Neurology

Clerkship

Syllabus

Clerkship Website

http://courses.washington.edu/neural/index.html

Neurology Clerkship

Identifying data

Name: _____

Dates of clerkship: _____/_____/_____ to _____/_____/_____

Location: _____

_____

_____

_____

Goals and Objectives

Please refer to the neurology clerkship website for details.

Core goals and objectives:

1. Learn the neurological exam.
2. Learn localization in neurology.
3. Understand a bioethical issue in neurology.
4. Have clinical exposure to several neurological diseases.
5. Receive mid-rotation feedback

Desired goals and objectives:

1. Formulate a differential diagnosis for patients with neurological symptoms.
2. Know when to order and how to interpret common tests used in diagnosing neurological disease.
3. Understand the management principles for common neurological diseases.
4. (Ideally) Perform a lumbar puncture.

Names and Numbers

Attending	_____	#	_____	
Attending	_____	#	_____	
Chief resident	_____	#	_____	
Junior resident	_____	#	_____	
Resident	_____	#	_____	
Intern	_____	#	_____	
Intern	_____	#	_____	
Student	_____	#	_____	
Other	1._____	#	6._____	#
	2._____	#	7._____	#
	3._____	#	8._____	#
	4._____	#	9._____	#
	5._____	#	10._____	#

Learning Neurology

Neurology can be taught by emphasizing localization, symptoms, or specific diseases. Each has its pros and cons and so this course will try to combine all three approaches.

Resources include general medical and neurology textbooks, the recommended text for this course, didactic lectures, attendings/residents/students, and web based information (referenced).

Localization of signs and symptoms

Try and think about neurological problems from an anatomical point-of-view. Split the nervous system up into parts and ask yourself, "Could the patient's symptoms be produced by this part of the nervous system"? You will usually find that this approach can easily eliminate a long differential list. Keep in mind that there are exceptions to every rule in neurology.

Anatomy	Function
Brain	Motor and sensory Language Visual acuity Memory Behavior Consciousness Seizures Movement disorders Often unilateral
Brain stem	Motor and sensory Cranial nerves: diplopia, vertigo, hearing, tongue, swallow Consciousness Cerebellar Movement disorders Often unilateral
Spinal cord	Motor and sensory Bilateral symptoms common Bowel, bladder and erectile function
Motor neuron	Motor only Proximal and distal Slowly progressive Asymmetric bilateral Fasciculations
Peripheral nerve	Motor and/or sensory (predominates) Cranial nerves: peripheral course Usually distal in stocking/glove distribution
Neuromuscular junction	Motor only Proximal and distal Fatigable weakness and eye involvement in MG
Muscle	Motor only Usually proximal and symmetric

Procedures and specific diseases

Procedures

- ☐ Lumbar puncture http://www.nejm.org/doi/full/10.1056/NEJMvcm054952
- ☐ EEG/evoked potentials
- ☐ EMG/NCV
- ☐ MRI
  http://spinwarp.ucsd.edu/NeuroWeb/Text/br-phys.html
- ☐ CT

General web sites to find everything below. Other sites listed under specific disease.

http://www.emedicine.com/neuro/ **(Almost any topic is available. Excellent site)**
http://www.uptodate.com/
http://www.mayoclinic.com/index.cfm

Movement disorders

- ☐ Tremor
- ☐ Parkinson's disease

Epilepsy/seizure

- ☐ Partial onset
- ☐ Generalized onset
- ☐ Status epilepticus

Disorders of vision

- ☐ Patterns of visual loss
- ☐ Afferent pupillary defect and Horner's syndrome
  http://cim.ucdavis.edu/EyeRelease/Interface/TopFrame.htm (Mozilla only)

Neuromuscular disease

http://neuromuscular.wustl.edu/

- ☐ Motor neuron disease/ALS

- ☐ Peripheral nerve
  Guillain-Barre syndrome, Carpal tunnel syndrome, Bell's palsy, Length dependent neuropathy
- ☐ Myasthenia gravis
- ☐ Myopathy
  Polymyositis, Muscular dystrophy

Dizziness

- ☐ Vertigo
- ☐ Presyncope
- ☐ Dysequilibrium

Cerebrovascular disease

- ☐ Stroke
  Embolic, Lacunar, Transient ischemic attack, Hemorrhagic

Multiple sclerosis

- ☐ Relapsing-remitting
- ☐ Primary progressive

Head trauma

- ☐ Concussion and post-concussive syndrome
- ☐ Subdural and epidural hematoma

Altered consciousness

- ☐ Delirium
- ☐ Coma
- ☐ Brain death

Dementia

- ☐ Alzheimer's

Aphasia
- ☐ Fluent (Wernicke's)
- ☐ Non-fluent (Broca's)

Headaches
- ☐ Migraine
- ☐ Tension
- ☐ Cluster
- ☐ Subarachnoid hemorrhage
- ☐ Giant cell arteritis

Brain tumors
- ☐ Primary
- ☐ Metastatic

Spinal disorders
- ☐ Radiculopathy
- ☐ Cervical stenosis
- ☐ Lumbar stenosis
- ☐ Epidural abscess
- ☐ Cauda equina syndrome
- ☐ B12 subacute combined degeneration

Infections
- ☐ Encephalitis
- ☐ Meningitis
- ☐ HIV related

Alcohol related disorders
- ☐ Delirium tremens
- ☐ Wernicke's encephalopathy
- ☐ Korsakoff's dementia

Sleep Medicine

- ☐ Sleep apnea
- ☐ Restless leg syndrome
- ☐ Narcolepsy

Child neurology
- ☐ Childhood specific epilepsy
- ☐ Enlarging head circumference
- ☐ Cerebral palsy

Psychiatry

- ☐ Depression
- ☐ Bipolar disorder
- ☐ Conversion disorder

Anatomy web sites

http://www.drawittoknowit.com/index.html http://www9.biostr.washington.edu/da.html
http://www.rad.washington.edu/atlas/ (Great peripheral nerve and muscle site)

Physical exam web sites

medlib.med.utah.edu/neurologicexam/html/home_exam.html (Video of entire exam)

Quiz yourself

http://umed.med.utah.edu/neuronet/ (Reasonable quiz questions)

Radiology web site

http://eradiology.bidmc.harvard.edu/

Patient log

Please record each patient encounter according to the guidelines at http://courses.washington.edu/neural/patientlog.html

1.

10.

20.

30.

40.

50.

60.

70.

80.

90.

100.

Appendix 1: Neurological Examination

A. Mental and communication status
   1. Education level
   2. Level of consciousness

      Alert Delirium Obtunded Stupor Coma

   3. Mood and psychomotor activity
   4. Orientation (time, place, person, body parts, left-right, awareness of illness)
   5. Calculation, spelling
   6. Speech function (fluency, comprehension, repetition, naming, reading, writing)
   7. Memory (immediate, short term, long term)
   8. Ability to follow complex commands
   9. Mental status exam See appendix 2

B. Cranial nerve functions
   1. Olfactory (aromatic smell)
   2. Optic
      a. Acuity (Snellen card, corrected?)
         Example 1: acuity (near, corrected) 20/20 OU
         Notation means normal vision in both eyes
         Example 2: acuity (near, uncorrected) 20/100 OD, 20/50 -2 OS
         In left eye, two of six numbers were missed on the 20/50 line

      b. Fundi (vessels, disc border, cup/disc ratio)
      c. Visual fields

   3, 4, 6. Oculomotor, Trochlear, Abducens
      a. Pupillary reaction (light, accommodation, afferent pupillary defect)
         Example 1: PERRLA = Pupils Equal Round Reactive to Light and Accommodation
         Example 2: The right pupil is large with no response to direct or consensual light but will accommodate.
         This example is consistent with a tonic (Adie's) pupil.

      b. Eye movements
         Example 1: EOMI = ExtraOcular Movements Intact
         Example 2: No abduction of the left eye with gaze left.
         This example is consistent with left abducens palsy.

      c. Nystagmus
         Example: A right beating nystagmus is seen in all directions of gaze.
         The direction of nystagmus is defined by its fast component.

   5. Trigeminal
      a. Muscles of mastication
      b. Sensation of face (test all 3 divisions) and cornea
      c. Sensation of mucous membranes and noxious smell
      d. Jaw jerk
   7. Facial
      a. Muscles of facial expression, palpebral fissures
      b. Taste anterior 2/3
   8. Acoustic
      a. Cochlear (finger rub, tuning fork)
      b. Vestibular (nystagmus, past pointing)

9, 10. Glossopharyngeal, Vagus
   a. Palate rise to phonation (say "ah") and gag
   b. Voice and articulation
   c. Taste posterior 1/3
11. Spinal accessory
   a. Sternocleidomastoid
   b. Upper trapezius
12. Hypoglossal
   a. Tongue movement
   b. Bulk

C. Motor function
1. Strength
   a. Direct testing

Grades: 0 No muscle contraction
1 Trace visual or palpable movement
2 Movement with gravity eliminated
3 Movement against gravity but not resistance
4 Movement against resistance but can be overcome
5 Normal

Example 1: strength 5/5 all muscles
Example 2:

	delt	bic	tric	w flex	w ext	grip	interosseous
R	**5**	**5**	**5**	**5**	**5**	**5**	**5**
L	**3**	**4+**	**4**	**4**	**3**	**3**	**1**

	h flex	h ext	quad	ham	f dorsiflex	f plantarflex
R	**4+**	**5**	**5**	**5**	**5**	**5**
L	**2**	**4**	**4**	**4**	**2**	**4**

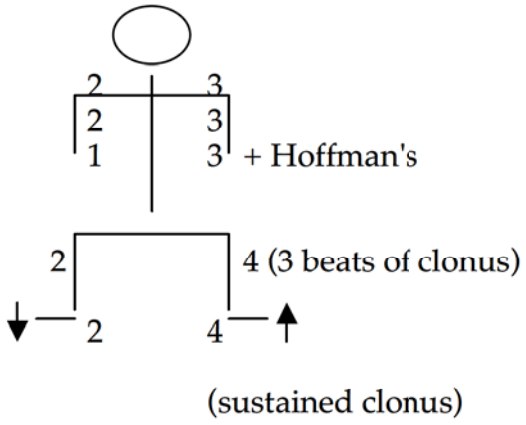
   b. Functional testing
      i. Walking on toes and heels
      ii. Deep knee bend
      iii. Hopping on one foot
      iv. Arm drift
2. Tone
   a. Spasticity
   b. Rigidity (lead-pipe, cogwheel)
   c. Hypotonic or flaccid
3. Bulk

D. Reflexes
1. Deep tendon

Grades: 0 No response
Tr Reinforcement required
1 Diminished
2 Normal, average
3 Brisker than normal
4 Clonus
Use "+ or -" to indicate smaller differences

2. Abdominal
3. Babinski
4. Hoffman
5. Frontal lobe (glabellar, snout, palmomental)
6. Other (cremasteric, bulbocavernosis)

Example:



(sustained clonus)

E. Sensory function (use sensory maps and draw pictures as needed)
   1. Primary (thalamic) sensation
      a. Light touch
      b. Pain
      c. Temperature
      d. Vibration
      e. Proprioception
   2. Discriminative (cortical) sensation
      a. Stereognosis
      b. Graphesthesia
      c. Two-point discrimination
      d. Point localization
      e. Extinction with double simultaneous stimulation (DSS)
   3. Romberg - evaluation of balance with eyes closed and feet together reflects proprioceptive and touch function in the legs and feet

      Example 1: Light touch, pinprick, and vibration are reduced distally in the hands and feet consistent with a stocking/glove distribution of sensory loss.

      This example would be consistent with peripheral neuropathy.

      Example 2: All left side primary sensory modalities are mildly reduced, and there is extinction on DSS.

      This example would be consistent with right parietal lobe dysfunction.

F. Coordination, station, and gait
   1. Balance on one foot with eyes open
   2. Walking
      a. Wide or narrow base
      b. Normal or reduced arm swing
      c. Tandem gait (heel-to-toe)
      d. Ataxia
   3. Rapid alternating movements (RAM)
   4. Finger-nose-finger (FNF) and heel-knee-shin (HKS) tests

      Example 1: The patient can't stand still with eyes open or closed, has markedly poor balance on one foot, a wide based ataxic gait, can't tandem walk, slow RAM, and dysmetria on FNF and HKS.

      This example would be consistent with cerebellar dysfunction.

      Example 2: The patient has a positive Romberg, mildly poor balance on one foot, slightly wide based non-ataxic gait, can take five steps in tandem, normal RAM, and no dysmetria on FNF and HKS.

      This example would be consistent with peripheral neuropathy.

G. Abnormal movements
    1. Tremor (note predominant component)
        a. Rest (Parkinsonian)
        b. Postural
        c. Kinetic (action)
    2. Involuntary movements (dystonia, chorea, tic)
    3. Bradykinesia

H. Meningeal and mechanical signs
    1. Neck stiffness
    2. Brudzinski's sign
    3. Kernig's sign
    4. Straight leg raise
    5. Pressure tenderness of bone, muscle, and nerves

I. Vascular status
    1. Auscultation of head and neck
    2. Auscultation of heart
    3. Palpate extremity vessels

Appendix 2: Montreal Cognitive Assessment (MoCA)
Tests in multiple languages can be found at: http://www.mocatest.org/