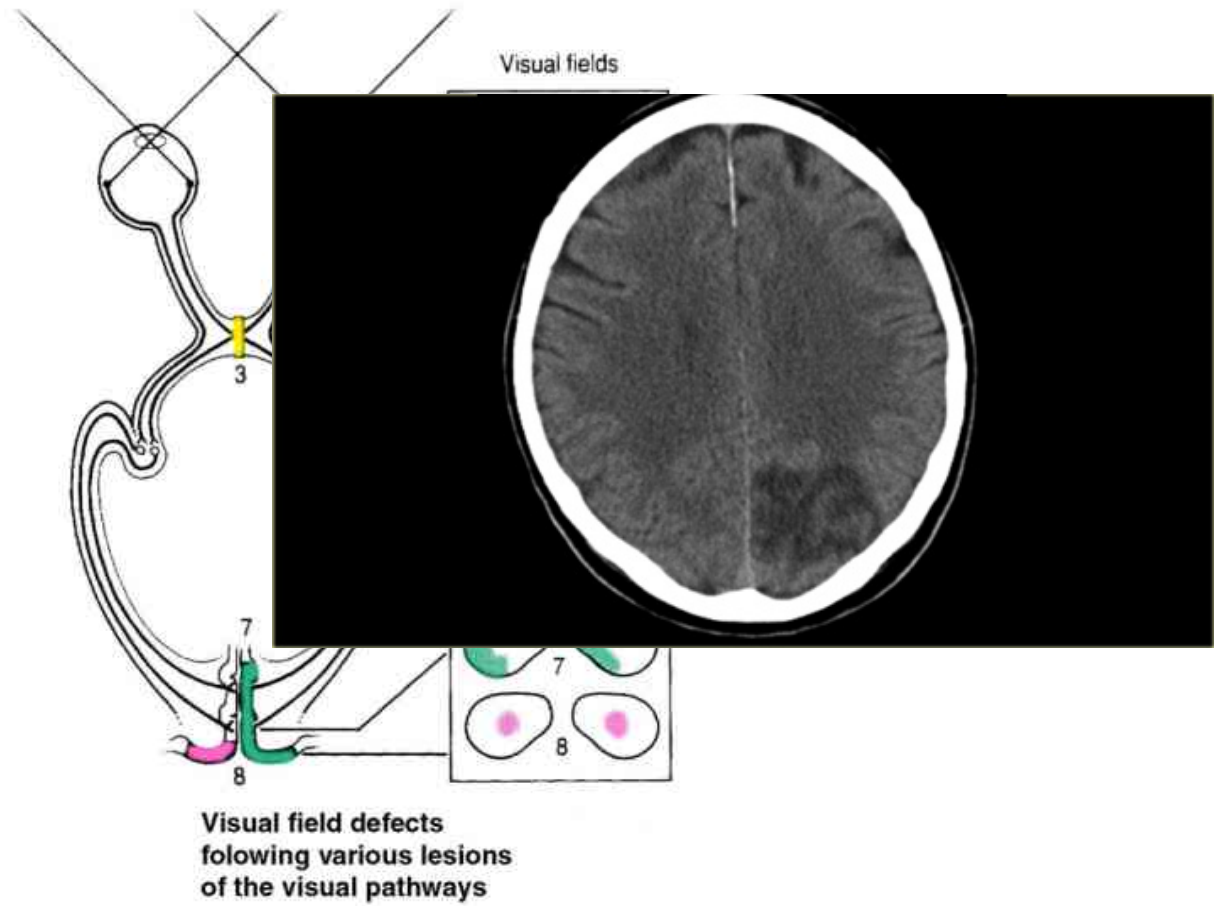
Causes of optic disc pallor

- Compression of the optic nerve
- Ischaemic optic neuropathy
- Retinal artery and vein occlusion
- Glaucoma
- Optic neuritis
- Inherited optic nerve disease
- Inherited retinal disease
- Toxic optic neuropathy
- Tobacco/alcohol/nutritional vitamin amblyopia

Optic chiasm



Optic tract, radiation, and visual cortex

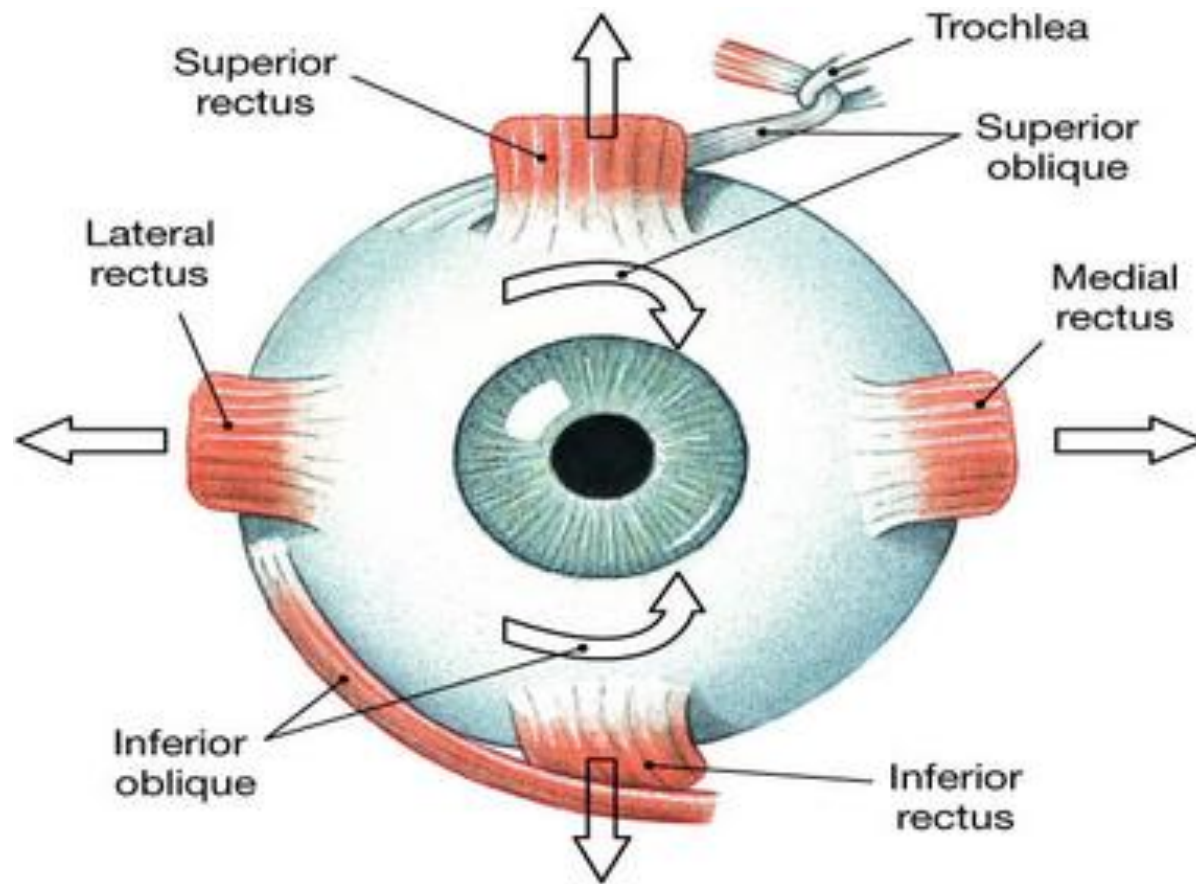


Eye movements and their disorders



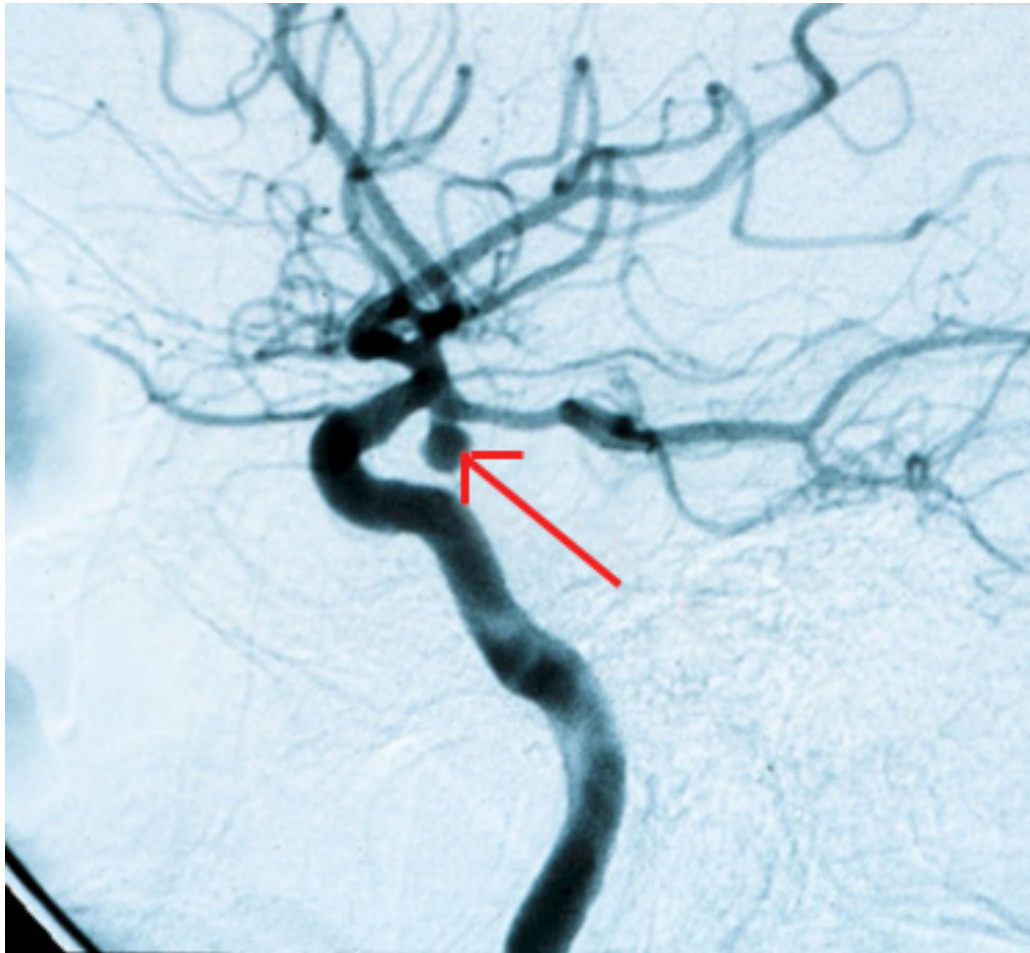
- Eye movements may be abnormal because there is:
 - Abnormal position of the eyes
 - Reduced range of eye movements
 - Abnormality in the form of eye movement

Anatomy and physiology



(c) Anterior view, right eye

Nerve palsy



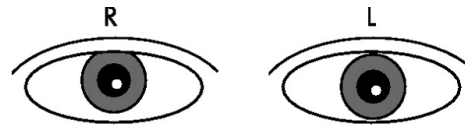
Nerve palsy



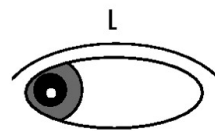
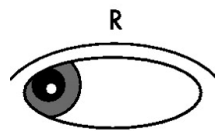
3rd nerve palsy



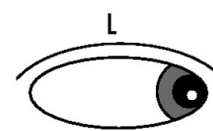
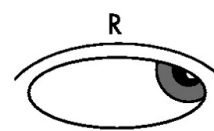
4th nerve palsy



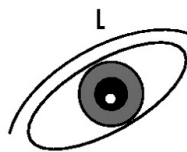
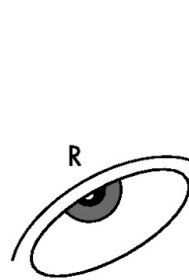
Primary position



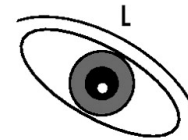
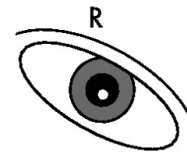
Right gaze



Left gaze



Head tilt right



Head tilt left

6th nerve palsy



Diseases of extraocular muscles



Myasthenia gravis

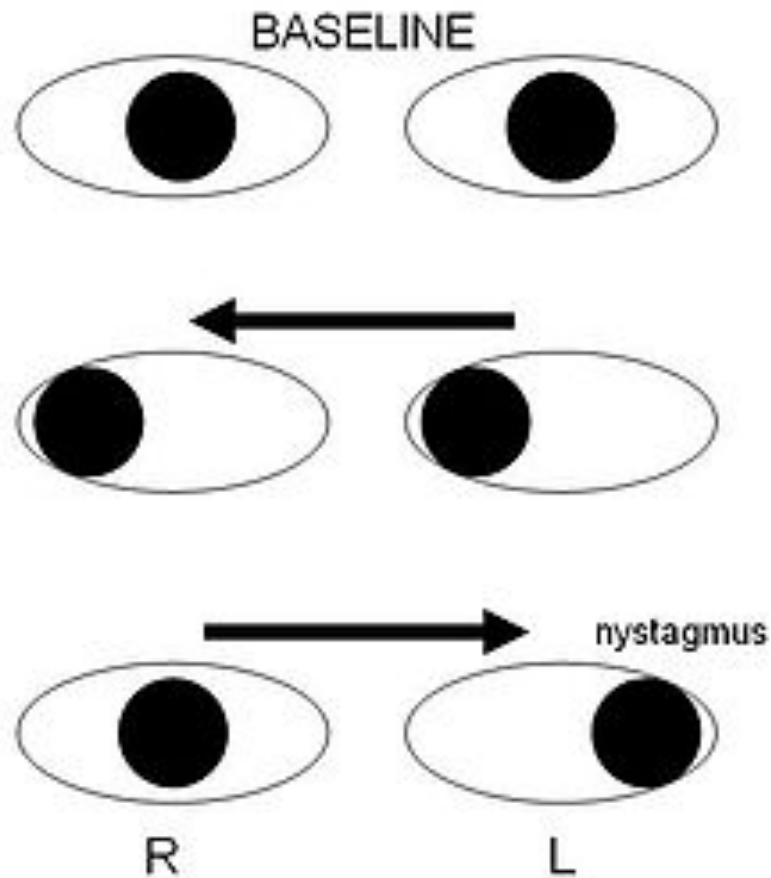


Gaze palsies



- Gaze palsies affect the movement of the two eyes acting in concert.
- Disordered eye movement results from damage to the pathways connecting the cranial nerve nuclei together and to the higher centres.

Internuclear ophthalmoplegia



Nystagmus



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