University of Minnesota Lab Medicine and Pathology

Neuropathology Rotation

**Location:** C514 Mayo
**Duration:** One month; additional training available as elective
**Rotation Director:** H. Brent Clark, MD, PhD (612-625-7636)
**Other Faculty:** W. Robert Bell, MD; Margaret Flanagan, MD

**General Description:**
The major purpose of the neuropathology rotation is to impart in the residents an ease and working familiarity with the gross and microscopic anatomy of the nervous system, and to have them acquire elementary dissection and diagnostic skills using both autopsy and surgical material. Although the residents' role in the rotation is not primarily to provide a service function to the Division, residents will be expected to take part in gross dissection and blocking of microscopic sections on autopsy brains. A combination of self- and group-directed learning coupled with didactic and Socratic teaching conferences allows the residents to concentrate primarily on educational goals rather than service-related concerns.

**Goals and Objectives:**
Upon completion of this rotation, the resident will gain:

1. Practical knowledge of gross and microscopic examination of the nervous system at autopsy.
2. Familiarity with the practice of surgical neuropathology.
3. Increased facility in communicating neuropathological knowledge to practicing physicians, peers and students.

The learning objectives below reference the corresponding ACGME core competencies: Patient Care (PC), Medical Knowledge (MK), Professionalism (Prof), Communication Skills (CS), Practice Based Learning and Improvement (PBLI), and Systems-Based Practice (SBP).

The resident should be able to do the following:

1. Develop a systematic approach to the pathological analysis of the nervous system, including gross examination and dissection with selection of appropriate sections for microscopic examination and utilization of appropriate histological stains. (PC, MK)
2. Be able to describe the gross and microscopic anatomy and pathology of the nervous system with appropriate terminology and concision. (PC, MK, CS)
3. Be able to interpret neuroimaging studies in light of anatomic and pathological implications. (PC, MK, CS, SBP)
4. Be able to recognize and diagnose the basic neoplastic processes that affect the nervous system. This includes understanding the clinical settings in which these tumors arise and the prognostic implications of the diagnoses. (PC, MK, SBP, CS)
5. Become familiar with the interpretation and reporting of intraoperative diagnostic techniques, e.g., frozen sections, touch preparations and cytological smear preparations, for lesions of the nervous system. (PC, MK, CS, SBP, Prof)
6. Demonstrate understanding of basic neurodegenerative diseases, CNS vascular disease, infectious diseases of the nervous system, and demyelinating diseases. (PC, MK)
7. Develop facility in conveying neuropathological findings, features and concepts to clinical colleagues, fellow residents and students. (PC, MK, CS, Prof, PBLI, SBP)

**Assigned Reading:**


**Optional Reading/Resources:**


**Web-links for Neuromuscular Pathology**

http://missinglink.ucsf.edu/lm/ids_104_musclenerve_path/student_musclenerve/normal2.html

http://www.pathology.vcu.edu/WirSelfInst/muscle.html

**Web-link for Virtual Microscopy Teaching-slide Set**

- Website URL: [https://images.pathology.umn.edu/](https://images.pathology.umn.edu/)
- Username: neuroset
- Password: Charcot&Wilbrand

**Additional Educational Websites:**

urmc.rochester.edu/libraries/courses/neuroslides

neuropathology-web.org

Virtualpathology.leeds.ac.uk/teaching/collections/neuro

http://www.ouhsc.edu/pathologyJTY/NeuroTest/Default.htm

**Call Duties:** There are no on-call duties on this rotation.

**During the rotation, the trainee is expected to join the following conferences:**

Monday Neuropathology Conference: A weekly Socratic session with attending neuropathologist to review neuropathology teaching specimens. 11 AM Monday, Neuropath office)

Neuro-Oncology Conference: A weekly review of patients seen in the Neuro-Oncology clinic at UMMC. Selected cases have pathology shown. This is primarily a working conference but it is a good role model for physician-pathologist interaction. Presentation of pathology by the resident may be
done on selected cases at the attending neuropathologist's discretion. (1:00 PM Monday 1-280 UMMC Hospital)

UMMC Clinical Neurosciences Joint Conference: A Neuroradiology-based weekly review of interesting cases in both Neurosurgery and Neurology. Pathology is presented in cases where it is pertinent. (7:30 AM Tuesday, 12-109 PWB)

UMMC Brain Cutting Conference: A weekly brain dissection session at UMMC; residents participate in dissecting autopsy brains and submitting blocks for microscopic sections; followed by a review of the cases with the residents and medical students on the UMMC Neurology Service in which the residents on the NP rotation present the cases. (8:45 AM Tuesday, C145 Mayo)

HCMC Brain Cutting Conference: A semimonthly brain dissection session at HCMC/Hennepin County Medical Examiner's Office which exposes the residents to forensic neuropathology. Residents may assist in block selection for microscopy. (2nd and 4th Wed. of Month at 9:30 AM, HCME office 5th St. and Chicago Ave., Mpls, MN)

Microscopic Neuropathology Conference: A weekly Socratic session to review microscopic neuropathology. A teaching set of microscopic examples of different neuropathological processes is the basis of the conference. Often these slides are supplemented by interesting recent case material. Unknown slides are put out for previewing prior to several of these conferences. (Friday 9 AM, C458 Mayo)

**Other Requirements:**

**Overview of Daily Duties and Responsibilities:**

1. Participate with the attending neuropathologist in the two weekly conferences at UMMC on gross and microscopic neuropathology for the residents in pathology, neurology and neurosurgery.

2. Assist the attending neuropathologist at the brain-cutting conferences held at UMMC and HCME office. These activities include gross dissection and description of autopsy brains, blocking tissues for microscopy, photography of specimens.

3. Attendance at sign-out of neurosurgical specimens with the attending neuropathologist. The resident will be responsible for formulating the written report which will be finalized by the attending neuropathologist.

4. Participate with the attending neuropathologist in all frozen sections on neurosurgical material.

5. Review all neurosurgical consultation cases with the attending neuropathologist. The resident will be responsible for formulating the written report at the discretion of the attending neuropathologist.

6. Fulfill explicit requests of the attending neuropathologist to review cases of special neuropathological interest from the autopsy, surgical or consult services.

**Assessment criteria and methods:**

The residents will be expected to perform autopsy brain dissections and descriptions in a competent manner such that appropriate materials are submitted for microscopic examination and an accurate diagnosis can be rendered by the attending neuropathologist. They also will be expected to interpret and write reports on neurosurgical pathology specimens.
The focus of this rotation is not on providing a service function for the Division of Neuropathology. The major goal of the rotation is to have the residents gain familiarity with neuropathological problems and to develop the necessary tools to perform a competent postmortem examination of the central nervous system and interpret neurosurgical specimens. Residents who put forth an honest effort to develop those skills will be evaluated favorably. **Absences from required functions are to be explained in advance with notification of the attending neuropathologist.** Residents who fail to attend the required functions or who fail to progress in the development of neuropathological skills will be evaluated unfavorably.

Evaluation will be an ongoing process during the frequent interactions between the attending neuropathologist and the resident(s) on the rotation. Perceived deficiencies will be pointed out to the rotating resident(s) as they occur. Formal didactic testing will not be done.

Resident performance on this rotation will be assessed by:

- Formative feedback provided by attending physician(s) (see above)
- Performance evaluation completed by attending physician(s) at the end of the rotation