ACCREDITATION

This program has been reviewed by the Residency Review Committee for Pathology of the Accreditation Council for Graduate Medical Education and is fully accredited by the ACGME (Program #315-48-21-083) through 2010. Accreditation was first obtained in 1992. It is administratively attached to the ACGME-accredited UT Southwestern Anatomic/Clinical Pathology training program (ACGME Program #300-48-11-345). UT Southwestern is ACGME Institution #800-48-00-441, which has been judged to meet the General Requirements of the ACGME for institutions.

GOALS AND OBJECTIVES OF THE PROGRAM

We have developed a detailed instructional plan that addresses the specific goals and objectives of the program. The objectives are designed to provide instruction in the 6 major competencies as defined by the ACGME, and to provide exposure to the types and quantities of cases as defined in the ACGME "Program Requirements for Graduate Medical Education in Neuropathology." The goals and objectives are provided to all faculty and fellows in Neuropathology, and the objectives for specific rotations are reviewed with the fellow at the beginning of each rotation.

Main goal of the program

Our educational philosophy is based upon the premise that the discipline of neuropathology is firmly rooted in a solid academic background, whether it is practiced in a traditional academic institution, a community/private practice setting, or a forensic setting. Consequently, the primary goal of our training program is to prepare candidates for an academically-oriented career that encompasses any combination of diagnosis, research, and teaching, and emphasizes the concept of lifelong learning. The program is structured to meet this goal through exposure of the fellow to 1) an abundance of diversified case material, 2) faculty members with a variety of clinical and research interests and capabilities and a commitment to medical teaching, who can serve as mentors and role models, 3) state of the art clinical and research laboratory support facilities, and 4) a graduated program of assigned responsibilities. By the completion of training, all Neuropathology fellows should be competent to practice at the level of a newly board certified practitioner in Neuropathology in all 6 of the core competency areas as defined by the ACGME.

Objectives of the fellowship program in the six core competencies

I. Patient Care

Fellows must demonstrate a satisfactory level of diagnostic competence and the ability to provide appropriate and effective consultation in the context of pathology services.

Fellows are expected to:

- Communicate effectively and demonstrate caring and respectful behaviors when interacting with patients and their families
- Gather essential and accurate information about the submitted specimens and patients
- Make informed diagnoses that incorporate patient information, pathological/clinical judgment, and up-to-date scientific evidence

- Make informed selections of diagnostic tests, counsel the clinician on the appropriateness of test selection, and take responsibility for the cost and ethical implications of the tests ordered
- Use information technology to support diagnostic decisions and patient and clinician education
- Demonstrate technical skills necessary to perform diagnostic and therapeutic services in an efficient and effective manner based upon the patient care objectives for the rotation
- Provide or suggest health care services aimed at preventing health problems or maintaining health
- Work with healthcare professionals, including those from other disciplines, to provide patient-focused care

II. Medical Knowledge

Fellows must demonstrate knowledge about established and evolving biomedical, clinical and cognate (e.g. epidemiological and social-behavioral) sciences and the application of this knowledge to patient care in pathology.

Fellows are expected to:

- Know and apply the basic and clinically supportive sciences that are appropriate to the practice of neuropathology
- Demonstrate an investigatory and analytic approach to clinical situations with proper selection of diagnostic testing

III. Practice Based Learning and Improvement

Fellows must be able to demonstrate the ability to investigate and evaluate their diagnostic and consultative practices, appraise and assimilate scientific evidence, and improve their patient care practices.

Fellows are expected to:

- Participate in the formulation and implementation of quality assurance monitors
- Locate, appraise, and assimilate evidence from scientific studies related to patient material in neuropathology cases
- Apply knowledge of study design and statistical methods to the appraisal of clinical studies and other information on diagnostic and therapeutic effectiveness, both in current medical literature and in practice
- Demonstrate awareness of the ways in which this pathology practice setting may differ from other practice settings
- Demonstrate the ability to utilize effectively library-based, web-based, and other educational sources
- Use information technology to manage information, access online medical information, and support their own education
- Facilitate the learning of students and other healthcare professionals

IV. Interpersonal and Communication Skills

Fellows must be able to demonstrate interpersonal and communication skills that result in effective exchange of information and teaming with other health care providers, patients, patients' families, technicians, secretaries, and students.

Fellows are expected to:

- Sustain ethically sound and appropriate professional relationships with colleagues, clinicians, laboratory personnel, administration, patients, and patients' families
- Be able to explain diagnoses, procedures, results to be expected, and costs associated with neuropathologic studies of autopsy and surgical specimens to another person in a manner that will create ethically sound relationships
- Promote constructive working relationships with colleagues, residents, students, and subordinates during the study of specific cases and ensure that results are obtained in a timely and cost-effective manner

V. Professionalism

Fellows must demonstrate a commitment to carrying out professional responsibilities, adherence to ethical principles, and sensitivity to diverse patient populations. It is recognized that neuropathologists interact only occasionally with patients and their families. More frequent interactions include those with colleagues in pathology, neurology, and neurosurgery, laboratory technicians, secretaries, other residents, and students.

Fellows are expected to:

- Carry out their duties in an altruistic, ethical, respectful, and timely manner; this includes demonstrating a commitment to ethical principles pertaining to confidentiality of patient information, informed consent, and business practices
- Demonstrate sensitivity and responsiveness to diversity of educational level, cultural background, age, gender, and disability status in patients, professional colleagues and laboratory personnel
- Adhere to guidelines and regulations set forth by regulatory and accrediting agencies
- Recognize and respond appropriately to deficiencies in peer performance
- Adopt practices that promote their own personal well-being, both physical and mental, so that they can better perform their professional duties

VI. Systems-Based Practice

Fellows must demonstrate an awareness of and responsiveness to the larger context and system of health care and the ability to call on system resources to provide pathology services that are of optimal value. In neuropathology, the fellow must be able to provide effective guidance to the clinicians directly responsible for making treatment decisions and calling on system resources. The resident must be aware of the consequences to the patient of the diagnosis and play an active role in assuring that the appropriate care is provided.

Fellows are expected to:

- Understand how their diagnostic opinions and other professional practices affect other healthcare professionals, the healthcare organization, and society, and how these elements of the system affect their own practice

- Know how types of medical practice and delivery systems differ from one another, including methods of controlling healthcare costs and allocating resources
- Practice cost-effective health care and resource allocation that does not compromise quality of care
- Advocate for quality patient care and assist clinicians in dealing with system complexities
- Know how to partner with healthcare managers and healthcare providers to assess, coordinate, and improve health care and know how these activities affect system performance

CLINICAL COMPONENT

A significant amount of the education of Neuropathology fellows takes place in the setting of clinical experience. Fellows actively participate in the evaluation of a comprehensive body of pathological lesions of the central nervous system, peripheral nervous system, and neuromuscular systems.

Fellows have graduated clinical responsibilities based upon their level of training. During at least 6 months of the first year of fellowship, fellows gain diagnostic experience as they evaluate all brain biopsies, autopsy brain cases, neuromuscular biopsies, and outside consultation cases submitted to Neuropathology during their on-service time. Cases are first evaluated independently by the fellow, and then reviewed for signout with Neuropathology attending staff.

During the course of their first year of fellowship, fellows are expected to progress from passive observation to taking increasing responsibility for workup of clinical cases. Thus, in their second year of training, Neuropathology fellows assume greater responsibility for frozen section coverage on neurosurgical biopsy cases, signout of autopsy and neurosurgical biopsy cases, and in conducting hospital and forensic brain cutting conferences (all under the supervision of the Neuropathology faculty). Each fellow has primary responsibility for one of these service functions for 6 of the 12 months of year 2. Neuropathology fellows also share responsibility with Neuropathology faculty for presentations at clinical case conferences in the Departments of Pathology, Neurology, and Neurological Surgery, including preparation of gross and microscopic photographs, clinical protocols, and references.

During the 2-year training period, each fellow is assigned to the Neuromuscular Biopsy service for 6 months, during which time they will have the opportunity to participate in the evaluation of over 250 neuromuscular specimens. Each fellow is assigned to the Neurosurgical Biopsy service for 6 months, during which time they will participate directly in the evaluation of over 300 neurosurgical biopsies and perform over 150 intraoperative consultations. Each fellow will be directly involved in brain cutting conferences for 18 months or more of the 2-year training period, during which they will participate in the evaluation of over 200 necropsy specimens. In addition, fellows attend a semiweekly slide review conference in which all interesting and instructional cases are reviewed, providing them with an opportunity to see important cases that are not part of their direct service assignment for a given month. Finally, the Neuropathology Division is the main neuropathology referral center for north Texas and the surrounding region; fellows are involved in the evaluation of consultation cases, mostly neurosurgical biopsies, submitted from over 100 referring institutions in the region, including from Texas, New Mexico, Louisiana, Arkansas, Oklahoma, and Arizona. In sum, the volume of clinical material available is more than adequate to ensure that all fellows will have exposure to the types and quantities of cases defined in the ACGME “Program Requirements for Graduate Medical Education in Neuropathology.

Electives are available in Ophthalmic Pathology, Molecular Diagnostics, Cytopathology, and Neuroradiology during either the first or second year of fellowship.

SPECIFIC CLINICAL SERVICE ROTATIONS AND RESPONSIBILITIES

Neuromuscular biopsy service

Technical objectives

1) Become well acquainted with the first steps in the technical preparation of all neuromuscular biopsy material, including:
    a) proper freezing techniques for muscle biopsies
    b) proper fixation techniques for muscle and nerve biopsies
    c) 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.

4) Learn to prepare teased fibers.

Interpretive objectives

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.

Specific duties

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) Review all relevant clinical information and laboratory data for correlation with pathologic findings. For on-campus patients, this includes searching institutional electronic medical records systems accessible through networked computers in Neuropathology.

3) 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 fellow can function independently.

4) Independently review slides on all biopsies, including preliminary frozen sections.

5) Select blocks for electron microscopy and perform EM (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.

6) Generate a written diagnosis on all preliminary frozen section biopsies.

7) At the discretion of the attending neuropathologist, verbally communicate the results of preliminary frozen section evaluations with relevant referring physicians.

8) Generate a written diagnosis and a draft narrative comment on all neuromuscular biopsies, taking into account all clinical and laboratory data and morphologic findings. This draft should be made available to the attending neuropathologist for review at the time the case is jointly reviewed. In order to avoid placing an excessive burden on the secretarial staff, reports by the fellow should be written (not dictated), until the attending neuropathologist determines that the fellow is proficient at generating reports.

9) Enter appropriate diagnostic and topographic SNOMED codes into computer database.

10) Be prepared to present appropriately chosen cases at the semi-weekly Neuropathology Case Review Conference.

11) Attend the weekly interdisciplinary neuromuscular biopsy conference and present biopsy material to other attendees.

Neurosurgical biopsy service

Technical objectives

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 proficient in the 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

Interpretive objectives

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 and radiographic-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.

Specific duties

1) Review daily surgery schedules (posted in Neuropathology) to identify potential frozen section cases.

2) 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.

3) Review frozen sections and smears with attending neuropathologist and discuss diagnostic considerations in light of clinical information and radiographic features.

4) Communicate frozen section findings to neurosurgeons intraoperatively.

5) Assist surgical pathology resident with histologic sampling for permanent sections and specimen description, as necessary.

6) Review all relevant clinical information, laboratory data, and radiographs for correlation with pathologic findings. This includes searching institutional electronic medical records systems accessible through networked computers in Neuropathology.

7) Review permanent sections of biopsy cases at daily neurosurgical biopsy signouts with surgical pathology resident and attending neuropathologist.

8) See that appropriate special studies (e.g., immunohistochemical stains) are ordered correctly and in a timely manner, and reviewed.

9) At the discretion of the attending neuropathologist, verbally communicate the results of biopsy reviews to referring physicians.

10) Generate a written diagnosis and a draft narrative comment on all neurosurgical biopsies, taking into account all clinical and laboratory data, radiographic findings, and morphologic findings. This draft should then be submitted to the attending neuropathologist for review and final editing and signing.

11) Enter appropriate diagnostic and topographic SNOMED codes into computer database.

12) Be prepared to present appropriately chosen cases at the semi-weekly Neuropathology Case Review Conference.

13) Attend the weekly interdisciplinary Neuro-oncology Conference and present biopsy material to other attendees.

Hospital Braincutting

Technical objectives

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

Interpretive objectives

1) Become familiar with normal gross and microscopic brain and spinal cord anatomy and be able to recognize disease-related deviations from normal anatomy and histology.

2) Become proficient in the gross and microscopic evaluation of brain and spinal cord specimens, with emphasis on clinico-pathologic and radiographic-pathologic correlation.

3) 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.

Specific duties

1) Review case list, researching pertinent topics as needed.

2) Review all relevant clinical information, laboratory data, and radiographs for correlation with pathologic findings. This includes searching institutional electronic medical records systems accessible through networked computers in Neuropathology.

3) Cut brains at weekly conference.

4) Elucidate important points of cases and the underlying pathogenesis and etiology, if possible, in group discussion. Discuss differential diagnoses where pertinent.

5) Discuss normal anatomy as appropriate.

6) Assist pathology residents responsible for autopsy case in documenting pertinent gross findings in photographs.

7) Make written notes on braincutting forms for incorporation into autopsy report by resident and attending pathologist responsible for case.

8) Assist residents in taking microscopic sections as necessary.

9) 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, and attending Neuropathology staff member.

10) Review microscopic sections with attending Neuropathologist.

11) Be prepared to present appropriately chosen cases at the semi-weekly Neuropathology Case Review Conference.

12) Be available to residents and faculty for review and consultation on cases.

Forensic Braincutting

Technical objectives

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

Interpretive objectives

1) Become familiar with normal gross and microscopic brain and spinal cord anatomy and be able to recognize disease-related deviations from normal anatomy and histology, especially with respect to forensic/medicolegal considerations.

2) Become proficient in the gross and microscopic evaluation of brain and spinal cord specimens, 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 CNS autopsy tissues, and become proficient in their interpretation.

Specific duties

1) Review case list, researching pertinent topics as needed

2) Cut brains at weekly conference

3) Elucidate important points of cases and the underlying pathogenesis and etiology, if possible, in group discussion. Discuss differential diagnoses where pertinent.

4) Discuss normal anatomy as appropriate.

5) Assist in documenting pertinent gross findings in photographs.

6) Dictate gross descriptions and initial diagnostic impressions for preliminary report.

7) Take microscopic sections as necessary.

8) 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.

9) Review H&E-stained slides prepared in Neuropathology histology lab; order special stains as necessary.

10) Review microscopic sections with attending Neuropathologist, and dictate microscopic findings and interpretative comments.

11) Correct transcriptions of final reports, and forward to attending Neuropathologist for additions or corrections and signature prior to distribution to medical examiners.

12) Enter appropriate diagnostic and topographic SNOMED codes into computer database.

13) Be prepared to present appropriately chosen cases at the semi-weekly Neuropathology Case Review Conference and the weekly Forensic Neuropathology Slide Review Conference.

14) Be available to residents and faculty for review and consultation on cases.

Consultation Service

Technical objectives

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

Interpretive objectives

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.

Specific duties

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) Review all special studies with attending neuropathologist.

4) 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. In order to avoid placing an excessive burden on the secretarial staff, reports by the fellow should be written (not dictated), until the attending neuropathologist determines that the fellow is proficient at generating reports.

5) Enter appropriate diagnostic and topographic SNOMED codes into computer database.

6) Be prepared to present appropriately chosen cases at the semi-weekly Neuropathology Case Review Conference.

RESEARCH COMPONENT

Neuropathology fellows are expected to spend approximately one half of their time in each year of their fellowship participating in clinical or basic research projects. Emphasis is placed on 1) application of the scientific method, stressing the generation and testing of hypotheses, fundamentals of experimental design, statistical analysis and interpretation of results, preparation of written reports of findings for publication, and public presentation of research data at scientific meetings; and 2) gaining experience in contemporary neuroscience research techniques. Currently there are several research projects underway within Neuropathology, in the areas of Alzheimer disease and other neurodegenerative diseases and disorders of aging, neuro-oncology, and neuromuscular disease. Neuropathology faculty have developed extensive research collaborations with faculty members in the Departments of Neurology, Psychiatry, Cell Biology and Neuroscience, Neurological Surgery, and Radiology, and in the Center for Basic Neuroscience Research. Fellows can spend a portion of their research time in the laboratories of these other investigators. In addition, the Department of Pathology has an active research program that is especially strong in molecular biology and immunopathology, and again, Neuropathology fellows can pursue specific research topics or techniques within those areas.

Neuropathology fellows participate in local and state pathology meetings, such as the Residents and Fellows Seminar at the annual meeting of the Texas Society of Pathologists. In addition, each fellow is expected to participate in one national meeting per year of a neuroscience organization such as the American Association of Neuropathologists or the Society for Neuroscience. Each fellow is expected to present at least one paper at a national meeting.