STUDENT WORKBOOK
IN NEUROLOGY

Department of Medicine
Faculty of Medicine
Sabaragamuwa University of Sri Lanka

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CLINICAL APPOINTMENT IN NEUROLOGY

1. Name of the student

……

2. Year passed GCE Advanced level Examination.

……

3. Duration of the appointment

From……/……/……. To ……../……/…….

4. Name of the consultant

……

CONTENTS

PREFACE

Students of the Faculty of Medicine, Sabaragamuwa University of Sri Lanka (*SUSL*), study Neurology as a separate appointment of 2 weeks at the Teaching Hospital Ratnapura. During this period, they will be attached to the Neurology Unit under the Consultant Neurologist appointed by the Ministry of Health.

This Workbook in Neurology is compiled to help students achieve essential knowledge and skills in neurology expected from an undergraduate when they qualify to work in general medical wards as intern house officers. Thus, the workbook will guide the student during their neurology short appointment.

This workbook is a joint effort between academic staff of the Department of Medicine, SUSL and the current Consultant Neurologist of the Teaching Hospital Ratnapura. Students are expected to organize their classes and do self-studies in order to complete the tasks set out in the workbook.

We value your feedback to improve the workbook.

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CHAPTER 1

INTRODUCTION

Dear Students,

We have prepared a series of workbooks to guide you during your medical appointments. These include 3rd year workbook, 4th year workbook and workbook for each short appointment and a workbook for the professorial appointment.

The appointments in finer specialties are organized based on the University Grants Commission guidelines and according to the needs of the Ministry of Health.

The short appointment in Neurology will give you the opportunity to study Neurology with exposure to specific case scenarios in more detail. This workbook is prepared to provide guidance to the students during the Neurology appointment to cover the essential areas expected from an undergraduate. You are expected to learn the management plans in further detail. This includes the investigation, treatment of common medical conditions, management of common emergencies, which are essential clinical topics for an intern medical officer. This knowledge, skills and experience you gather during the short appointments will help you to understand patient problems in greater depth.

Your continuous assessments will be based on these workbooks.

Learning Outcomes in Neurology

At the end of the appointment students should be able to

1. Describe the anatomy and physiology of the neurological system, pathogenesis of its disorders and scientific basis of their management.

2. Obtain histories, elicit physical signs and interpret physical signs, describe pathophysiology, principles of management and prognosis of patients having the following conditions.
    a. Stroke
    b. Epilepsy
    c. Myasthenia gravis and other neuro-muscular junction disorders
    d. AIDP, CIDP
    e. Peripheral neuropathies
    f. Myopathies
    g. Parkinson disease and other movement disorders
    h. CNS infections (meningitis, encephalitis, cerebral abscess, TB)
    i. Cervical and lumbar root lesions
    j. Spinal cord compressions and other spinal cord diseases
    k. Demyelinating and autoimmune neurological disorders

3. Arrive at a clinical diagnosis of common and important disorders of the neurological system

4. Describe and outline
    a. Differential diagnosis of speech disorders and localizing the site of the lesion, identification of common gait disorders
    b. Different involuntary movements, their identification and the management of Parkinson's disease
    c. The management of Myasthenia Gravis, Motor Neuron Disease and Syringomyelia

5. Identify the indications, describe the necessary preparations and perform under supervision a lumbar puncture in a model

6. Describe the indications, limitations, underlying principles and be able to interpret findings of investigations that are relevant
    a. Lumbar puncture
    b. CSF manometry
    c. Nerve conduction studies
    d. EMG
    e. EEG
    f. CT scanning and MRI scanning

7. Describe the neuro-radiological correlations and recognize typical patterns of common abnormalities on plain radiograph, CT & MRI scans of the head and spine, carotid angiogram and myelogram

8. Describe the emergency management of following conditions
   a. Unconscious patient
   b. Fits and status epilepticus
   c. Respiratory muscle paralysis'
   d. Increased infra-cranial pressure

9. Describe the management of acute stroke including procedures, indications and contra indications for thrombolytic therapy. Be able to asses disability after stroke and understand the relevant components of stroke rehabilitation.

10. Communicate effectively with patients from different social and cultural backgrounds and with their families with particular reference to obtaining consent and giving information in relation to common neurological disorders and communicating serious news to patients or relatives in relation to neurological disorders: brain death, vegetative states, massive stroke, advanced stages of neuro-degenerative diseases, motor neuron disease

11. Write case notes, daily status, referrals, discharge summaries, clinic notes and prescriptions.

12. Demonstrate empathy and maintain high ethical standards

13. Be an effective member of the healthcare team and know the health facilities and social support available to care for neurological disorders in Sri Lanka.

CHAPTER 2

CORE CLINICAL KNOWLEDGE AND SKILLS

At the end of the neurology appointment, you should be competent in the technique of history taking, physical examination (general examination and examination of the nervous system) and clinical reasoning at a level of a student about to enter the final year.
In addition to the cases you are allocated during the apppointment, you are adviced to see the following presentations given in the next section on "Topics to Cover During Neurology Appointment"

2.1 Clinical Presentations in Neurology Appointment

These are some of the key presentations that ought to be 'covered' during the Neurology Appointment.

- Sudden hemiparesis
- Acute or progressive lower limb weakness
- Numbness of upper/lower limbs
- Muscle wasting
- Tremors of hands / Abnormal involuntary movements
- Unsteadiness /Ataxia
- Dizziness and vertigo
- Blackouts/ Loss of consciousness
- Altered level of consciousness
- Impaired memory
- Convulsions
- Headache
- Facial pain
- Cranial nerve palsies
- Diplopia
- Impaired vision
- Dysphasia

2.3 EMERGENCIES

Following is a list of common neurological emergencies

- Sudden severe headache
- Sudden hemiparesis
- Status epilepticus
- Acute cord compression
- Acute flaccid paralysis
- Sudden loss of consciousness

2.2 Topic in Neurology

These topics are often termed as the theoretical aspects of neurology and require didactic teaching (e.g., lectures) or self-study using standard textbooks.

1. Common clinical presentations and evaluation
2. CNS infections /CNS Tuberculosis
3. Cerebral vascular disorders (Stroke)
4. Acute flaccid paralysis
5. Spinal cord disorders
6. Headache disorder
7. Management of unconscious/ confused patient
8. Convulsions and epilepsy
9. Movement disorders and Parkinson' disease
10. Muscle and neuromuscular junction disorders and Myopathies
11. Neuropathies (cranial/ peripheral/ autonomic/ focal)
12. Memory disorders and dementia
13. Non-compressive myelopathies
14. Gait disorders and cerebellar syndrome
15. Motor neuron disease, disorders of NMJ and myopathies
16. Multiple sclerosis and other demyelinating disorders
17. Higher cerebral function and speech disorders
18. Ethical issues related to brain death

CHAPTER 3

HISTORY TAKING

PRESENTING COMPLAINT

Ask about the symptom or the problem that brought the patient to the hospital. Ask what the symptom (e.g., weakness) is, what part of the body is affected and whether it is localized (e.g., weakness of the left lower limb) or generalized (unsteadiness of gait).

HISTORY OF THE PRESENTING COMPLAINT

Ask the patient about the onset of the symptom, whether it is sudden onset or gradual onset, whether there is any fall or trauma prior to the appearance of symptom, the chronological order of the intensity of the symptom or any associated symptoms. Was the problem static, deteriorating or improving?
Are there any aggravating or relieving factors such as posture, exercise or sleep? Ask about other associated symptoms such as headache, pain, numbness, pins and needles, cold or warmth, weakness, gait changes, nausea, vomiting, visual or hearing, swallowing or speech disturbances, vertigo, altered level of consciousness, convulsions, and psychological changes such as aggression, depression or sleep disturbances. Ask more about the disability and urinary and bowel continence, and how it affected activities of daily living and other social activities and the occupation.
Ask if the patient is right-handed or left-handed
Assess the mood and the coping with the disease and the disability.

- **Systemic**: fevers, weight change, fatigue, appetite, oedema of the body
- **Respiratory**: shortness of breath, cough, chest pain, wheezing
- **Cardiovascular system**: chest pain, shortness of breath, palpitations
- **Gastrointestinal**: dysphagia, dyspepsia, odynophagia, constipation or diarrhea
- **Genitourinary**: oliguria, polyuria, anuria, incontinence and increased frequency
- **Musculoskeletal**: pain, trauma
- **Dermatological**: brittle nails, trophic ulcers

PAST MEDICAL HISTORY

Some neurological disorders such as cerebrovascular disorders could be a cause of associated risk factors of diabetes, hypertension, ischemic heart disease, valvular heart disease, arrhythmias and dyslipideamia.

Past history of falls, head injury, epilepsy, malignancy, tuberculosis

FAMILY HISTORY

Family history of diabetes, hypertension, cardiovascular diseases, cerebrovascular diseases, congenital neurological disorders, epilepsy, migraine, neuropathies and muscular dystrophies.

SOCIAL HISTORY

Ask about smoking and alcohol as alcohol is a significant neurotoxin, both centrally and peripherally and use of illicit drugs.

Ask about occupation to see whether there is exposure to neurotoxins. Continuation of the occupations such as work at heights and dangerous environment and driving in patients with epilepsy is highly risky.

Find out the financial status, availability of caregivers and impact of the illness and disability to the patient and to his family, the working environment and the society. Assess the ability of getting activities of daily living and the instrumental activities, caregiver burden.

COMMON SYMPTOMS IN NEUROLOGY

Symptom	Causes	Describe the symptom to differentiate the causes mentioned
Loss of consciousness		
Altered level of consciousness		
Syncope		
Convulsions		
Vertigo		
Tremors of hands		
Diplopia		
Ptosis		
Progressive lower limb weakness		
Symmetrical proximal muscle weakness		
Distal muscle wasting and weakness		
Numbness of feet		
Numbness of hands		
Headache		
Facial pain		

Gait abnormalities

Gait abnormality	Causes
Spastic	
Shuffling	
Waddling	
High stepping gait	
Broad based	
Stamping	

CHAPTER 4

EXAMINATION OF THE CENTRAL NERVOUS SYSTEM

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Examination of the Nervous System

A few important features in the general examination **commonly** relevant to the NS examination are:

- General appearance (lack of facial expression in Parkinson Disease)
- Presence or absence of fever
- Neck stiffness and other features of Meningism (Kernig Sign)
- Look for evidence of Neurocutaneous Syndromes (Neurofibromatosis)

The nervous system is traditionally examined in four components – these are,

- Examination of higher cerebral functions
- Examination of the cranial nerves
- Examination of the upper limbs
- Examination of the lower limbs

Examination of higher functions

- Assess the level of consciousness
- Level of consciousness is often assessed objectively using the Glasgow Coma Scale (GCS). An abbreviated scale is: A=alert; V=responds to voice; P=responds to pain and U=unresponsive
- Assess orientation in time, place and person.
- Assess speech (dysarthria - dysfunction of articulation, dysphasia - dysfunction of written or spoken language and dysphonia - hoarseness of voice)
- Further cognitive assessment, if indicated, is best done using screening tools such as the Mini-Mental State Examination (MMSE) scale and or the Montreal Cognitive Assessment (MOCA) scale.

Examination of cranial nerves

Cranial nerve I (olfactory)

Test each side separately using non-irritant smells familiar to the patient.

Cranial nerve II (optic)

To test the functions of the optic nerve, examine

- The visual acuity – use a pocket Snellen chart
- Visual fields - examine the peripheral visual fields using a white hatpin or your finger. Start from the temporal field and move diagonally towards the nasal field. Check the central field by using a red hat pin by moving it from temporal to central in the horizontal plane and map the blind spot.
- Colour vision using Ishihara Charts
- Pupils for their sizes and symmetry, for direct and consensual light reflex and accommodation reflex
- Both the optic fundi.

Cranial nerves – III (oculomotor), IV (trochlear) and VI (abducens)

- Examine the eye movements by asking the patient to focus on your finger while moving your finger in the shape of an 'H'. Ask for diplopia in each direction while noting impairment of ocular movement. Determine which extraocular muscles are weak. Remember LR6 and SO4. i.e., the lateral rectus muscle is innervated by the VI cranial nerve and the superior oblique muscle is innervated by the IV cranial nerve while all other extraocular muscles are innervated by the III cranial nerve.

Cranial nerve V (trigeminal)

To test the functions of the trigeminal nerve, examine the

- Muscles of mastication, including the temporalis, medial and lateral pterygoids. (clench the teeth, open the mouth)
- Sensory distribution of the trigeminal nerve, including the ophthalmic, maxillary and mandibular divisions
- Corneal reflex by lightly touching the scleral-limbic junction with a wisp of sterile cotton wool
- Examine the jaw reflex

Cranial nerve VII (facial)

- Proceed to examine the face and muscles of facial expression – frontalis, orbicularis oculi, orbicularis oris, buccinators and platysma

Cranial nerve VIII (vestibulo-cochlear)

- Examine hearing using the whispering test
- Do the Rinne and Weber tests using a tuning fork

Cranial nerve IX (glossopharyngeal), X (vagus) and XII (hypoglossal)

- Observe the oral cavity – look at the movement of the palate, symmetry of the Fauci, and movement/deviation of the uvula.
- Look at the tongue while inside the oral cavity and observe for wasting, fasciculations.
- Ask the patient to protrude the tongue and look for deviation. Ask the patient to move the tongue from side to side and note if the tongue is spastic.

Cranial nerve XI (accessory)

- Ask the patient to turn the head to a side against the resistance of your hand and feel the sternocleidomastoid on the opposite side. The trapezius muscles are tested by asking the patient to shrug his or her shoulders against resistance of the examiner.

Neurological examination of the upper limbs

Examination routine

- Introduce yourself and explain the procedure to the patient
- The upper limbs should be examined in the following order – inspection, tone, power, reflexes, coordination and examination of the sensory system

Inspection

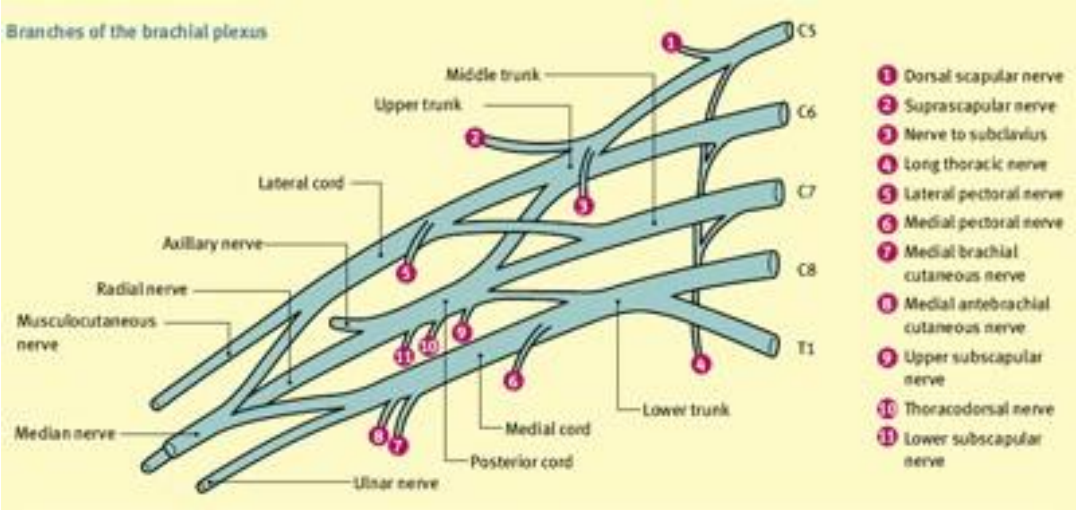
- Inspect the upper limbs for wasting, fasciculations, deformities, scars and abnormal movements
- Look for pronator drift

Tone

- Examine the tone by movements around the wrist and elbow. Note if the tone is increased or decreased. If increased, differentiate rigidity from spasticity.

Muscle power

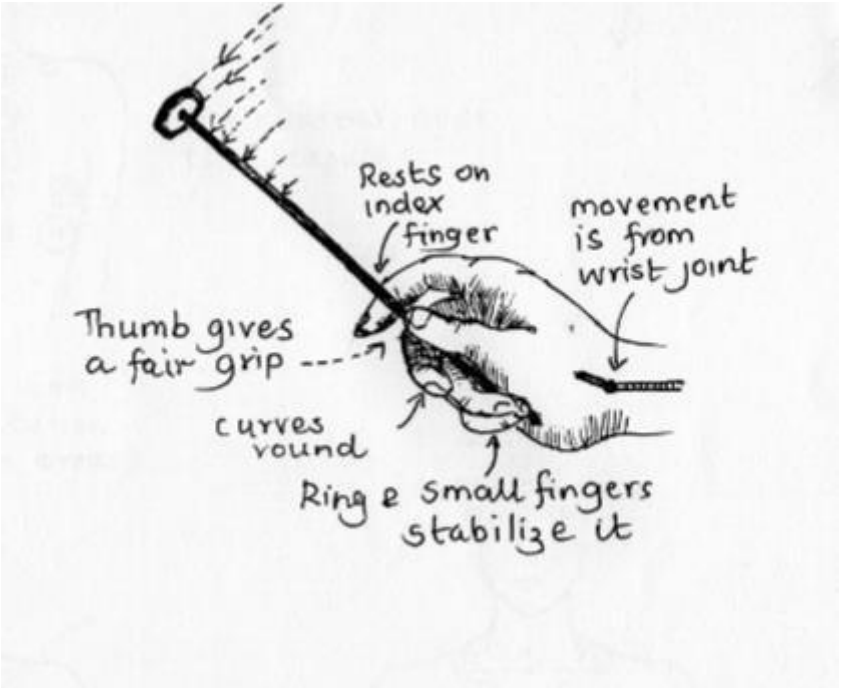
- Examine the muscle power around all major joints and the power of the small muscles of the hands
- Examine shoulder abduction, elbow flexion and extension, wrist flexion and extension, long flexors and extensors of the fingers and the small muscles of the hand including the palmar and dorsal interossei and thenar muscles
- Muscle power should be graded based on the Medical Research Council (MRC) scale from 0/5 (absent voluntary movement) to 5/5 (normal power).
- Any muscle weakness noted should be related to the myotome and nerve supply of the muscle or muscle groups that are weak.

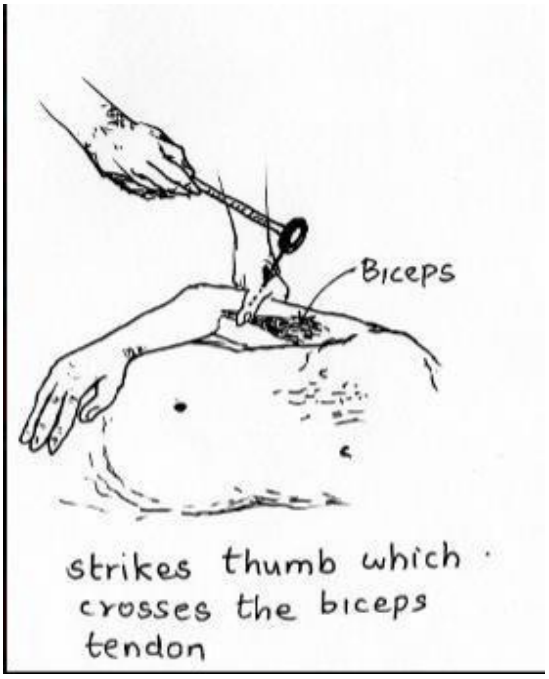


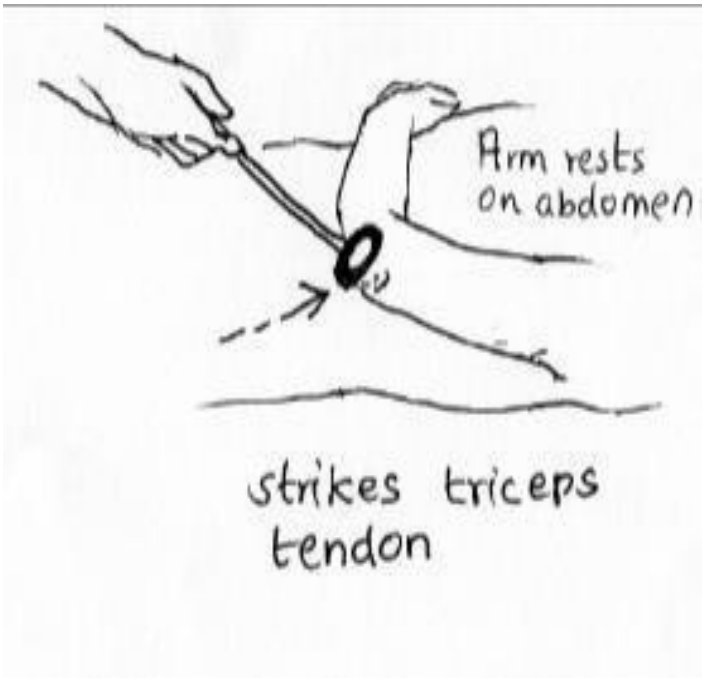
ACTION	MUSCLE	NERVE	ROOT
Shoulder Abduction	Deltoid	Axillary	C5
Elbow Flexion	Biceps	Musculocutaneous	C5,6
Elbow Extension	Triceps	Radial	C7,8
Wrist Extension	Extensors	Radial	C7,8
Wrist Flexion	Flexors	Median and Ulnar	C6,7
Finger Flexion	Flexors	Median and Ulnar	C6,7,8
Finger Extension	Extensors	Posterior Interosseous	C7,8
Finger Abduction	Dorsal Interossei	Ulnar	T1
Finger Adduction	Palmar Interossei	Ulnar	T1
Thumb Abduction	Abductor Pollicis Brevis	Median	T1
Thumb Adduction	Adductor Pollicis	Ulnar	T1

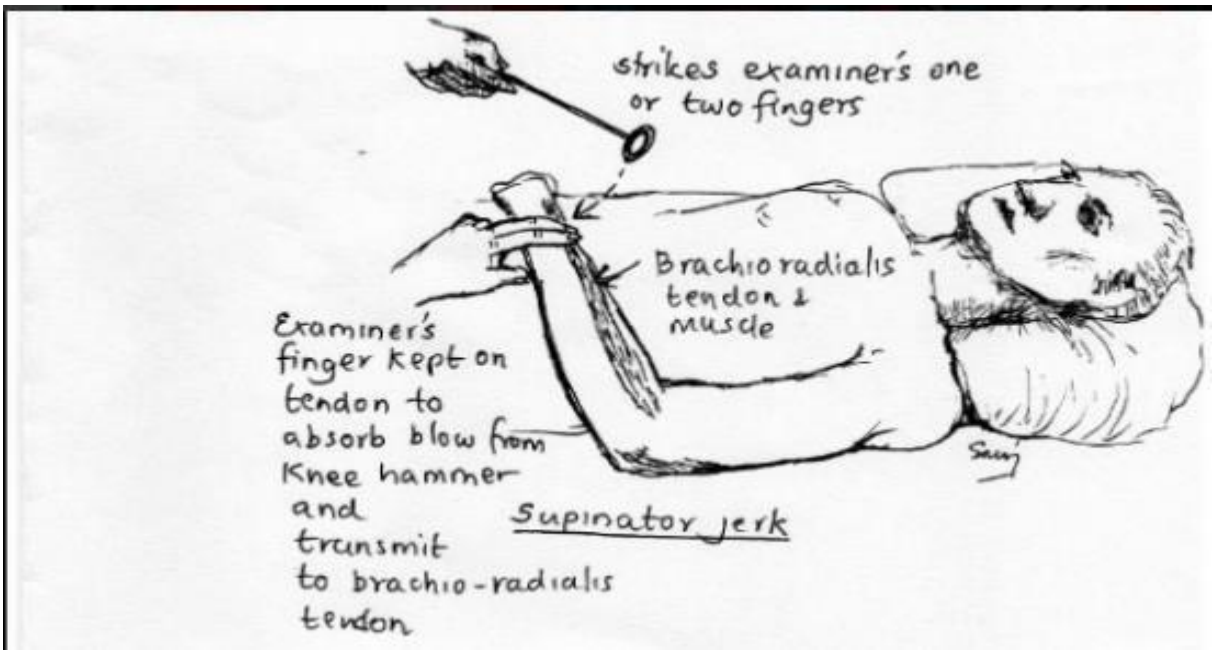
Reflexes

- Examine the biceps, triceps and supinator reflexes







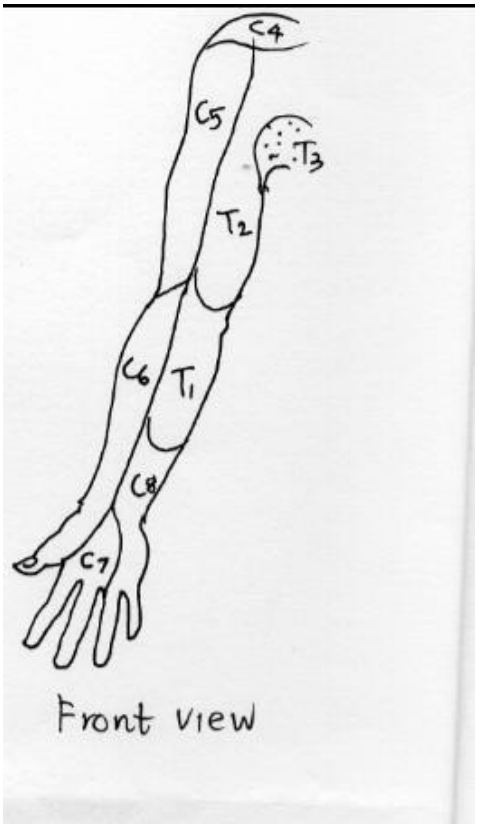


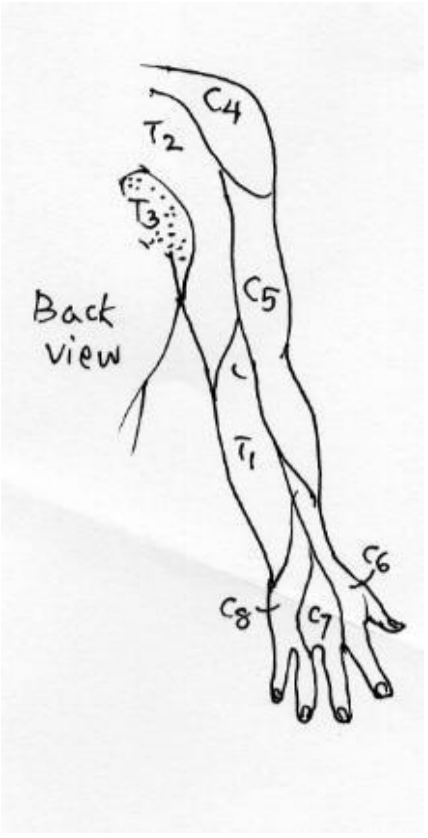
Coordination

- Examine for dysmetria using the finger nose test and for dysdiadochokinesia

Sensory

- Examine the upper limb sensory modalities with special emphasis on dermatomes





Neurological examination of the lower limbs

- Examine the gait if the patient is ambulant. Examination of the gait can be done either at the beginning or end of the examination of the lower limbs.
- The order of examination is same as for the upper limbs.

Examination of the gait

- Observe the patient's separation of feet (normally, less than 3 inches between the medial malleoli), stride length, clearance of feet from the ground, arm swing and pelvic tilt during walking.
- Determine if the patient has foot drop, spastic gait, scissoring gait, hemiplegic gait, ataxic gait, waddling gait, extrapyramidal gait, or Marche petit pas (frontal gait).

Inspection

- Inspect the lower limbs for wasting, fasciculations, deformities, scars and abnormal movements

Tone

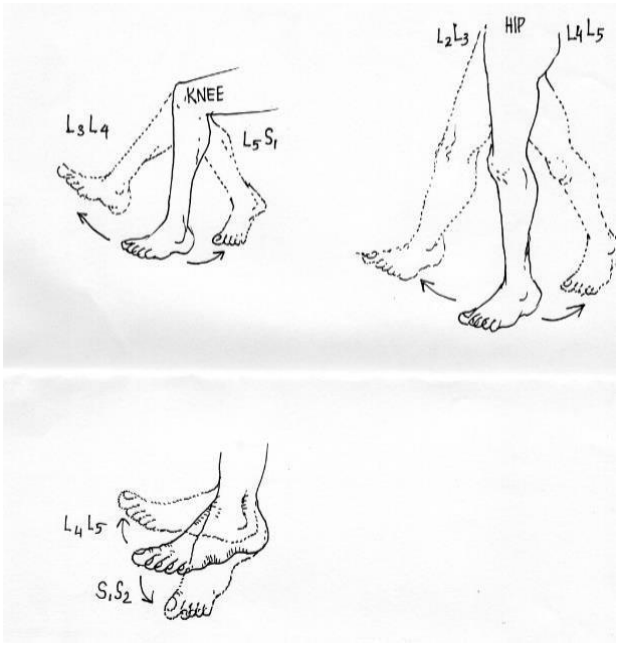
- This can be done by flicking the leg up at the knee from the resting position
- If the tone is increased look for ankle and patellar clonus

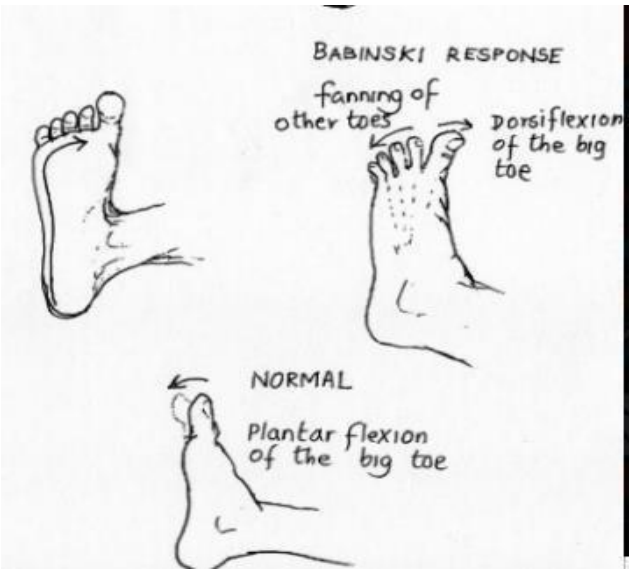
Power

- Examine the tone around the major joints in the lower limbs
- Examine hip flexion, extension, abduction and adduction, knee flexion and extension, ankle dorsiflexion, plantar flexion, inversion and eversion
- Muscle power should be graded based on the Medical Research Council (MRC) scale from 0/5 (absent voluntary movement) to 5/5 (normal power).
- Any muscle weakness noted should be related to the myotome and nerve supply of the muscle or muscle groups that are weak.

Reflexes

- Examine the knee and ankle reflexes
- Examine the plantar reflex



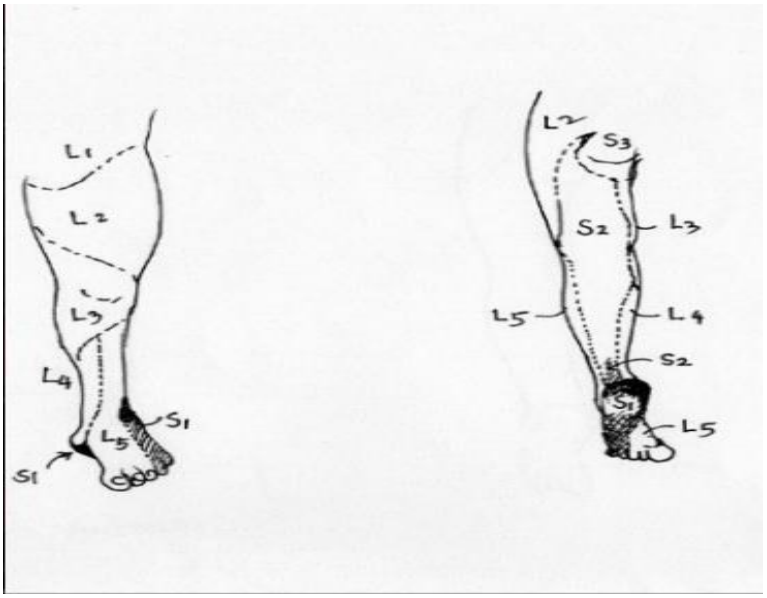


Coordination

- Perform the heel, knee, shin test
- Examine tandem gait

Sensory

- Examine pain, light touch and joint position sense in the lower limbs. Map the dermatomal distribution of the lower limbs
- Perform the Romberg test



An example of how to present a 'NS Short Case' on cranial nerve abnormalities

Present your findings in a sequential order.
"I examined this middle-aged gentleman's upper cranial nerves. On inspection there is right sided complete ptosis, with the pupil deviated laterally and inferiorly. His visual acuity and visual fields were normal. The patient had limitation of eye movements in the medial, upward and downward directions with preservation of intorsion. The direct and consensual light reflexes as well as the accommodation reflex were normal. Fundus examination was normal. Other upper cranial nerves were normal."
At the end of the presentation of your findings you can give the diagnosis or differential diagnosis for your findings. "My diagnosis is a right sided 3rd cranial nerve palsy"

Examiner will now ask you some questions and proceed with the discussion based on your patient.

An example of how to present a 'NS Short Case' on upper limb abnormalities

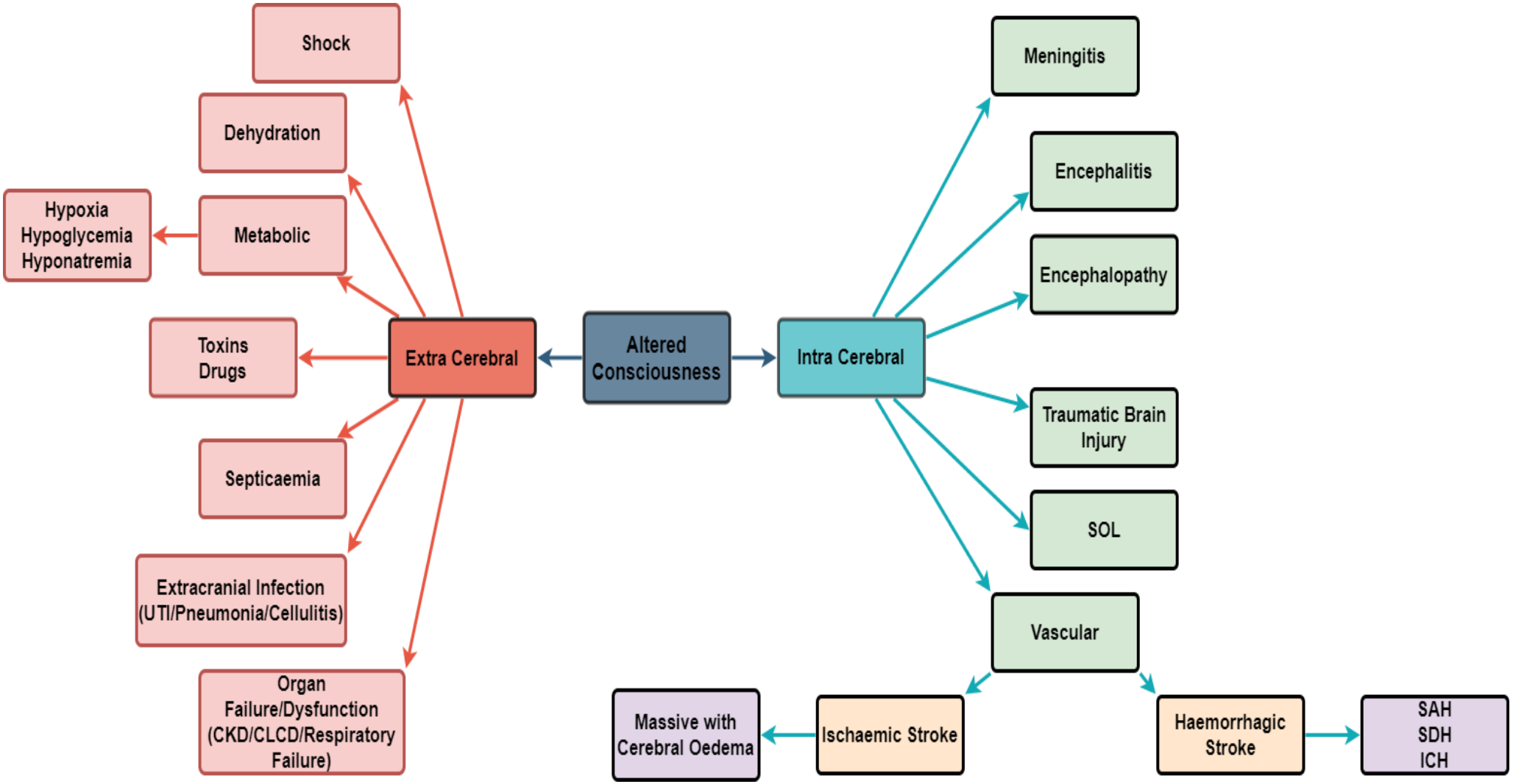
You may present your findings as a summary of your detailed examination. "I examined the upper limbs of this gentleman. On inspection bilateral small muscle wasting was noted in the hands and forearms with fasciculations around bilateral shoulder girdles. No abnormal movements were seen. The tone in both upper limbs were normal. A weakness was noted in finger abduction, adduction and opposition. Forearm flexion, extension and lateral rotation were also noted to be week with a power of 4/5. Power in other muscle groups were normal. The biceps, triceps and supinator reflexes were brisk. Coordination was normal and there was no evidence of sensory loss."

In summary, this patient has mixed upper and lower motor neuron signs in the upper limbs without sensory loss and cerebellar involvement. I would consider a differential diagnosis of motor neuron disease and cervical myeloradiculopathy and motor neuropathy" At the end of your presentation the examiner will guide you on further discussion.

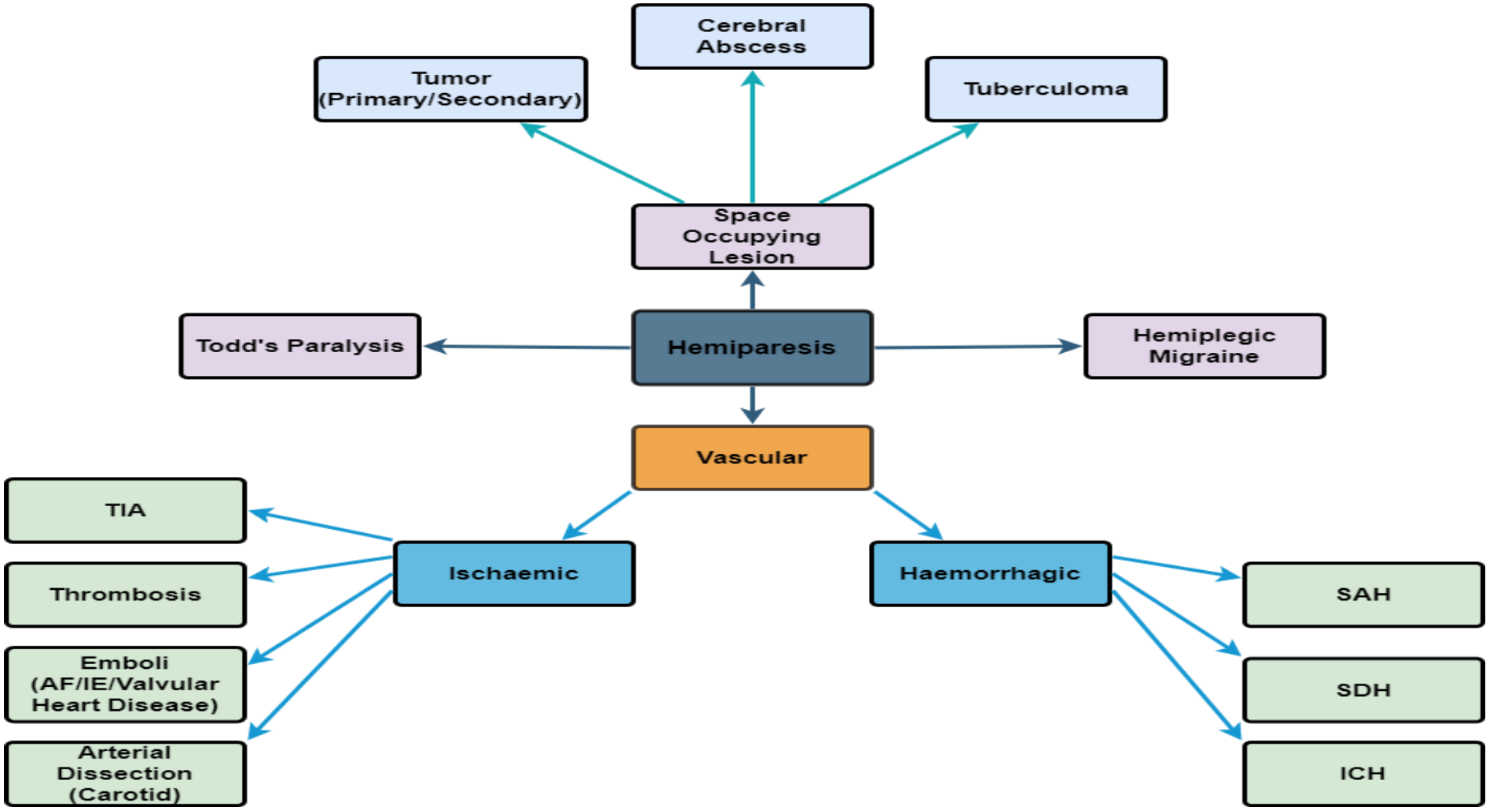
An example of how to present a 'NS Short Case' on lower limb abnormalities

You may present your findings as a summary of your detailed examination. "I examined the lower limbs neurologically on this middle-aged lady. On inspection I did not notice any wasting, fasciculations or abnormal movements. The tone in both lower limbs were increased with demonstrable ankle and patellar clonus. The power of the proximal muscles was 3/5 and distal muscles was 4/5 with flexors more affected than extensors. Both knee and ankle reflexes were brisk. Plantar responses were extensor. I elicited a sensory level at T9. Proprioception was also impaired bilaterally. [YOU WILL NOT BE ABLE TO CHECK THE GAIT WHEN THE PROXIMAL MUSCLE POWER IS 3/5]
At the end of the presentation of your findings, you give your diagnosis or the deferential diagnosis. "This lady has spastic paraparesis with a sensory level at T9. Based on these findings I would localize the lesion to the thoracic spinal cord."

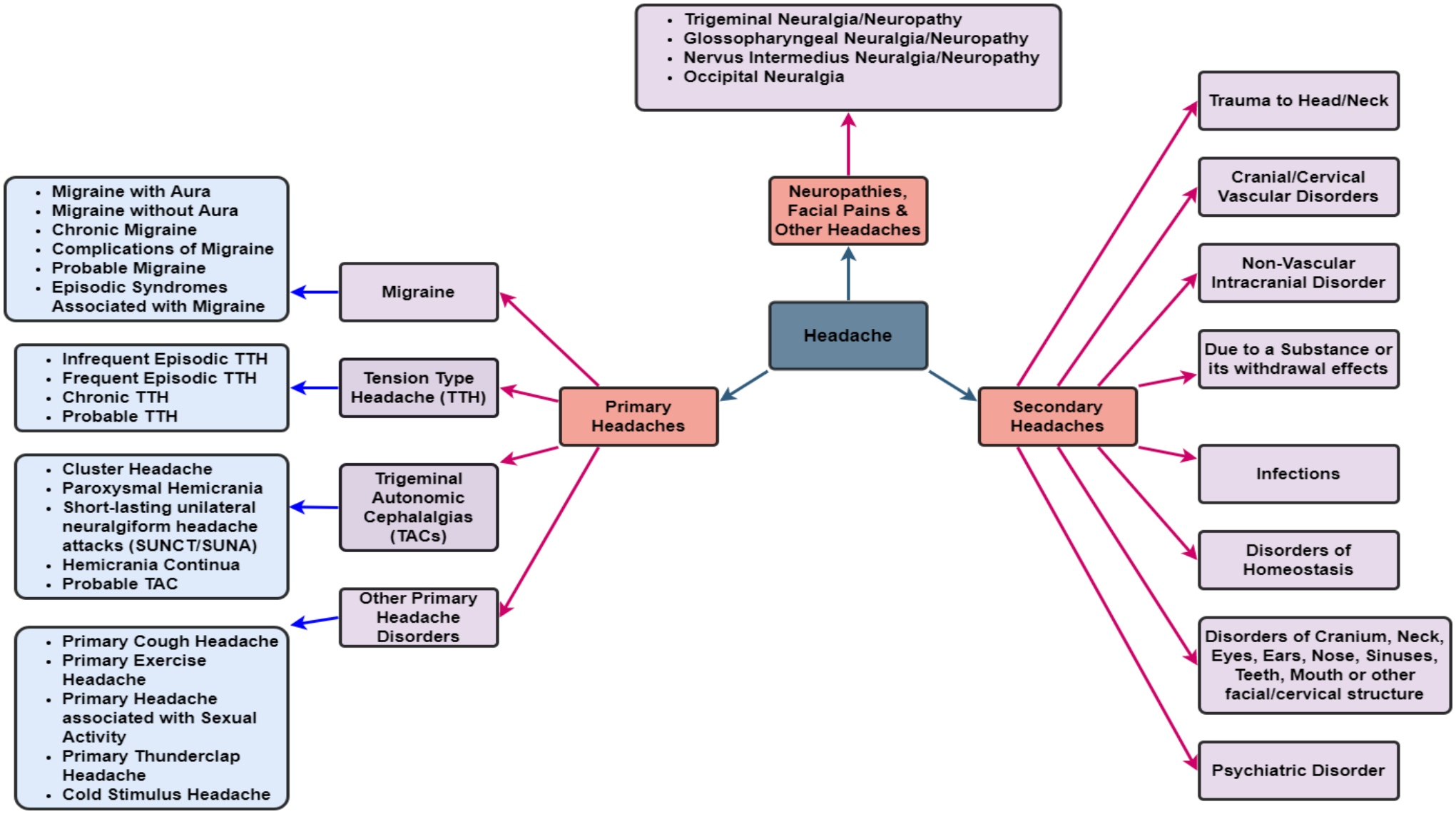
At the end of your presentation the examiner will guide you to the discussion.



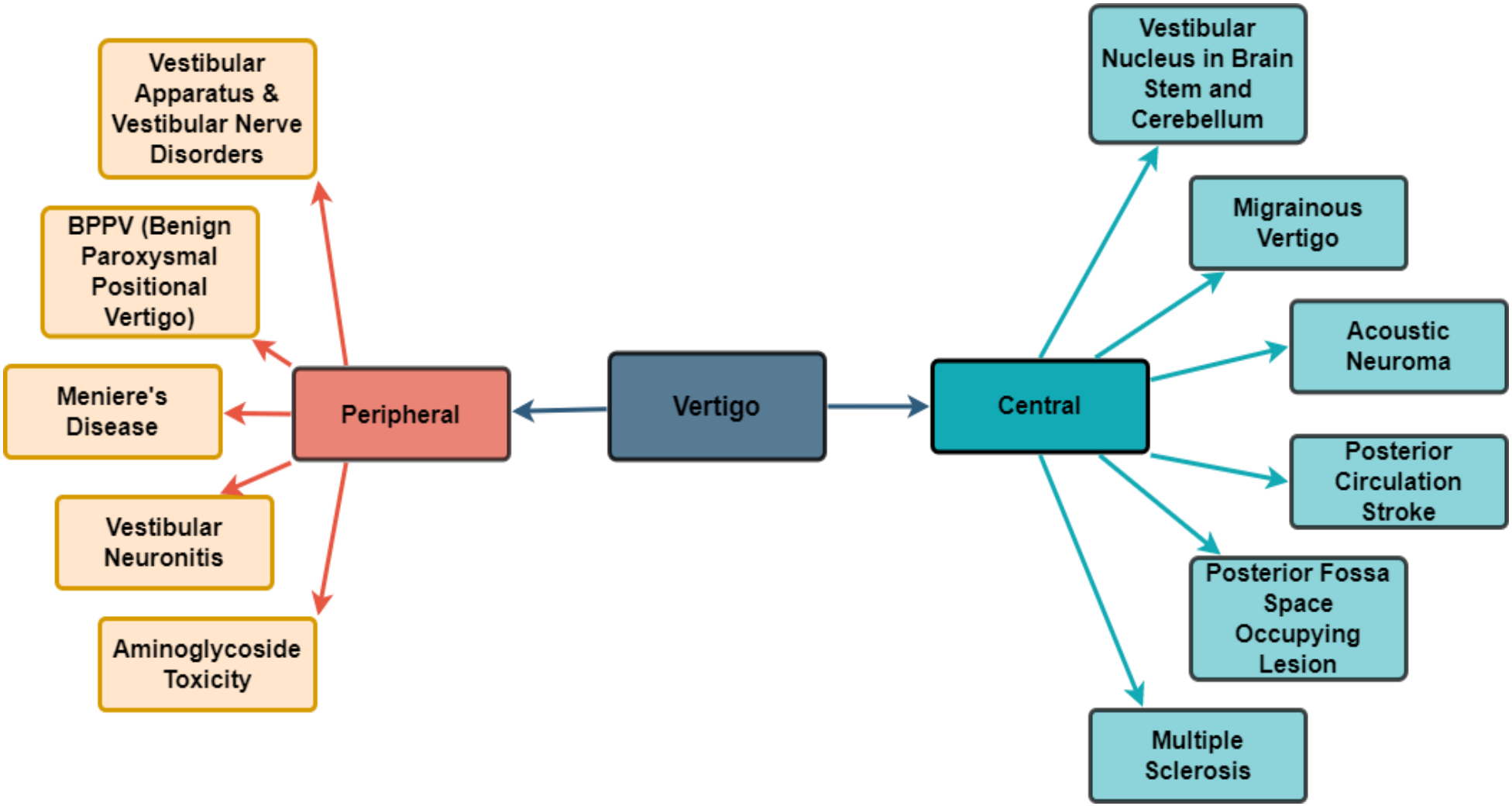
SOL-Space occupying Lesion, UTI-Urinary Tract Infection, CKD-Chronic Kidney Disease, CLCD-Chronic Liver Cell Disease, SAH-Sub Arachnoid Haemorrhage, SDH-Sub Dural Haemorrhage, ICH-Intra Cerebral Haemorrhage

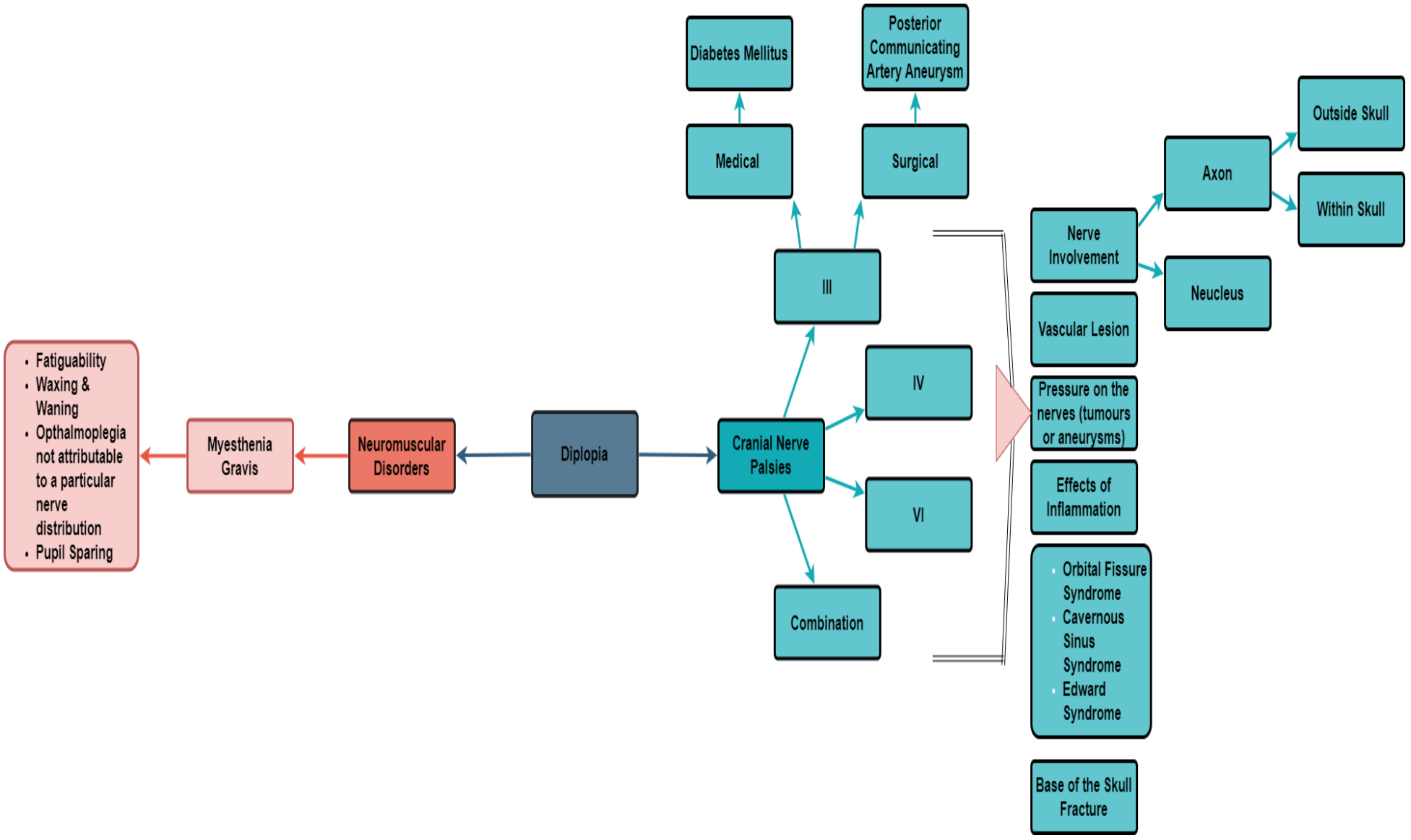


AF- Atrial Fibrillation, IE- Infective Endocarditis, SAH-Sub Arachnoid Haemorrhage, SDH-Sub Dural Haemorrhage, ICH-Intra Cerebral Haemorrhage, TIA-Transient Ischaemic Attack

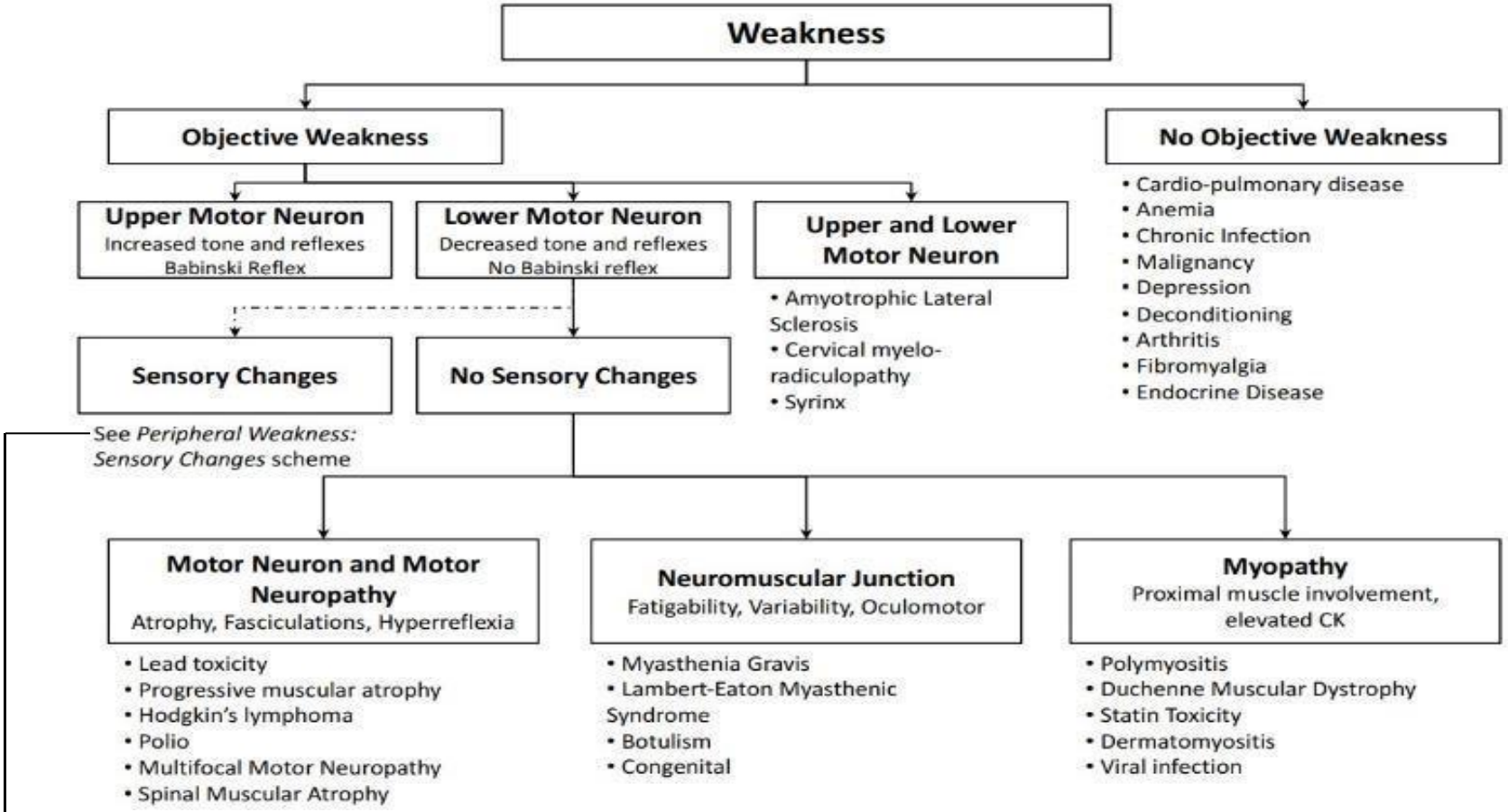


Refer the International Classification of Headache Disorders 3rd Edition (ICHD3)

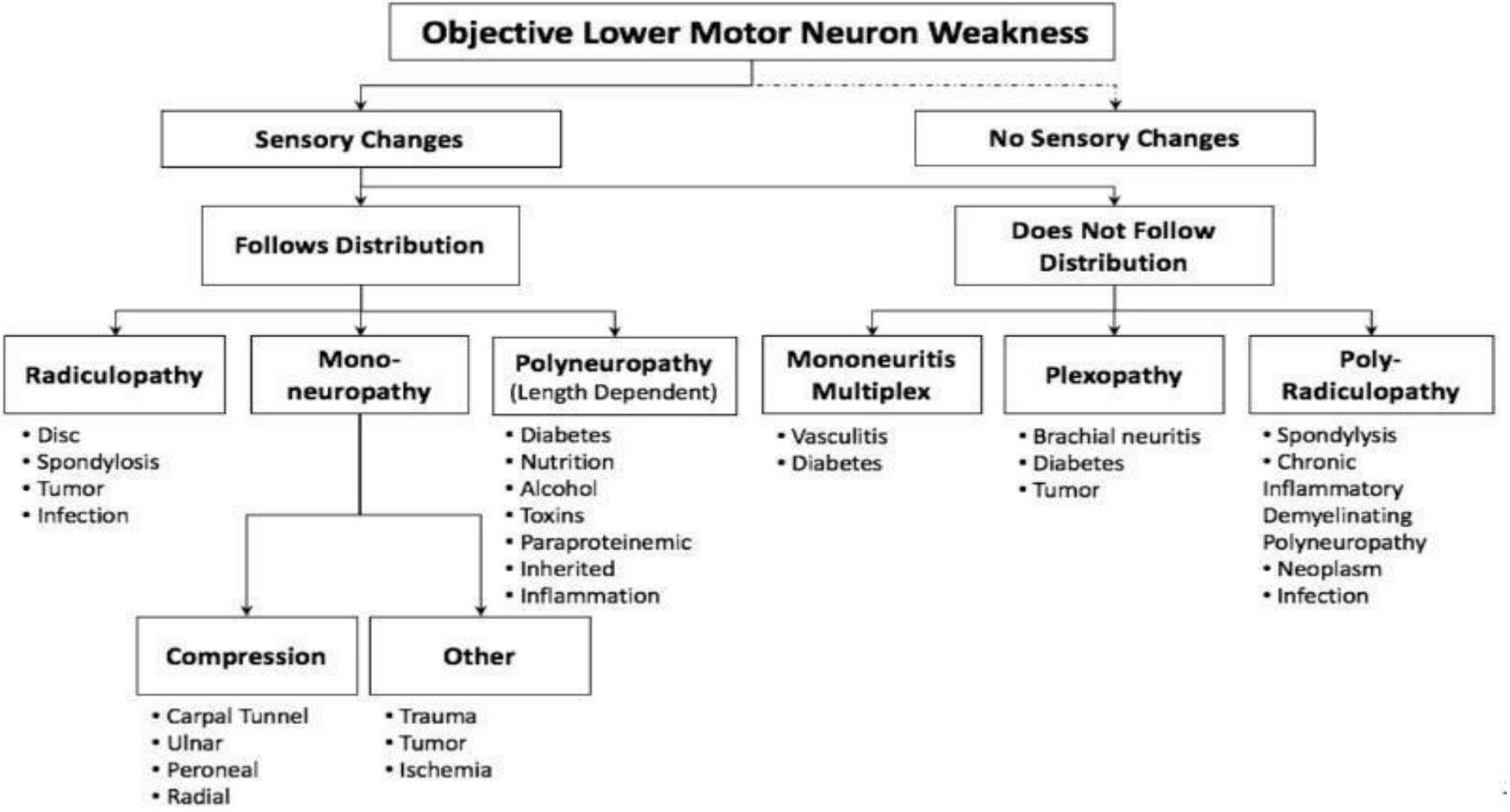

Vertigo
Peripheral
Central
Vestibular Apparatus & Vestibular Nerve Disorders
BPPV (Benign Paroxysmal Positional Vertigo)
Meniere's Disease
Vestibular Neuronitis
Aminoglycoside Toxicity
Vestibular Nucleus in Brain Stem and Cerebellum
Migrainous Vertigo
Acoustic Neuroma
Posterior Circulation Stroke
Posterior Fossa Space Occupying Lesion
Multiple Sclerosis


Diplopia
Neuromuscular Disorders
Myesthenia Gravis
Fatiguability
Waxing & Waning
Opthalmoplegia not attributable to a particular nerve distribution
Pupil Sparing
Cranial Nerve Palsies
III
Medical
Diabetes Mellitus
Surgical
Posterior Communicating Artery Aneurysm
IV
VI
Combination
Pressure on the nerves (tumours or aneurysms)
Nerve Involvement
Axon
Outside Skull
Within Skull
Neucleus
Vascular Lesion
Effects of Inflammation
Orbital Fissure Syndrome
Cavernous Sinus Syndrome
Edward Syndrome
Base of the Skull Fracture

Peripheral Weakness



****Peripheral Weakness with Sensory Changes Scheme**



CHAPTER 5

COMMON INVESTIGATIONS

1. Cerebrospinal fluid (CSF) analysis
    a. Observe a lumbar puncture being done in the ward and outline the steps of the procedure. (This should include the CSF manometry as well)
    b. State the contraindications you looked for, prior to the procedure
    c. What are the precautions you have to take when collecting CSF?
    d. List the investigations requested in your patients' CSF samples. Write the appropriate bottles you collected those samples.
    e. Draw a diagram to explain the formation and circulation of CSF
    f. What is the function of CSF?
    g. Fill the following table.

CSF parameter	Normal CSF	Bacterial meningitis	Viral	TB
CSF opening pressure				
Appearance				
Protein				
Sugar				
Cells				

    h. How do you differentiate cerebral hemorrhage and traumatic tap?

2. NCCT scan Brain
    a. List 5 situations when you request NCCT Brain
    b. Identify the neuro anatomical structures in a CT
    c. Study the sample CT films of following conditions
        i. Acute large or massive MCA infarction
        ii. Acute occipital infarction
        iii. Thalamic infarction
        iv. Microvascular ischemia or multiple lacunar infarctions
        v. SAH (Sub arachnoid haemorrhage)
        vi. Acute or acute on chronic SDH (Subdural haemorrhage)
        vii. Extradural haemorrhage
        viii. Deep intracerebral haemorrhage
        ix. Chronic sinusitis

d. What are the indications you might request urgent neurosurgical interventions out of above-mentioned conditions?

3. CECT (contrast enhanced CT) brain Write five indications where you request CECT brain
    i. Write a request form for CECT brain and paste it below
    ii. How do you get consent for CECT brain? Outline the steps below

4. EEG
    a. What are indications that you might request for an EEG?
    b. How do you take consent and prepare a patient for EEG?

5. MRI scanning (good to know)
    a. Write five indications where you request MRI scans
    b. How do you take consent from a patient for MRI scan of the spine?
    c. Mention the significance of following modalities of MRI scan of the brain (Answer in one sentence only)
        i. T1 weighted
        ii. T2 weighted
        iii. Flair
        iv. MRA
        v. MRV
        vi. DWI
        vii. SWI
        viii. Gadolinium enhancement

6. Nerve conduction study (NCS)
    a. State five clinical conditions where you request NCS
    b. How do you explain the procedure to the patient before performing NCS?

7. Cerebral angiography / Cerebral Venography
    a. Mention 5 clinical situations where you request cerebral angiogram
    b. How do you prepare a patient for cerebral angiogram?
    c. What are the contraindications for cerebral angiography?

CHAPTER 6

EXERCISES

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1. Stroke

A previously healthy 72 years old man presented to the emergency department 2 hours after sudden onset of right sided upper limb and lower limb weakness and aphasia. The gaze preference is to the left. His blood pressure is 170/90mmHg. You are the house officer in the emergency department.

a. Outline the immediate management steps (including investigations and medication you give) you take at the emergency department. State the rationale for each action.

If CT brain shows infarction,

b. How do you assess a patient for the suitability for thrombolysis?
c. Describe likely complications of thrombolysis in acute stroke.
d. What is the arterial territory you expect to be involved in this patient?
e. 24 hours later, the patient complains of headache. How do you evaluate and manage the patient now?
f. If this patient ended up with moderate improvement of disability, what are the main steps in rehabilitation?
g. What are the measures you take for secondary prevention in this patient?

2. Seizure

a. Take a history of a patient presented with a seizure. Write it in the patient's own language and translate it to English.
b. What are the different types of seizures?
c. Write 3 causes of which a patient present with seizures. What is the aetiology in your patient?
d. Outline the immediate management steps in the emergency department in a patient present with a seizure
e. If the seizure has not been terminated within 10 minutes, what are the next steps in the management?
f. What are the common factors that could precipitate a seizure?

3. Acute flaccid paralysis

a. Write a case history of a patient who presents with acute flaccid paralysis in patient's own language and in English language
b. What are the likely aetiologies in your patient?
c. List important examination findings you need to elicit which are relevant in the management of the patient and explain why they are important.
d. List 2 specific investigations which help in the diagnosis
e. Outline the management of your patient

4. Peripheral neuropathy

a. Obtain history from a patient diagnosed to have peripheral neuropathy. Describe the onset, progression and current symptoms that patient is having.
b. What are the differential diagnoses you considered in your patient?
c. How do you confirm the clinical diagnosis of peripheral neuropathy?
d. How do you investigate your patient to come into a conclusion on aetiology?
e. Define diabetic neuropathy
f. What are different types of diabetic neuropathy?
g. Describe different presentations of each type you mentioned
h. How do you manage a patient with diabetic polyneuropathy describing the role of multi-disciplinary team?

5. Spinal cord disorders

a. Examine a patient with a spinal cord disease and describe your findings below
b. Based on your findings, what is the level of lesion your patient is having?
c. Describe how you come to the conclusion of the site of the lesion?
d. What are the likely aetiologies you consider in your patient?
e. How do you further evaluate to come to a conclusion of the aetiology?

6. CNS infections

a. Write a history and examination findings of a patient diagnosed with meningitis that you encountered
b. List the differential diagnosis you considered
c. Describe the likely short term and long-term complications of meningitis
d. List important investigations you request and mention why they are done
e. What are the common organisms which cause meningitis in Sri Lanka?
f. Outline the management of Bacterial meningitis
g. What are the features that suggest the presence of associated encephalitis in a patient with meningitis?

7. Headache

a. Write a history and examination findings of a patient coming with headache
b. List the differential diagnoses you arrived at
c. What clinical findings are in favour of secondary headache?
d. Describe the different types of primary headache types and their characteristic features
e. When do you request neuro imaging for headache disorders?

CHAPTER 7

CASE BASED SCENARIOS

In this section we expect you to write histories (minimum of 5 cases as complete documentations) of patients that you encountered during your neurology appointment.

This book is peer reviewed and recommended as a teaching and learning material for the Department of Medicine, Faculty of Medicine Sabaragamuwa University of Sri Lanka, by the following experts,

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