UCLA-OLIVE VIEW INTERNAL MEDICINE RESIDENCY

NEUROLOGY CLINIC CURRICULUM

Target: PGY 1-3
Updated September 2018

A. EDUCATIONAL OVERVIEW

The purpose of this rotation is to provide training to medicine residents in the evaluation and treatment of patients with neurological disorders, especially stroke, multiple sclerosis, seizure disorders, neuromuscular disorders, headache, and movement disorders. Residents will receive one-on-one training in neurological history, localization, and differential diagnosis. Each patient presented will be seen and examined with the attending physician, and the resident will participate in developing a diagnostic and treatment strategy. Before clinic concludes, an interactive teaching module using a questions-answer format will be held to supplement resident case experience. These modules are rotated to ensure a new set of questions for each resident rotation in clinic. (See attached sample teaching modules).

In addition, over 10 individual formal lectures on neurological emergencies, the neurological exam, stroke, dementia, multiple sclerosis, neuromuscular disorders, coma/altered mental status, neuro-infectious diseases, headache and seizure disorders are provided at noon conference for all medicine residents. During May of each year, two 1-hour board review session are provided for all residents.

B. ROTATION DESCRIPTION AND STRUCTURE

The training site for this clinic assignment is the Olive View-UCLA Medical Center, Clinic C, on Tuesdays from 1:00 PM to 5:30 PM. At the beginning of each clinic, a huddle is held to orient the resident and to provide key points in completing the neurology electronic medical record. Residents will be expected to see about 3-5 patients in an afternoon, and each resident will be supervised directly by a UCLA faculty member board-certified in Neurology. In addition, a post-clinic teaching module will be held just prior to clinic end. Multiple subspecialists will be present to provide residents with exposure to seizure disorder, stroke, and neuromuscular specialists.

C. CORE TOPICS IN NEUROLOGY

At the completion of the three-year training, the resident will be able to explain the differential diagnosis, general diagnostic approach, and appropriate treatment plan for the following conditions and diseases. (MK1)

- **Stroke and Transient Ischemic Attack (TIA)**
- **Headache**: Chronic daily headache, Migraine and its variants, Trigeminal cephalgias, pseudotumor cerebri (Idiopathic intracranial hypertension) and pathologic headaches
- **Vertigo**: Benign positional vertigo, Vestibular neuritis, central versus peripheral etiologies, Dix-Hall-Pike maneuver, Epley maneuver
- **Seizure disorders**: focal and generalized seizure disorders and antiepileptic drug therapy
- **Neuromuscular Disorders**, including peripheral neuropathies
- **Movement Disorders**: Parkinson's Disease, Essential Tremor, Hemifacial spasm, Huntington's Disease
- **Multiple Sclerosis**
- **Depression and Cognitive Impairment** (as consequences of neurological disorders)
- **Cranial Neuropathies**: Bell's Palsy, 3rd and 6th cranial nerve neuropathies

D. GOALS & OBJECTIVES

Residents will be expected to acquire the knowledge and skills necessary to care for patients with common neurological conditions over the three-year training program.

1. **Goal: Demonstrate knowledge and skills specific to common neurological conditions and diseases.**

    - For stroke and TIA:
        - Describe the etiology and evaluation of stroke in young patients. (MK1, PC1/2)
        - Describe treatment for secondary prevention of stroke. (MK1, PC2)
        - Describe stroke findings on advanced imaging and correlate findings to the patient's symptoms and exam. (PC1, MK1)
    - For seizure disorders:
        - Distinguish focal and generalized seizures and their causes. (PC1, MK1)
        - Explain the role of EEG and imaging. (PC2, MK2)
        - Describe first-line therapy for epilepsy and treatment for drug-resistant epilepsy. (PC2, MK1)
        - Explain how to reduce the risk of birth defects in women with epilepsy. (PC2, MK1)
        - Describe risks associated with specific anti-epileptic drugs. (PC1, MK1)
        - Explain the indications for and complete the confidential morbidity and mortality report when appropriate. (PC2, SBP4)
    - For multiple sclerosis (MS) and its major variants (neuromyelitis optica, NMO):
        - Describe the imaging findings in MS and NMO. (PC1, MK1)
        - Asses for evidence of neurological decline and mimics in MS. (PC1, MK1)
        - Identify treatment modalities for early and advanced disease. (PC2, MK1)

2. **Goal: Provide the initial and follow-up evaluation of neurological disorders.**

The resident should be able to:

- Perform a neurological history and review of systems for neurological disorders, focused history including birth and developmental history, onset, evolution of the symptoms, medical history, and drug exposures. (PC1, MK1)
- Perform a focused neurological examination, especially differentiating central from peripheral nervous system findings. (PC1, MK1)
- Learn neurological localization and development of a focused differential diagnosis. (PC1, MK1)
- Develop a diagnostic and treatment plan under supervision of the attending neurologist. (PC2/3)

3. **Goal: Prescribe evidence-based treatment of neurological disorders.**

The resident should become confident and knowledgeable in the treatment of a variety of neurological disorders. At the end of the three-year rotation, the resident will have confidence to:

- Select and prescribe evidence-based preventive and abortive therapies for headache. (PC2, MK1)
- Identify and prescribe evidence-based therapies for secondary prevention of stroke, including treatment of hypertension, antiplatelet agents and statins, and indications for anticoagulation. (PC2, MK1)
- Select optimal evidence-based therapies for seizure disorders, including deciding when to initiate, when to stop, and when to add and how to taper antiepileptic drugs. (PC2, MK1)
- Explain the options in early and advanced Parkinson's disease and essential tremor. (PC2, MK1)
- Perform with proper technique the Dix-Hallpike and Epley maneuver for BPPV. (PC2, MK2)

E. TEACHING METHODS

Clinical education is provided through a combination of formal presentation of patient cases, attending feedback and interaction, and formal teaching modules covering a wide variety of common neurological disorders.

F. SUPERVISION AND EVALUATION

All housestaff and patient care will be supervised by the attending physician from the Department of Neurology. Many of the neurology faculty have been recognized by national organizations and the UCLA Department as outstanding teachers and many are recognized as Best Doctors©, Americas Top Doctors©, or Superdoctors© at the National and local level.

Residents will be evaluated by the supervising attending. Direct verbal feedback may be provided during the clinic assignment, and written evaluations may be submitted to the Chief Residents or Program Directors.

G. EDUCATIONAL RESOURCES

Electronic resources are also available through the internet at Olive View-UCLA Medical Center and through UCLA.

- UpToDate
- Dynamed (coming)
- Harrison's Principles of Internal Medicine
- PubMed (*Neurology, New England Journal of Medicine, Lancet*)

The resident teaching modules (sample attached) will be presented and discussed with the supervising faculty.

Medicine Resident Teaching Module A General Neurology		
T	F	Alzheimer's disease commonly begins at age 50. It is associated with personality changes first, followed by impaired recent memory.
T	F	Alzheimer's pathology includes senile plaques (beta-amyloid) in extracellular space and neurofibrillary tangles (microtubule proteins) in cytoplasm.
T	F	Wernicke-Korsakoff' Syndrome is a triad of opthalmoplegia, ataxia, and confusion/amnesia.
T	F	Wernicke Korsakoff Syndrome is due to **B12** deficiency. Recovery after injection follows a sequence, starting with improvement in opthalmoplegia in the majority, then ataxia in 40%, and memory in only 20%.
T	F	Demyelinating and axonal are the two primary types of neuropathy. Demyelinating neuropathy is much more common than axonal neuropathy.
T	F	Demyelinating neuropathies cause delays in conduction velocity on nerve conduction studies. Axonal neuropathies cause reductions in amplitude.
T	F	Guillain-Barre Syndrome is more responsive to steroid therapy than IVIG or plasmapheresis.
T	F	Antiepileptic drugs should be started after a first unprovoked seizure if the EEG shows epileptic abnormalities or if the MRI is abnormal.
T	F	Cluster headache is more common in males. Episodes last 15 minutes to 1.5 hours, and occur up to 8 times per day, usually at night with circadian rhythm. The trigeminal nerve is implicated.
T	F	Recurrent headache of 4-72 hours in duration, with at 2 or more of the following are diagnostic of migraine: pulsatile headache, nausea, photophobia or phonophobia.
T	F	Migraine is often associated with unilateral lacrimation, ptosis, rhinorrhea and unilateral stabbing pain in orbit.
T	F	Temporal Lobe Epilepsy is the most common form of focal epilepsy, and is often associated with aura, staring spells and automatisms
T	F	Subacute onset of dementia with a visual field defect, imbalance, or myoclonus (twitching) is consistent with Creutzfeldt Jacob Disease.

Medicine Resident Teaching Module for Clinic B STROKE		
T	F	Strokes with cortical lesions such as aphasia, neglect, and gaze deviation are usually due to small vessel disease.
T	F	Cortical strokes are most often associated with cardiac (atrial fibrillation, valve or arch) or internal carotid sources.
T	F	Symptoms such as pure motor hemiparesis, pure hemisensory loss or isolated dysarthria are more often caused by subcortical lesions from small vessel disease.
T	F	Typical risk factors for small vessel infarcts are diabetes, hypertension, hyperlipidemia, and smoking.
T	F	The most common risk factor for stroke in young people is cardiac arrhythmia or cardioembolism.
T	F	A 75 year old patient presents 6 hours after the acute onset of isolated left hemisensory loss. He is found to have an A1C of 12, LDL of 194 and an average blood pressure of 165/95. CT brain shows no hemorrhage. A carotid ultrasound shows a right carotid stenosis of >70. Is there strong evidence to perform a carotid endarterectomy in this case?
T	F	The patient in question #3 had this ischemic stroke while on aspirin. Is it there strong evidence to switch to Plavix? What about Coumadin?
T	F	A patient with an acute stroke (no hemorrhage) presents with a blood pressure of 190/110. This should be treated with IV anti-hypertensives (e.g. enalapril or labetalol).
T	F	A 65 y/o man presents with isolated dense right face/arm/leg hemiparesis. His CTH shows a left basal ganglia hemorrhage involving the internal capsule. Permissive hypertension should be followed for the first 24 hours.
T	F	The patient above should be discharged on an aspirin and a statin.
T	F	Normal Saline IV fluids should be administered to all patients presenting with acute ischemic stroke unless there is a clear contraindication.
T	F	Ischemic stroke in a young person (< 45 - 55 y/o) is primarily due to DM, HTN, or hyperlipidemia. Strokes are rarely due to cardioembolism, arterial dissection, hyper-coaguable states (anticardiolipin antibody), drug use or oral contraceptives.
T	F	In secondary stroke prevention studies in patients with stroke risk factors, (DM, HTN. Hyperlipidemia), the use of antiplatelet agents, statins, and antihypertensive medications is supported.

Medicine Resident Teaching Module C General Neurology		
T	F	Ischemic stroke in a young person (< 50) without traditional CAD risk factors is usually due to the following causes in order: cardioembolism, cardiolipin antibodies, dissection, or oral contraceptives.
T	F	Vascular Cognitive Impairment is less common than Alzheimer's (about 10%-20%). MRI often shows large vessel and small vessel disease. Cognition may improve with control of vascular risk factors and cholinesterase agents.
T	F	Pseudotumor cerebri is associated with anorexia, and opening pressure < 25 on LP. MRI usually shows enlarged ventricles.
T	F	Normal Pressure Hydrocephalus has a triad of gait disturbance, confusion, and urinary incontinence. MRI shows large ventricles out of proportion to cortical atrophy. Gait is more responsive than mental status to shunting.
T	F	Essential Tremor is often autosomal dominant, and more common than Parkinson Disease, 5% versus 1%. Action tremor is present in the hands, legs, or head.
T	F	Herpes Encephalitis is the most common sporadic encephalitis. PCR is sensitive and specific in > 90% if obtained from CSF within 1-week. MRI often shows high signal and edema in one or both temporal regions.
T	F	West Nile is the most common seasonal encephalitis, mortality = 10%. It can present with flaccid weakness. MRI shows signal changes in multiple regions, including the thalamus and basal ganglia.
T	F	Pure hemiparesis is usually due to a small vessel disease in the thalamus. Pure hemisensory loss is usually due to small vessel infarct in the internal capsule.
T	F	Endocarditis should be treated with anticoagulation and antibiotics to prevent septic emboli.
T	F	The motor exam is usually normal in Alzheimer's Disease until later in the course of the disease. Olfaction (CN I) is often impaired.
T	F	Coma due to cardiac arrest has a favorable prognosis compared with coma due to head trauma.

Medicine Resident Teaching Module	**D**	**General Neurology**
T	F	Transverse myelitis is most commonly due to enterovirus (recent epidemic, D68), varicella, HSV, or West Nile virus.
T	F	Neuromyelitis Optica is an autoimmune disorder which affects primarily the spinal cord and optic nerves. It is associated with aquaporin antibody in 40-70% of cases. The MRI of the brain is often normal in contrast to MS.
T	F	Transverse myelitis usually affects the thoracic spinal cord, while Neuromyelitis optica (NMO) usually affects the cervical cord.
T	F	Neuropsychiatric SLE (NPSLE) is usually associated with headaches, memory/cognitive impairment, or mood disorder. Seizures occur in 10%, stroke in 8%, and psychosis in < 10%).
T	F	In NPSLE, anti-ribosomal P antibodies are associated with risk for psychosis.
T	F	In NPSLE, anti-cardiolipin antibodies and Lupus anticoagulant (+DRVVT) are the primary cause of stroke. Other causes include Leibman Sachs endocarditis and.
T	F	Temporal arteritis is best diagnosed with very high ESR and CRP. Jaw claudication is common.
T	F	Pituitary adenomas are most commonly growth hormone secreting rather than prolactin secreting. Dopamine agonists are not usually effective in prolactin secreting adenomas.