

Neuropathology Rotation - Objectives

Patient Care

A. Procedural skills

1. Objectives

a. *Neuromuscular Biopsy Service*

1. Become well acquainted with the first steps in the technical preparation of all neuromuscular biopsy material, including:
 - i. proper freezing techniques for muscle biopsies
 - ii. proper fixation techniques for muscle and nerve biopsies
 - iii. proper gross sectioning of nerve and muscle biopsies
2. Be able to communicate effectively with referring pathologists and clinicians about the proper handling and shipping of neuromuscular biopsies performed at off-campus sites.
3. Become familiar with the basic details of enzyme histochemical and immunohistochemical processing, in order to effectively troubleshoot technical problems.

b. *Neurosurgical Biopsy Service*

1. Be able to communicate effectively with referring neurosurgeons about the proper sampling and submission of neurosurgical biopsies with specific reference to differential diagnostic considerations.
2. Become acquainted with the proper preparation of intraoperative frozen sections and smears of nervous system tissue, including tissue sampling, freezing and staining techniques, and technical limitations of frozen sections and smears.
3. Know the appropriate elements for inclusion in describing and reporting of neurosurgical biopsies

c. *Hospital and Forensic Braincutting Service*

1. Become familiar with the gross dissection, photography, and histologic sampling of postmortem brain and spinal cord specimens.

d. *Consultation Service*

1. Be able to communicate effectively with referring physicians about the proper submission of consultation material, including supporting documentation and radiographs as appropriate.

2. Plan

- a. These skills we be taught by Neuropathology faculty, fellows, and laboratory staff. Specific duties of residents are as follows:
- b. *Neuromuscular Biopsy Service*
 1. Review paperwork on all biopsies received in lab for possible preliminary frozen section evaluation and/or any other special requirements. This should be immediately followed by a discussion of the case with the attending neuropathologist.
 2. Cut in gross specimens in a timely fashion. This should initially be done under the direct supervision of the attending neuropathologist, who will then make an assessment of when the resident can function independently.
 3. Perform electron microscopy (including photography) on diagnostic cases. In order to make efficient use of the EM laboratory, until proficiency is gained, each of these procedures should be done with the attending neuropathologist.
 4. Attend weekly Neuromuscular Pathology Conference.
- c. *Neurosurgical Biopsy Service*

1. Attend all intraoperative frozen sections during assigned rotation (including those that occur outside of normal office hours), assisting surgical pathology residents and assuming responsibility for performance of frozen sections and dictation of gross descriptions as necessary.
 2. Assist surgical pathology resident with histologic sampling for permanent sections and specimen description, as necessary.
 3. See that appropriate special studies (e.g., immunohistochemical stains) are ordered correctly and in a timely manner, and reviewed.
 4. Prepare photomicrographs of cases for weekly Neuro-Oncology Conference as directed.
 5. Attend weekly Neuro-Oncology Conference
- d. *Hospital Braincutting Service*
1. Review brain cutting case list, researching pertinent topics as needed.
 2. Attend weekly Hospital Braincutting Conference.
 3. Assist pathology residents responsible for autopsy case in documenting pertinent gross findings in photographs.
 4. Make written notes on braincutting forms for incorporation into autopsy report by resident and attending pathologist responsible for case.
 5. Assist residents in taking microscopic sections as necessary.
- e. *Forensic Braincutting Service*
1. Review case list, researching pertinent topics as needed
 2. Attend weekly Forensic Braincutting Conference.
 3. Document pertinent gross findings in photographs.
 4. Write or dictate gross descriptions and initial diagnostic impressions for preliminary report.
 5. Take microscopic sections as necessary.
 6. Correct transcriptions of preliminary reports in a timely manner, and forward to attending Neuropathologist for additions or corrections and signature prior to distribution to medical examiners.
- f. *Consultation Service*
1. Review submitted paperwork, clinical information, radiographs, slides, and any other material submitted on all consultation cases assigned by an attending neuropathologist.
 2. Review case preliminarily with attending neuropathologist who assigned case, and see that appropriate special studies (e.g., immunohistochemical stains) are ordered correctly and in a timely manner.
 3. Supervision/Assessment
 4. Resident performance will be assessed through direct observation by Neuropathology faculty, fellows, and office and laboratory staff, and by clinicians and others who interact with the Neuropathology Division.
 5. Some concepts may be tested through the written multiple choice examination that is administered at the end of the rotation.
 6. Input from Neuropathology faculty and staff regarding individual resident performance is solicited by the rotation director, and communicated to the resident through face-to-face verbal as well as formal written evaluations. The formal written evaluation that is completed at the end of the rotation becomes a part of the resident's permanent record.

B. Interpretive skills

1. Objectives

a. *Neuromuscular Biopsy Service*

1. Understand the clinical indications for preliminary frozen section evaluation of muscle and nerve biopsies.
2. Become proficient in the evaluation of muscle enzyme histochemical and immunohistochemical preparations, including assessment of specimen quality, and with emphasis on clinico-pathologic correlation.
3. Become proficient in the light microscopic evaluation of peripheral nerve biopsies in cryostat, paraffin, and plastic-embedded material, and teased fiber preparations.
4. Become familiar with the diagnostic indications for, and limitations of, ultrastructural evaluation of muscle and nerve biopsies, and develop proficiency in the performance of such studies.

b. *Neurosurgical Biopsy Service*

1. Understand the clinical indications for, and limitations of, preliminary frozen section evaluation (including the use of smear preparations) of nervous system tissues.
2. Become proficient in the light microscopic evaluation of neurosurgical biopsy preparations, with emphasis on clinico-pathologic correlation.
3. Become familiar with the diagnostic indications for, and limitations of, special histologic stains, immunohistochemical stains, and ultrastructural evaluation of neurosurgical biopsies, and become proficient in their interpretation.

c. *Hospital and Forensic Braincutting Services*

1. Become proficient in the gross and microscopic evaluation of brain and spinal cord specimens, with emphasis on clinico-pathologic and radiographic-pathologic correlation.
2. Become familiar with the diagnostic indications for, and limitations of, special histologic stains, immunohistochemical stains, and ultrastructural evaluation of CNS autopsy tissues, and become proficient in their interpretation.

d. *Consultation Service*

1. Become proficient in the light microscopic evaluation of submitted consultation material, with emphasis on clinico-pathologic correlation.
2. Become familiar with the diagnostic indications for, and limitations of, special histologic stains, immunohistochemical stains, and ultrastructural evaluation of consultation material, and become proficient in their interpretation.

2. Plan

a. *Neuromuscular Biopsy Service*

1. Independently review slides on all biopsies, including preliminary frozen sections.
2. At the discretion of the attending neuropathologist, verbally communicate the results of preliminary frozen section evaluations with relevant referring physicians.
3. Generate a written diagnosis and a draft narrative comment on all neuromuscular biopsies. This should be made available to the attending neuropathologist for review at the time the case is jointly reviewed.

b. *Neurosurgical Biopsy Service*

1. Review intraoperative frozen sections and smears with attending neuropathologist and discuss diagnostic considerations in light of clinical information and radiographic features.
 2. Independently review slides on all biopsies, including preliminary frozen sections.
 3. Generate a written diagnosis and a draft narrative comment on all neurosurgical biopsies. This should then be submitted to the attending neuropathologist for review and final editing and signing.
 4. Review permanent sections of biopsy cases with attending neuropathologist.
 5. At the discretion of the attending neuropathologist, verbally communicate the results of biopsy reviews to referring physicians.
- c. *Hospital Braincutting Service*
1. Review H&E-stained slides prepared in Neuropathology histology lab; order special stains as necessary, coordinating with Pathology resident and attending pathologist responsible for case.
 2. Review microscopic sections with attending Neuropathologist.
- d. *Forensic Braincutting Service*
1. Review H&E-stained slides prepared in Neuropathology histology lab; order special stains as necessary.
 2. Review microscopic sections with attending Neuropathologist, and write or dictate microscopic findings and interpretative comments as directed.
- e. *Consultation Service*
1. Generate a written diagnosis and a draft narrative comment on case. This should be made available to the attending neuropathologist for review at the time the case is jointly reviewed in final form.
 2. Review microscopic sections with attending Neuropathologist.
3. **Supervision/Assessment**
1. Resident performance will be assessed through direct observation by Neuropathology faculty, fellows, and office and laboratory staff, and by clinicians and others who interact with the Neuropathology Division.
 2. Performance will also be assessed by oral quizzes during regular signout, conference, and didactic activities.
 3. Some concepts may be tested through the written multiple choice examination that is administered at the end of the rotation.
 4. Input from Neuropathology faculty and staff regarding individual resident performance is solicited by the rotation director, and communicated to the resident through face-to-face verbal as well as formal written evaluations. The formal written evaluation that is completed at the end of the rotation becomes a part of the resident's permanent record.