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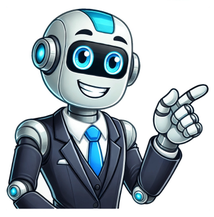

Complete neurological exam

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When tremor is superimposed it is described as “cog-wheel” rigidity Power Power is rated on a scale of 0 to 5 according to the Medical Research Council (MRC) MRC grading scale for power 5 – Full Strength 4 – Movement against partial resistance 3 – Movement against gravity 2 – Movement with gravity eliminated 1 – Feeble contractions 0 – Absent voluntary contraction Correct use of this scoring system can be helpful in progressive disorders and in the rehabilitation setting Note that when time is short, full examination of each muscle group may not be possible. In such cases, you can test grip power by asking the patient to squeeze your index and middle finger. You can also ask the patient to pull you towards them and push you away. This covers basic proximal and distal muscle strength The table below gives the general scheme for examination of power in the upper limb including a general overview of relevant basic anatomy. 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Dermatomes Upper limb Outer shoulder/regimental badge area: axillary nerve C6 Outer forearm: lateral cutaneous C5 Thumb: median nerve C6 Middle finger: median nerve C7 Little finger: ulnar nerve C8 Back of the hand – radial side: radialnerve C5-T1 Medial antecubital fossa: medial cutaneous T1 Lower limb Inner thigh: upper L1, mid L2 Medial side of knee: L3 Medial malleolus: L4 Big toe: L5 Heel: S1 Popliteal fossa: S2 Anal sensation/tone needs to be tested if concern about spinal cord lesions: S3 and S4 In determining the sensory level remember that the pain and temperature pathways decussate at the level of entry at the spinal cord (spinothalamic tract) while the pathways for fine touch and propioception ascend the spinal cord and decussate at the level of the brain stem (dorsal columns) Other sensory modalities To test sensation thoroughly the above routine should be repeated, testing the rest of the sensory modalities Pain Alternate using the sharp and blunt ends of the neurotip) Temperature Can be tested with the metal tuning fork as it tends to be cold Vibration Tested on a bony prominence looking for when the patient stops feeling the vibration Propioception Start at the most distal joint in the limb, such as the distal interphalageal joint. Place your fingers on either side of the digit to isolate the joint. Move the joint upwards and say “this is up” and then move the joint down and say “this is down”. Ask the patient to then close their eyes and tell you which way they feel you are moving their joint. If they are unable to tell you move to the next more proximal joint. Beware of the subjective nature of the sensory exam. If you suspect that the patient is giving spurious answers, or trying to disguise a lack of sensation, instruct them to close their eyes and ask them which side you are touching without touching them at all. Patches of sensory loss that do not follow a dermatomal or nerve distribution are likely to be non-organic in aetiology. Click here for exam and OSCE/PACES questions about the neurological exam Perfect revision for doctors, medical students exams, finals, OSCES, PACES and USMLE Click here for how to do the cranial nerve examination and click here for example exam questions on the cranial nerve examination

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Sensation: Upper and Lower Limbs There are three principals in testing sensation: compare left to right, compare distal areas to proximal areas and finally test dermatomes (when indicated) It can be helpful to ask the patient if they have any numbness or tingling Start by touching the patient’s upper chest lightly with your finger or a piece of cotton wool and ask them if it feels like a finger/cotton touching them Ask them to close their eyes and each time you touch their limb ask them which side you have touched, left or right. Ask them if it feels the same on both sides. Dermatomes Upper limb Outer shoulder/regimental badge area: axillary nerve C6 Outer forearm: lateral cutaneous C5 Thumb: median nerve C6 Middle finger: median nerve C7 Little finger: ulnar nerve C8 Back of the hand – radial side: radialnerve C5-T1 Medial antecubital fossa: medial cutaneous T1 Lower limb Inner thigh: upper L1, mid L2 Medial side of knee: L3 Medial malleolus: L4 Big toe: L5 Heel: S1 Popliteal fossa: S2 Anal sensation/tone needs to be tested if concern about spinal cord lesions: S3 and S4 In determining the sensory level remember that the pain and temperature pathways decussate at the level of entry at the spinal cord (spinothalamic tract) while the pathways for fine touch and propioception ascend the spinal cord and decussate at the level of the brain stem (dorsal columns) Other sensory modalities To test sensation thoroughly the above routine should be repeated, testing the rest of the sensory modalities Pain Alternate using the sharp and blunt ends of the neurotip) Temperature Can be tested with the metal tuning fork as it tends to be cold Vibration Tested on a bony prominence looking for when the patient stops feeling the vibration Propioception Start at the most distal joint in the limb, such as the distal interphalageal joint. Place your fingers on either side of the digit to isolate the joint. Move the joint upwards and say “this is up” and then move the joint down and say “this is down”. Ask the patient to then close their eyes and tell you which way they feel you are moving their joint. If they are unable to tell you move to the next more proximal joint. Beware of the subjective nature of the sensory exam. If you suspect that the patient is giving spurious answers, or trying to disguise a lack of sensation, instruct them to close their eyes and ask them which side you are touching without touching them at all. Patches of sensory loss that do not follow a dermatomal or nerve distribution are likely to be non-organic in aetiology. 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