

Neuro Ophthalmology

Anatomy and Physiology of:

1. The visual pathway.
2. The pupillary reflexes.
3. The cranial nerves.
4. Pupillary/ near synkinesis neuro-anatomy.
5. Ocular motility and related neuronal pathways
6. The supranuclear control of eye movements
7. The brain

Clinical knowledge of examination and ancillary testing:

Clinical tests of visual function.

- Brain Imaging CT, MRI MRA, MRV.
- Pupil testing.
- Visual field indications, selection (Goldmann and Humphrey visual fields) and interpretation (e.g., artifacts of automated perimetry, testing and thresholding strategies).
- Technique of Oculomotor examination.
- Visual evoked responses.
- Colour vision.
- Contrast sensitivity.
- Hess test.

Clinical knowledge of diagnosis, aetiology, pathology and management:

- a. Congenital anomalies of the optic nerve head

Diagnosis, evaluation and management of congenital optic nerve abnormalities

(e.g., optic disc pit, optic disc coloboma, papillorenal syndrome, morning glory disc anomaly, tilted disc, peripapillary staphyloma, optic nerve hypoplasia/dysplasia, myelinated nerve fibre layer, congenital optic disc pigmentation, pseudopapilledema (disc drusen), Bergmeister's papilla).

- b. Hereditary optic neuropathies

- Leber's and Hereditary optic neuropathies
- Dominant optic atrophy
- Genetic basis of the inherited optic neuropathies

c. Acquired disorders of optic nerve – optic neuropathies

Features, evaluation and management of the most common optic neuropathies:

- Optic neuritis (demyelinating [Multiple sclerosis], infectious/parainfectious, post-vaccination, inflammatory, neuroretinitis, optic paraneuritis, optic neuritis in children)
- Ischaemic optic neuropathies (Arteritic/Non-arteritic anterior ischaemic optic neuropathy, Posterior ischaemic optic neuropathy)
- Radiation optic neuropathy
- Compressive optic neuropathies/optic nerve tumours
- Infiltrative optic neuropathies (Tumours, inflammatory and infectious infiltrative optic neuropathies)
- Traumatic optic neuropathies
- Toxic and deficiency optic neuropathies (methanol, ethylene glycol, ethambutol, Amiodarone, Tobacco toxicity)

d. Benign intracranial hypertension

e. Neuro-ophthalmological emergencies including pupil and motility disorders

- Pupils
 - i. rigid amaurotic pupil
 - ii. rigid pupil
 - iii. rigid, reflective pupil
 - iv. anisocoria
 - *Carotid artery disease stenosis, dissection and aneurysm
 - *3rd nerve palsy
 - v. Miosis on inflammation
 - vi. Pupillotonia
 - vii. Miosis on convergence

f. Ocular motility

- i. supranuclear, intranuclear and peripheral disorder

g. Transient amaurosis

h. Pain in the eye region:

- I. migraine
- II. trigeminal neuralgia
- III. vasomotor pain

i. Cavernous sinus and superior orbital fissure syndromes (e.g., infectious, vascular, neoplastic, inflammatory aetiologies).

j. Pituitary tumour; pituitary apoplexy

k. Cervical tumours

- l. Meningitis, encephalitis
- m. Exophthalmos (see under specific symptoms and clinical signs)
- n. Retrochiasmal lesions
- o. Cortical blindness
- p. Neuro-ophthalmic findings in trauma; coma
- q. Neuro-ophthalmic findings in malignant hypertension; diabetes

Clinical knowledge of therapy:

- i. Surgical treatment fenestration of the optic nerve
- ii. Nystagmus (e.g., surgical treatment options, using the null point in either prism or surgical therapy).
- iii. Neuro-ophthalmologic corticosteroid or surgical therapy in traumatic optic neuropathy).

RECOMMENDED READING

Kanski's Clinical Ophthalmology

AAO Neuro-Ophthalmology Section 5 BSCS

Pane et al The Neuro-Ophthalmology Survival Guide