

Introduction

- Wash hands, Introduce self, Patients name & DOB & what they like to be called, Explain examination and get consent

Inspection

- **Patient:** patient well, posture etc
- **Around bed:** walking aids, glasses
- **Eyes inspection:**
 - Pupil size and symmetry (CN3 lesion = pupil dilated)
 - Strabismus (CN3 lesion = pupil down & out; CN6 lesion = can't look laterally)
 - Ptosis (CN3 lesion/Horner's)
 - Proptosis (thyrotoxicosis, retro-orbital tumour)
 - Sclera (erythema, lesions)
 - Around eyes (scarring, lesions, pus, discharge, swelling)

Acuity

Ask the patient if they wear glasses and to remove them.

Ask them to cover one eye with their palm to test each eye in turn.

- **Distant vision:** use Snellen chart (reading is 'distance/smallest font size read' e.g. 6/9)
- **Near vision:** read a line of a letter/magazine
- **Colour vision:** "I would also like to test colour vision using Ishihara plates"

Fields

- **Visual inattention:** with both their eyes open and focussed on you, hold your fists out laterally to each side. Ask them to point at the fist(s) which you are opening and closing (inattention to one side = contralateral parietal lesion).
- **Visual fields:** sit the patient on the same level as you 1 meter directly in front of you. Get them to cover one eye with their palm and close your eye on the same side (without using your palm if you can). Ask them to stay focussed on your open eye. Using a white visual fields pin, bring it in from the periphery keeping it at mid-distance between you and the patient. Ask them to tell you when they can see it. Do this in a diagonal direction in each of the 4 quadrants only. Test both eyes and compare with your fields (monocular field loss = retinal damage or ipsilateral optic nerve lesion; bitemporal hemianopia = optic chiasm compression; left/right homonymous hemianopia = contralateral optic tract/radiation lesion (or occipital cortex if macular sparing)).
- **Blind spots:** in the same position as visual fields, hold the red pin mid-distance between your open eyes. Check they can see it as red. Not move it horizontally towards the periphery and get them to tell you when it "disappears". Map their blind spots on each eye to your own (large blind spot = papilloedema).

Reflexes

- **Accommodation:** ask the patient to focus on a distant object, and then ask them to focus on your finger close to their face. Pupils should constrict and eyes should converge.
- **Direct and consensual pupillary reflexes:** in a dimmed room, ask patient to hold their hand between their eyes and focus on a distant point in the room. Shine the light at each pupil in turn from about 45°. Observe for direct and consensual pupillary constriction
 - Afferent defect (i.e. pupils are symmetrical but when light is shined in affected eye, neither pupils constrict) = CN2 lesion
 - Efferent defect (affected pupil is persistently dilated, whilst other is reactive to light being shined in either eye) = CN3 lesion
- **Swinging light test for relative deficits:** shine the light between the two eyes – the pupillary size should stay the same regardless of which eye the light is shined in. If pupils become more dilated when the light is shined in one of the eyes, then that eye is less sensitive to light and, hence, there is a relative afferent pupillary defect (partial CN2 lesion on that side).

Ophthalmoscopy

- Consider preparing pupils with mydriatic drops (e.g. tropicamide) and use a darkened room
- Ask the patient to focus on a point in the distance until you tell them otherwise
- **Red reflexes:** look through ophthalmoscope at patient's pupil from 1 metre away (lost in: cataract, retinoblastoma)
- Hold the patient's right shoulder with your left hand and the ophthalmoscope in your right for the right eye (and vice versa for the left). Focus the ophthalmoscope on the retina by spinning the focus wheel in each direction. Now look for:

- **Optic discs:** visualised by aiming the ophthalmoscope slightly nasally. Check the:
 - Cup (enlarged = glaucoma)
 - Colour (grey/pale = optic atrophy)
 - Contours (swelling = papilloedema)
- **4 quadrants:** follow the blood vessels out from the optic disc in each direction to visualise each of the 4 quadrants. Observe for
 - Hypertensive retinopathy signs (1. silver wiring, 2. AV nipping, 3. cotton wool spots, 4. papilloedema)
 - Diabetic retinopathy signs (dot and blot haemorrhages, cotton wool spots, neovascularisation, retinal fibrosis)
 - Other characteristic appearances (e.g. drusen (macular degeneration), pigmentation (retinitis pigmentosa) etc)
- **Macula:** visualised by asking the patient to now focus on the light of the ophthalmoscope. Should be pink (dark = macular degeneration).

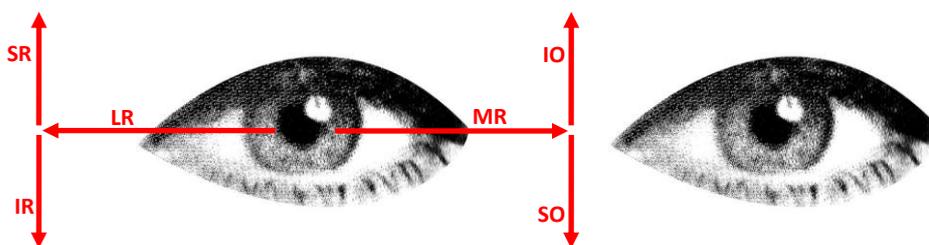
Extra-ocular Muscles

Ask if they have any double vision and tell you if they experience any at any point.

- **H-test:** ask patient to keep their head still and, with both eyes open, follow your finger. Make a H shape and watch the movement of both eyes while doing it. Pause when they are looking laterally (nystagmus = cerebellar lesion).

N.B. CN3 supplies all extra-ocular muscles except superior oblique (CN4) and lateral rectus (CN6) – mnemonic: **SO4LR6**

Hence, if an eye cannot move laterally, there is a CN6 lesion and, if the eye cannot move inferiorly when facing medially, there is a CN4 lesion. If the majority of the eye movements are impaired and the eye rests in a 'down and out' position, there is a CN3 lesion.



To Complete

- Thank patient
- Summarise and suggest further investigations