CLINICAL SKILLS: MS FOCUSED EXAMINATION

When examining a patient with a particular neurological condition, it is important to be able to highlight certain key signs. An OSCE station might ask you to examine for signs of a multiple sclerosis, or you may feel it appropriate to add in certain elements of this examination into a general neurological examination if you believe the patient may have the condition. Multiple sclerosis is characterised by lesions of demyelination in the central nervous system, which can commonly cause motor, coordination and visual symptoms and signs.

- **Wash hands**
- **Introduce yourself**
- **Ask for permission**
- **Are you in any pain at all?**
- **Expose - preferably in underwear**

Inspect:

- Around patient - walking aids, wheelchair
- Wasting in particular area of the body (though as MS is an upper motor neurone disorder, wasting may be a *late* sign.

Examine arms:

- As per a normal upper limb examination
- Tone - generally increased (upper motor neurone sign)
- Power - weakness
- Co-ordination - may be impaired if there are lesions in the cerebellum or the ascending proprioceptive tracts (e.g. dorsal columns).
- Reflexes - brisk (upper motor neurone sign)

Examine face:

- Focus on eye movements and function
- Look for nystagmus, suggestive of cerebellar lesions
- Examine for **'internuclear opthalmoplegia' (INO)**
    - Hold one finger a reasonable distance (40cm) in front of the centre of the patient's face
    - Ask the patient to focus on the tip of your finger whilst it moves, but ask them to keep their head still
    - Move you finger rapidly to the patient's left (so that their gaze is maximally deviated to the left)
    - Watch both eyes:
        - A normal result would be if their right eye fully adducts and their left eye fully abducts.
        - An em>abnormal result would be if the right eye only partially adducts (this is the abnormal side), and their left eye fully abducts (as it is not impaired) but shows small oscillating movements back and forward because of the malpositioning of the abnormal right eye
    - Repeat this for the other direction of gaze
    - The abnormality is due to damage to the medial longitudinal fasciculus which normally links the VI nerve nucleus (responsible for eye abduction) to the III nerve nucleas (responsible for adduction of the eye). Demyelination in MS can

damage this tract and cause a lack of coordination in lateral gaze as described above

- Examine pupil response to bright lights. In severe optic neuropathy (affecting the III cranial nerve), there may be a clear loss of pupillary reaction to light due to loss of *afferent* input. Ie.: if you shine a light in the affected eye, neither pupil contracts. However, if you shine a light in the contralateral/normal eye, then both pupils contract normally
- A more subtle and early stage of poor pupil reactivity is demonstrated by testing for **'relative afferent pupillary defect' (RAPD)**. This is tested by the 'swinging light test':
    - Ask the patient to focus on a point on the wall
    - Use a pen torch held below the patient's line of vision to ensure that the accommodation reflex isn't elicited
    - Shine the light in the patient's right eye whilst looking at the size of the *left* pupil
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    - Then swing the pen torch rapidly over to shine it into their left eye. Keep focusing on their left eye. The pupil should remain the same size
    - An RAPD in the left eye would be demonstrated by the left pupil relatively dilating when the torch is moved to it. This is because there is impairment of the optic nerve afferent signal in this eye. The swinging light test allows for direct comparison between the afferent input in both eyes, so allows for picking up subtle afferent impairment
    - Repeat the test with the other eye by reversing the procedure

Assess the patient's color vision by testing for 'red desaturation'. This can be done with any object which has a small red area on it. Ask the patient to look at the red area with each eye in turn (covering the opposite eye). Ask if the colour looks different on either side. Early optic nerve damage can cause loss of red colour appreciation, and the red object will look 'washed out' or pink on the affected side

- Examine the fundi to look for pale optic discs, representative of severe or end stage optic nerve damage, possibly due to demyelination
- Speech - look for patterns of speech seen in cerebellar pathology (stacatto speech), or a pseudobulbar palsy (with very stiff bulbar muscles, speech is difficult and very nasal)

Examine gait:

- Spastic gait suggestive of upper motor neurone damage
- Ataxic gait suggestive of cerebellar lesions

To conclude the examination:

- Thank patient and offer to help them get dressed
- Turn to the examiner and offer to complete your examination with a full systematic neurological examination of upper limb, lower limb and cranial nerves
- You could offer to further assess the patient by taking a history of their symptoms and the time course of their onset, which may help with the diagnosis of MS and the differentiation of type (e.g. relapsing-remitting, primary progressive, secondary progressive)
- Further investigations that you could discuss include:
    - MRI head to look for demyelination
    - Lumbar puncture (to examine the CSF for oligoclonal bands)
    - Visual evoked potentials to assess for optic neuropathy