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## Cranial Nerve Examination

Examination of the cranial nerves should, preferably, be done with patient sitting on edge of bed.

### General Inspection

- Look for comfort of patient. Is he/she comfortably positioned?
- Craniotomy scars?, neurofibromas?, haemangioma (distributed along V nerve division)?

### Cranial Nerves

#### CN I – Olfactory Nerve

- Not usually tested. “Have you had any problems with your sense of smell? How has your sense of taste been lately?”
- If **tested**: general inspection of external nose?, polyps?, test each nostril with vials of familiar smells – “Can you identify the smell for me?”

#### CN II – Optic Nerve

- Amaurosis fugax?, scotoma?, photophobia?, blurred vision?, hemianopia?, pupil asymmetry? – “How has your vision been lately?”
- **Visual Acuity**
  - Keep on patient’s spectacles
  - Hold ‘pocket’ Snellen’s chart at arm’s length – ask the patient to read each line (cover the opposite eye).
  - If no lines can be read – test ‘number’ of fingers in front of eye, if this proves negative → then test perception of hand movement, if this proves negative → then light perception is only intact.
- **Visual fields**
  - Remove patient’s spectacles.
  - Patient’s head should be at arm’s length. Close one eye of patient, establish congruent visual fields.
  - Explain what he/she is looking for: “You are looking for the first instant the hat pin is visible”. Bring the hat pin diagonally towards the centre of the field of vision.
  - **Blind spot**: Bring in hat pin at horizontal level towards patient’s centre of visual field. “Tell me when the hat pin disappears”.
- **Fundoscopy**
  - Always use congruent eye’s during examination.
  - Set scope → +20 → examine the patient’s cornea, iris, lens. Cataracts?, ulcers?, iridonesis?.
  - Set scope → 0 → approach patient at an angle, examine their retina, focus the retina, search for the optic disc by following a vessel back (vessels radiate from optic disc).
  - Papilloedema?, optic atrophy?, hypertensive changes?, retinitis pigmentosa?, central retinal artery occlusion? (this is not an extensive list)

#### CN III – Oculomotor Nerve / CN IV – Trochlear Nerve / CN VI – Abducens Nerve

- Ptosis?, pupil size? shape? equality? (Patient looking into distance)

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- **Pupillary Light Reflex**
  - Shine light into eye, bringing the light source from the side. Check for *direct & consensual* response. Repeat for other eye.
  - Swinging light test: swing the torch from one eye to the other (“1001”, “1002” method). Check for paradoxical pupillary dilation of affected eye due to afferent pupillary defect → Marcus Gunn pupillary sign. This implies: afferent impulses markedly reduced in affected eye.
  - Accommodation: Patient looking into the distance → introduce object into visual field → patient re-focuses their eyes on this object. Check for *bilateral pupillary constriction* (**absence** of pupillary light reflex, **presence** of accommodation → **Argyll-Robertson pupil of syphilis**, or **Adie’s pupil**, or **Parinaud’s syndrome**)
- **Eye movements (eye movements, nystagmus, diplopia assessment)**
  - “Can you look left, right, up & down for me please”? → Assessment of voluntary movement
  - **H test**: Start hat pin centrally, and then move in a H pattern looking only at one eye. Loss of movement?, Diplopia? (vertical/horizontal), Nystagmus?

For more information about nerve palsy’s refer to Talley & O Connor pp 367-370.

#### CN V – Trigeminal Nerve

- **Corneal blink reflex**: Lightly touch the cornea with a wisp of cotton brought in from the side. Reflex blinking of both eyes is normal. “Could you feel the cotton touch your eye?”. **Sensory → V, Motor → VII**.
- **Facial sensation**: Test for *pain sensation* (compare each side) along the distribution of each of the 3 divisions of V nerve. “Does it feel sharp/dull?”. Patient’s eyes closed. Test for *light touch sensation* (compare each side) – as above. “Say yes when you feel the touch.”
- **Motor division**: *Clench teeth*, palpate for masseter + temporalis. Open mouth – “Don’t let me close the mouth.” *Jaw jerk reflex*: lightly tap your finger placed on the tip of the jaw → reflex closing of mouth.

#### CN VII – Facial Nerve

- Unilateral facial droop (LMN), Lower ½-2/3 facial droop (contralateral UMN).
- **Power of muscles of facial expression**: Wrinkle forehead → resistance offered, Shut eyes tightly → resistance offered, Show teeth → check for groove loss, Blow cheeks out → resistance offered.
- **Taste sensation of anterior 2/3 of tongue**: Not usually done.

#### CN VIII – Vestibulocochlear Nerve

- “Has your hearing been good lately?”
- **Hearing test**: Test each ear separately. Cover opposite ear – offer distraction, whisper the numbers “68” & “99” from 60 cm.
- **Rinne’s test**: Vibrating tuning fork is placed on mastoid process, behind the ear, and when sound is no longer heard – re-placed in line with external meatus. *Sound is heard here if normal hearing*. Conductive deafness means no sounds heard here → Rinne’s negative.

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- **Weber's test:** Place vibrating tuning fork on centre of forehead. Normal hearing means sound heard in the middle. Conductive deafness → sound louder in abnormal ear, Sensorineural deafness → sound louder on normal ear.
- **Hallpike manoeuvre:** Mention this in the exam → testing vestibular function, but don't do it.

#### CN IX – Glossopharyngeal Nerve / CN X – Vagus Nerve

- **Palate / Uvula:** “Can you open your mouth for me please?” – Look at palate with torch, uvula deviation. “Can you say Ahhh... for me please?” – uvula deviation? (deviates to unaffected side – unilateral X lesion).
- **Gag reflex:** In order from bottom to top: tongue depressor, torch light, cotton bud. Touch each side of the posterior pharynx, gag reflex is not necessary.

#### CN XII – Hypoglossal Nerve

- Experienced clinicians perform this while doing CN IX + X. wasting? (LMN), fasciculations? (LMN), poke up tongue → deviation to affected side? (LMN)
- **Tongue movements:** “Can you move your tongue left & right for me?”, “Can you poke your cheek with your tongue for me, don't let me push it back”.

#### CN XI – Accessory Nerve

- **Muscle Strength:** “Can you shrug your shoulders for me. Don't let me push it down.” + “Can you turn your head against my hand please?” – Remember left SCM rotates head right, and vice versa. Thus, lesion is on weaker side of movement.