



## **NEURORADIOLOGY**

*James A. Haley V.A. Hospital*

**Rotation Director:** Chris Vaillancourt, M.D.

**General Goals:** On this rotation, the resident will be exposed to computed tomography and magnetic resonance neuroimaging examinations, formulate appropriate differential diagnoses and recommendations for various nervous system pathologies, and also perform basic interventional procedures. Attendance at weekly clinical neurosurgery, neurology, and Otolaryngology conferences is encouraged. Here active imaging cases are discussed in terms of patient clinical presentation, imaging findings, treatment and outcome.

**Daily Work:** During the VA "Neuroradiology" rotations, the resident is responsible for determining patient history, assessing the relevance of the imaging exam and its relationship to prior imaging, reviewing the study and coming to an independent assessment of the findings. All cases are then reviewed with the attending radiologist. The resident is then responsible for formulating and performing the study dictation which is subsequently reviewed and corrected by the attending. For procedures, the resident is responsible for patient history review and formulation of a procedure plan. All procedures are performed under the guidance and direct supervision of the attending radiologist.

### **Suggested Reading:**

- Neuroradiology: the requisites; Robert I. Grossman, David M. Yousem; 2<sup>nd</sup> edition.
- Fundamentals of Diagnostic Imaging; William E. Brant, Clyde A. Helms; 3<sup>rd</sup> edition.
- Diagnostic Imaging. Brain; Anne G. Osborn, Karen L. Salzman, Susan Blaser; 1<sup>st</sup> edition.

### **Educational Goals and Objectives:**

#### **Rotation 1 (First Year Radiology Residents):**

##### Patient Care:

- Develop an understanding of the strengths/weaknesses of diagnostic tests for achieving a neuroradiologic diagnosis (CT, MRI, Angiography, Myelography) relative to other diagnostic tests for achieving a diagnosis
- Become familiar with the risks/contraindications of neuroradiologic procedures
- Become familiar with the contrast agents doses/risks/contraindications used in neuroradiologic imaging. Become familiar with the protocol for treatment of contrast reactions
- Demonstrate proper technique and planning in performing lumbar punctures and myelography

#### Medical Knowledge:

- Become familiar with Neuroanatomy (brain/spine/vascular).
- Develop an understanding of the MRI features of neoplastic/inflammatory/degenerative/metabolic/congenital diseases of the CNS.
- Be able to develop an image based differential diagnosis for brain and spine. Understand principles of CT/MR Imaging (Physics of image acquisition)
- Understand MRI sequence design-strengths/weaknesses for achieving an expected diagnosis.

#### Interpersonal Communication Skills:

- Consultation with clinicians who come to review imaging studies.
- Verbalization of observation and interpretation leading to a useful differential diagnosis.
- Organize cases and present a lucid description of patient's clinical problem as well as past medical history and surgical history prior to image interpretation.
- Dictate cases in an organized, succinct and informative fashion.

#### Practice Based Learning and Improvement:

- Review all cases and present findings with differential diagnosis to the attending. The attending interprets and modifies or corrects preliminary interpretation.
- Review attendings' Resident Evaluation form. Discuss comments when pertinent.
- Learn to access and incorporate Pub Med and Google Searches in interpretive armamentarium.
- Attend clinical conferences in Neurology, Neurosurgery, and Otolaryngology

#### Professionalism:

- Demonstrate respect for all patients
- Serve as role model from medical students and residents in other specialties
- Respect patient confidentiality
- Present oneself as professional in appearance and communication
- Demonstrate a responsible work ethic with regard to work assignments

#### Systems-based Practice:

- Attend clinical conferences in Neurosurgery, Neurology, and Otolaryngology
- Gain an understanding of the integration of imaging findings with clinical findings in obtaining a focused differential diagnosis
- Gain an understanding of the relative costs and benefits of MRI, CT, myelography and angiography
- Demonstrate knowledge of ACR appropriateness criteria through discussion with attending Staff and case presentation at Imaging Conference

### **Rotation 2 (Third Year Radiology Residents):**

#### Patient Care:

- Demonstrate an understanding of the strengths/weaknesses of diagnostic tests for achieving a neuroradiologic diagnosis (CT, MRI, Angiography, Myelography) relative to other diagnostic tests for achieving a diagnosis
- Obtain informed consent, explaining to patients the risks/contraindications of neuroradiologic procedures
- Demonstrate knowledge of contrast agents doses/risks/contraindications used in neuroradiologic imaging
- Appropriately treat contrast reactions.
- Demonstrate proper technique and planning in performing lumbar puncture and myelography and angiography
- Produce an appropriate differential diagnosis based upon imaging findings

Medical Knowledge:

- Demonstrate knowledge of neuroanatomy (brain/spine/vascular)
- Understand the MRI features of neoplastic/inflammatory/ degenerative/metabolic/congenital diseases of the CNS
- Understand principles of CT/MR Imaging (Physics of image acquisition)
- Understand MRI sequence design-strengths/weaknesses for achieving an expected diagnosis

Interpersonal Communication Skills:

- Consultation with clinicians who come to review imaging studies
- Verbalization of observation and interpretation leading to a useful differential diagnosis
- Organize cases and present a lucid description of patient's clinical problem as well as past medical history and surgical history prior to image interpretation
- Dictate cases in an organized, succinct and informative fashion

Practice Based Learning and Improvement:

- Review all cases and present findings with differential diagnosis to the attending. The attending interprets and modifies or corrects preliminary interpretation.
- Review attendings' Resident Evaluation form. Discuss comments when pertinent.
- Learn to access and incorporate Pub Med and Google Searches in interpretive armamentarium.
- Attend Clinical Conferences in Otolaryngology.

Professionalism:

- Demonstrate respect for all patients
- Serve as role model for junior residents
- Respect patient confidentiality
- Present oneself as professional in appearance and communication
- Demonstrate a responsible work ethic with regard to work assignments

Systems-Based Practice:

- Attend clinical conferences in Otolaryngology.
- Gain an understanding of the relative costs and benefits of MRI, CT, myelography and angiography.
- Demonstrate knowledge of ACR appropriateness criteria through discussion with attending staff and case presentation conferences

**Mechanism of Evaluation:** Medical knowledge in neuroradiology will be assessed by the ACR in-service examination. In addition, after the completion of each rotation, a global evaluation form will be completed by the neuroradiology faculty.