

University of Kentucky Department of Neurology

NEUROIMAGING

Introduction

The various tools with which to image the neurological system are valuable in our effort to fully evaluate our patient's neurological disorders. It is imperative for the neurologist to know the technical aspects of these studies, to be able to order these tests appropriately, to be able to interpret the results once obtained, and to adequately describe the results to his patient. We believe that the neurologist should be so well trained that he can give a very accurate interpretation of these various imaging results.

I. PATIENT CARE

1. Improve understanding of when to appropriately order various neuroimaging studies.
2. Improve understanding of the technical aspects of performing various neuroimaging studies in order to be better able to describe these to patients as well as to help best determine in some instances the most appropriate test for a particular patient.
3. Improve understanding of the indications for various modes of imaging and use of complimentary imaging modalities.
4. Improve understanding of the limitations of various imaging modalities.
5. Improve understanding and utility of various interventional neuroradiology procedures and their indications.
6. Expand knowledge base of potential side effects and complications of various imaging procedures.

II. MEDICAL KNOWLEDGE

1. Demonstrate improved fund of knowledge regarding the technical aspects of MRI, CT, angiography, PET scanning and vascular ultrasound.
2. Improve understanding of neuroanatomy.
3. Improve ability to accurately interpret CT and MRI imaging of basic disease entities such as stroke, tumors, hemorrhage, abscess, gray and white matter disease, demyelinating disease and structural disease of the spine.
4. Increase basic knowledge of MR spectroscopy and PET scanning.
5. Increase basic knowledge of vascular ultrasound and basic interpretation principles of vascular ultrasound.
6. Improve ability to generate a differential diagnosis based upon imaging findings.

III. PRACTICE-BASED LEARNING AND IMPROVEMENT

1. Identify and acknowledge gaps in personal knowledge and skills in the use of neuroimaging.

2. Develop and implement strategies for filling in gaps in knowledge and skills.
3. Use knowledge gained on this rotation to improve your clinical use of diagnostic testing in the hospital and in the clinic.

IV. INTERPERSONAL SKILLS AND COMMUNICATION

1. Communicate effectively with physician colleagues in radiology as well technicians performing the studies.
2. Communicate effectively with all ancillary care personnel involved in the care of the patient.
3. Present patient information concisely and clearly, verbally and in writing.
4. Teach colleagues and medical students effectively.

V. PROFESSIONALISM

1. Demonstrate respect, compassion and integrity when dealing with patients and families.
2. Demonstrate sensitivity and respect for patients' age, culture, race, gender and religious beliefs.
3. Demonstrate a commitment to ethical principles of providing or withholding care, patient confidentiality and informed consent, and business practices.
4. Demonstrate a commitment to carrying out professional duties including punctuality, reliability, chart maintenance and independent learning and professional development.
5. Demonstrate professional respects for superiors, colleagues, students and all members of the health care team.

VI. SYSTEMS-BASED PRACTICE

1. Understand the impact and use of high cost imaging modalities on patient care as well as the burden of this expenditure in the global setting of our health care system.
2. Collaborate with other members of the health care team to assure comprehensive patient care.
3. Use evidence-based, cost-conscious strategies in the use of neuroimaging.
4. Understand the long-term consequences of patient care in relation to the individual's socioeconomic status.

Duties

1. The house officer shall gain exposure to CT scanning technology and interpretation. This will be focused on imaging of the brain but should include some exposure to spinal CT scans and CT myelography, and CT angiography. By the end of the rotation, the house officer should have a basic competence in interpreting CT scan images of stroke, ICH, SAH, subdural and epidural hemorrhages, assessment of cerebral atrophy, and neoplastic disease.

2. The house officer will gain exposure to the technology and interpretation of MRI scanning. This will include scanning of the entire spine, brain, plexuses, and radicular components. By the end of this rotation, the resident should have a basic competence in interpretation of MR images of stroke, neoplastic and demyelinating disease. This ability should be further refined during the second neuroimaging block.
3. The house officer will have exposure to cerebral angiography. This should include scrubbing for at least one procedure, attending several procedures, and studying films with the fellows and faculty members to gain expertise in interpretation. The house officer should also have exposure to the interventional aspect of this procedure.
4. The house officer should have exposure to MR spectroscopy and to PET scanning. These procedures are still considered in some arenas research tools, but they will prove to be a valuable tool in the span of diagnostic tests.
5. The house officer will attend all faculty interpretation sessions in these areas.
6. The house officer will undertake an extensive review of neuroanatomy during this rotation.