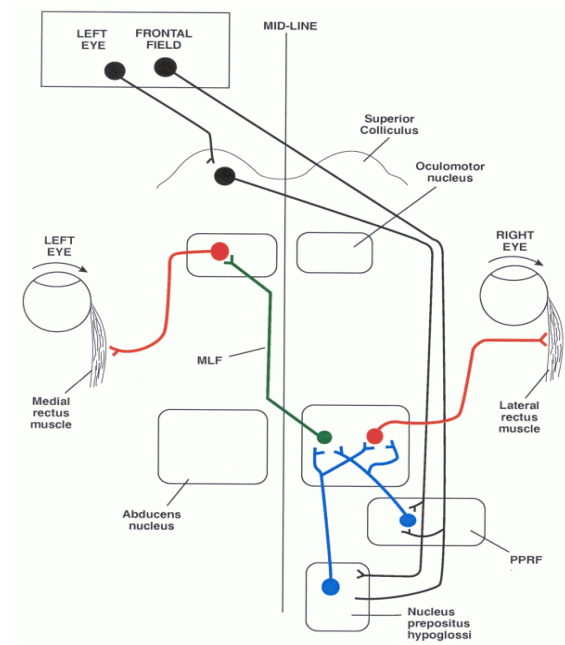


CONJUGATE EYE MOVEMENTS

Horizontal:



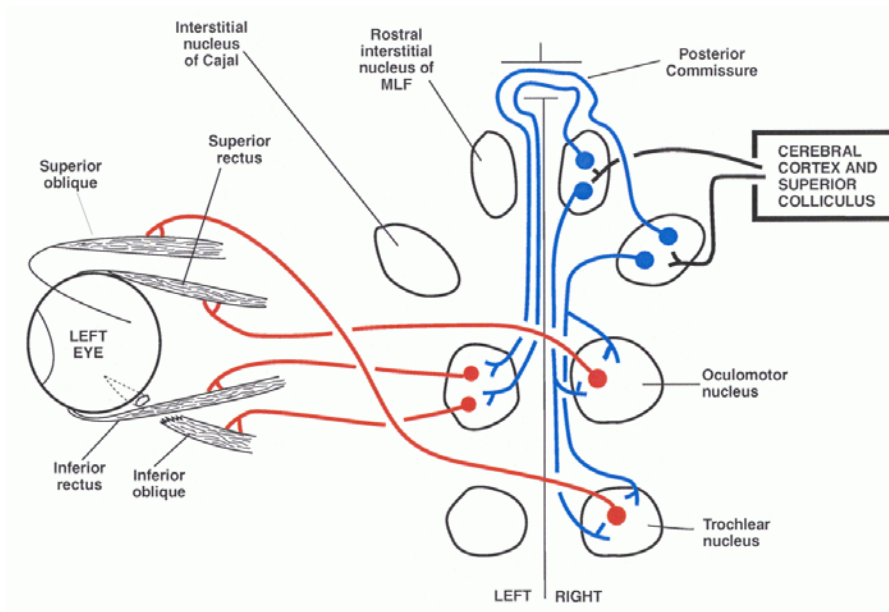
Pathway descends to caudal pontine level, then ascends to midbrain.

Abducens nucleus lesion causes paralysis of lateral rectus and contralateral medial rectus on attempted lateral gaze. Medial recti contract normally for convergence.

Paramedian pontine reticular formation is "centre for lateral gaze."

Internuclear ophthalmoplegia from small lesion in MLF.

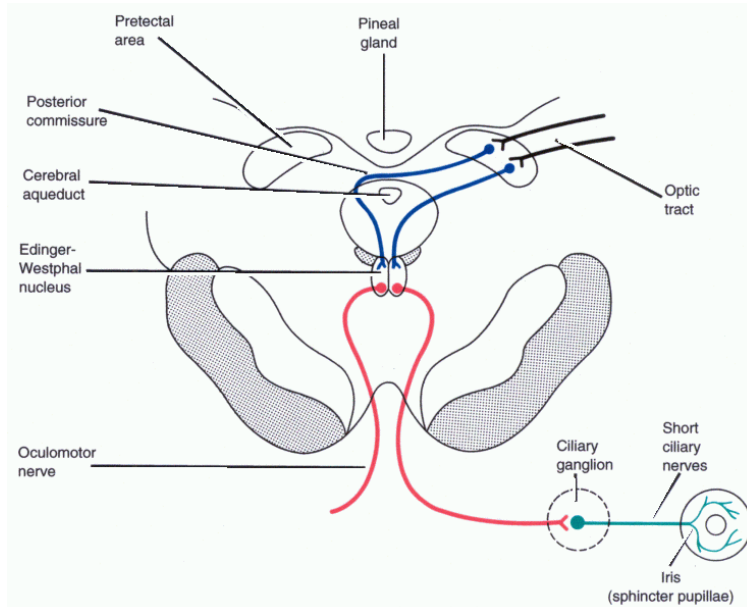
Vertical:



Nuclei in rostral midbrain constitute "centre for vertical gaze".

Parinaud's syndrome (vertical gaze paralysis) from dorsal, rostral midbrain lesion (eg pineal tumour).

Pupillary light reflex.



Both pupils constrict.

Preganglionic parasympathetic fibres are near surface of IIIrd nerve. Pressure on nerve causes sluggish response, dilation of pupil (mydriasis).

Dilation of pupil is due to sympathetic innervation of radial smooth muscle of iris. Horner's syndrome: Sympathetic denervation causes constricted pupil (miosis), drooping, but not closed, eyelid (ptosis) and apparent retraction of eyeball (enophthalmos). Also loss of facial sweating. Several causes.

Eye drops. **Mydriatic** (to dilate pupil) ! drugs that antagonize acetylcholine at muscarinic receptors (atropine, homatropine, lachesine). These allow unopposed action of the sympathetic innervation of the iris. Cocaine, which potentiates noradrenaline action, is also a mydriatic. **Miotic** (to constrict pupil) ! drugs that mimic the action of acetylcholine at muscarinic receptors (pilocarpine) or inhibit acetylcholinesterase (eserine, DFP). Morphine and other opiates also cause miosis (complex mechanism involving action in midbrain).

Diminished light reflex: Interruption of either the afferent pathway (eg optic neuritis) or the efferent pathway (eg pressure on oculomotor nerve). Deduce how to tell the difference by simple clinical examination.