

## **Neurology Objectives Clinical Medicine II**

### **A. Overview of the Nervous System**

1. Identify the anatomy of the central and peripheral nervous systems.
2. Relate neuroanatomy to physiologic function.
3. Relate neurologic deficits and groups of deficits to anatomic lesions.
4. Describe evaluative methods used in diagnosing neurological disease.
  - a. History and physical
  - b. Lumbar puncture
  - c. EEG
  - d. EMG
  - e. CT
  - f. MRI
  - g. Angiogram
  - h. Plain film
  - i. Carotid ultrasound

### **B. Vascular Disease**

1. Define stroke, Transient Ischemic Attack (TIA), and Reversible Ischemic Neurological Deficit (RIND).
2. Explain the epidemiology of stroke.
3. Describe and differentiate the pathophysiology of ischemic strokes, hemorrhagic strokes, and cerebral aneurism.
4. Identify modifiable and non-modifiable risk factors for stroke.
5. Discuss the clinical presentation of ischemic and hemorrhagic stroke and differentiate these from TIA.
6. When given a patient presenting with stroke symptoms, describe the type of stroke and probable location of the lesion.
7. List the differential diagnosis for stroke symptoms.
8. Formulate a plan for the diagnostic evaluation for a patient with suspected stroke.
9. Formulate a treatment plan for a patient with stroke including pharmacological intervention.
10. Define and describe the Glasgow Coma Scale.

### **C. Seizures**

1. Explain epidemiology, etiology, and pathophysiology of generalized convulsive and generalized non-convulsive disorders.
  - a. Generalized
    - i. Tonic
    - ii. Clonic
    - iii. Tonic-clonic seizures
    - iv. Myoclinic seizures
    - v. Absence
  - b. Partial seizures
    - i. Simple
    - ii. Complex
    - iii. Secondary
  - c. Specialized
2. List the risk factors for specific seizures.
3. Correlate clinical presentation with the underlying pathophysiology and characteristics of specific seizure types.
4. Formulate a plan for the diagnostic evaluation of seizures.
5. Define status epilepticus and describe basic management strategies.
6. Discuss patient education for a patient/parent of child with a seizure disorder.

### **D. Headache**

1. Explain the epidemiology, etiology, and pathophysiology of the various classifications of headache.
  - a. Tension
  - b. Migraine
  - c. Cluster
  - d. Vascular
  - e. Tumor, mass, or lesion
  - f. Infection
  - g. Bleed
2. List history findings that are useful in differentiating types of headaches.
3. List risk factors for each classification of headaches and identify the pathology behind these risk factors that would contribute to headaches.
4. Compare and contrast the clinical presentation of each of the major classifications of headaches.
5. Formulate a plan for the diagnostic evaluation of a patient with a headache
6. Formulate a treatment plan (non-pharmacological) including patient education.
7. Describe history and physical exam findings suggestive of headaches that signal a life threatening emergency.

## **E. Vertigo**

1. Differentiate between vertigo and dizziness.
2. List the components of the history and physical exam that should be obtained from a patient complaining of vertigo.
3. List the differential diagnosis for a patient presenting with vertigo.
4. Outline the therapeutic options for the treatment of vertigo.
5. Describe the criteria for ENT referral for the patient with vertigo.

## **F. Movement Disorders:**

### **Parkinson's Disease, Essential Tremor, and Huntington's Disease**

1. Define ataxia, dystonia, and spasticity.
2. Explain the epidemiology, etiology, and pathophysiology of common movement disorders.
  - a. Parkinson's disease
  - b. Essential tremor
  - c. Huntington's disease
3. Define essential tremor and discuss the classifications of tremor.
4. List the presenting signs and symptoms to alert the practitioner that the tremor is not an essential tremor.
5. Correlate the clinical presentation with the underlying pathophysiology of each disease.
6. Formulate a plan for the diagnostic evaluation of Parkinson's disease, essential tremor, and Huntington's disease.
7. Formulate a treatment plan for essential tremor and Huntington's disease. (Pharmacological management of Parkinson's disease will be address in Pharmacotherapy II.)
8. Recognize the existence of Parkinson-like syndromes and associated etiologies.
9. Describe the clinical course of Parkinson's disease and Huntington's disease.

## **F. Multiple Sclerosis**

1. Explain the epidemiology, etiology, and pathophysiology of Multiple Sclerosis (MS).
2. List the risk factors for the development of MS.
3. Correlate the clinical presentation with the underlying pathophysiology of the disease.
4. Describe the various possible courses of disease including: remitting /relapsing, secondary-progressive, primary-progressive, and progressive-relapsing.
5. Formulate a plan for the diagnostic evaluation for a patient with suspected MS.
6. Formulate a treatment plan (non-pharmacological) to include patient education, lifestyle changes, and family education pertinent to a patient with MS.
7. Describe the variable clinical course of patients with MS.
8. Discuss the physical/psychosocial needs of the patient (family) with MS and the role of a team approach to the management of this disease.

## **G. Infectious Disorders (Meningitis and Encephalitis)**

### **1. Meningitis**

- a. Explain the epidemiology of meningitis.
- b. Explain the etiology and pathophysiology of the various types of meningitis.
  - i. Viral
  - ii. Bacterial
  - iii. Aseptic
  - iv. Chronic
- c. List the risk factors for the development of meningitis.
- d. Correlate the clinical presentation with the underlying pathophysiology.
- e. Formulate a plan for the diagnostic evaluation of meningitis.
- f. Discuss laboratory findings, and explain how the results correlate with the different etiologies.
- g. Formulate a plan for the treatment (non-pharmacological) of meningitis.
- h. Discuss vaccinations available for the prevention of meningitis and current recommendations for immunizations.
- i. Explain complications of untreated meningitis.
- j. Discuss the unique presentation of meningitis in neonates and infants.

### **2. Encephalitis**

- a. Explain the epidemiology, etiology, and pathophysiology of the most common types of encephalitis.
- b. Correlate the clinical presentation with the underlying pathophysiology.
- c. Formulate a plan for the diagnostic evaluation of encephalitis.
- d. Formulate a plan for the treatment (non-pharmacological) of encephalitis.

## **H. Dementia/Delirium/Alzheimer's**

1. Define dementia and delirium.
2. Differentiate between delirium and dementia.
3. Identify the factors/possible causes in the development of delirium.
4. Describe the epidemiology and etiology of dementia.
5. Explain the structural changes and underlying pathophysiology of Alzheimer's disease/dementia.
6. Formulate a plan for the diagnostic evaluation of patients with delirium and dementia.
7. Describe the management of delirium.
8. Differentiate between Alzheimer's disease and other dementias.
9. Discuss patient and caregiver education for a patient with Alzheimer's disease.

## **I. Evaluation of Weakness**

1. Define paresis, paralysis, plegia, hemi-, mono-, para-, di-, quadro-, palsy hypertonic, hypotonic, spasticity, atrophy, rigidity, UMN, LMN, clonus, apraxia, ataxia, diplopia, dysarthria, and myopathies.
2. Discuss the useful historical factors to elicit in the patient complaining of weakness.
3. Describe the physical exam for weakness given a patient history of weakness.
4. Differentiate weakness from pain preventing the demonstration of true strength.
5. Explain the etiology and epidemiology of common neurological diseases exhibiting weakness.

## **J. Closed Head Injury (CHI)**

1. Explain the epidemiology of CHI.
2. Identify factors that contribute to intracranial pressure (ICP) and the use of ICP monitoring as a diagnostic tool.
3. Identify presenting signs, symptoms, and characteristics of diffuse and focal lesions.
  - a. Diffuse lesions
    - i. Concussion
    - ii. Diffuse axonal injury
  - b. Focal lesions
    - i. Skull lesion
    - ii. Cerebral contusion
    - iii. Intracerebral hemorrhage
    - iv. Epidural hematoma
    - v. Subdural hematoma
4. Formulate a plan for the diagnostic evaluation of CHI.
5. Describe the management of patients with specific diffuse and focal lesions.
6. Identify emergent situations requiring admission and referral to neurology/neurosurgery.

## **Objectives for Selected Topics Covered in Student Presentations**

### **Lyme Disease**

1. Explain the epidemiology of Lyme disease.
  - a. Identify geographical areas where Lyme disease is prevalent.
2. List the risk factors for Lyme disease.
3. Correlate the clinical presentation with the underlying pathophysiology.
  - a. Identify and describe the three phases of Lyme disease.
4. Formulate a plan for the diagnostic evaluation of Lyme disease.
5. Formulate a treatment plan/list goals of treatment for a patient with Lyme disease.
6. Identify strategies to prevent Lyme disease.

### **Amyotrophic Lateral Sclerosis**

1. Explain the epidemiology of ALS.
2. List the risk factor for ALS.
3. Correlate the clinical presentation with the underlying pathophysiology.
4. Discuss treatment options and the prognosis for ALS.
5. Discuss patient education concerns for the patient with ALS.

### **Neuropathy**

1. Explain the etiology and pathophysiology of neuropathy.
2. List common diseases with manifestations of peripheral neuropathy.
3. Correlate the clinical presentation with the underlying pathophysiology.

### **Restless Leg Syndrome (idiopathic and secondary RLS)**

1. Explain the epidemiology of RLS.
2. Discuss the etiology of RLS.
3. Correlate the clinical presentation with the underlying pathophysiology.
4. Discuss treatment options and patient education.

### **Guillain-Barre**

1. Explain the epidemiology and etiology of Guillain-Barre.
2. List the risk factors for Guillain-Barre.
3. Correlate the clinical presentation with the underlying pathophysiology.
4. Formulate a plan for the diagnostic evaluation of Guillain-Barre.
5. Discuss treatment options and the prognosis.
6. Discuss patient education concerns.

### **Myasthenia Gravis**

1. Explain the epidemiology and etiology of Myasthenia Gravis.
2. List the risk factors for Myasthenia Gravis
3. Correlate the clinical presentation with the underlying pathophysiology.
4. Formulate a plan for the diagnostic evaluation of Myasthenia Gravis.
5. Discuss treatment options and the prognosis.
6. Discuss patient education concerns.

### **Bell's Palsy/Trigeminal Neuralgia**

1. Explain the epidemiology and etiology of Bell's Palsy/Trigeminal Neuralgia.
2. List the risk factors for Bell's Palsy/Trigeminal Neuralgia.
3. Correlate the clinical presentation with the underlying pathophysiology.
4. Formulate a plan for the diagnostic evaluation of Bell's Palsy/Trigeminal Neuralgia.
4. Discuss treatment options and the prognosis.
5. Discuss patient education concerns.

## **Ophthalmology Objectives Clinical Medicine II**

### **A. Overview of the Eye**

1. Identify the anatomy of the eye and extra-ocular structures including nerves and muscles.
2. Utilize general ophthalmologic terminology and abbreviations (e.g., VA, OD, OS, OU).
3. Explain the importance and timing of the measurement of visual acuity.
4. Distinguish between the common refraction errors.
5. Compare and contrast the indications for the use of the ophthalmoscope and slit-lamp.
6. Identify common eye signs and symptoms and correlate these with the underlying pathophysiology of disease.

### **B. The Red Eye**

1. Explain the etiology of each of the conditions listed below that present as red eye.
  - a. Orbital cellulitis
  - b. Chemical injury to the cornea
  - c. Acute Glaucoma
  - d. Hyphema
  - e. Ectropion
  - f. Entropion
  - g. Blepharitis
  - h. Hordeolum
  - i. Chalazion
  - j. Allergic conjunctivitis
  - k. Bacterial conjunctivitis
  - l. Viral conjunctivitis (including Herpetic)
  - m. Chemical conjunctivitis
  - n. Sub-conjunctival hemorrhage
  - o. Bacterial keratitis
  - p. Viral keratitis
  - q. Scleritis
  - r. Episcleritis
  - s. Iritis
  - t. Dacryoadenitis
  - u. Pterygium
  - v. Pinguecula
  - w. Keratoconjunctivitis sicca
2. Identify risk factors for each of these conditions.
3. Correlate clinical presentation with the underlying pathophysiology of each specific condition.
4. Formulate a plan for the diagnostic evaluation of each condition.
5. Formulate a treatment plan for each condition.
6. Determine whether the condition is vision threatening, and whether the condition requires emergent/non-emergent referral.

### **C. Acute and Chronic Visual Loss**

1. Explain the etiology of each of the following conditions associated with acute or chronic vision loss.
  - a. Acute angle closure glaucoma
  - b. Cataract
  - c. Glaucoma
  - d. Macular degeneration
  - e. Diabetic retinopathy
  - f. Hypertensive retinopathy
  - g. Central retinal artery occlusion
  - h. Retinal vascular occlusion
  - i. Retinal detachment
  - j. Vitreous hemorrhage
  - k. Papilledema
  - l. Optic neuritis
  - m. Amblyopia
  - n. Strabismus
2. Identify risk factors for each of these conditions.
3. Correlate clinical presentation with the underlying pathophysiology of each specific condition.
4. Formulate a plan for the diagnostic evaluation of each condition.
5. Formulate a treatment plan for each condition.
6. Determine whether the condition requires emergent or non-emergent referral.

### **D. Eye Trauma**

1. Discuss the examination of the traumatized eye.
2. Explain the etiology of each of the conditions listed below that present as red eye.
  - a. Corneal abrasion
  - b. Corneal laceration
  - c. Ocular and corneal foreign bodies
  - d. Chemical burns
  - e. Ruptured globe
  - f. Lacerated globe
  - g. Hyphema
  - h. Orbital trauma
  - i. Lid lacerations
3. Identify risk factors for each of these conditions.
4. Correlate clinical presentation with the underlying pathophysiology of each specific condition.
5. Formulate a plan for the diagnostic evaluation of each condition.
6. Formulate a treatment plan for each condition.
7. Determine whether the condition is vision threatening, and whether the condition requires emergent or non-emergent referral.