



American Association
of Neuropathologists

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Diagnostic Slide Session

Saturday, June 6, 2026

<https://neuro2.pathology.pitt.edu/dss/current>

Learning Objectives:

1. Describe advancements in diagnostic criteria and techniques for diseases of the central nervous system.
2. Apply diagnostic criteria to develop differential diagnoses.
3. Recognize the underlying causes of diseases of the central nervous system.

67th ANNUAL DIAGNOSTIC SLIDE SESSION 2026
DSS Case 2026-01

Submitted by:

Carolyne Lemieux, M.B.B.S., M.Sc., Rachel Larsen, M.S., P.A. (ASCP), Daniel Larson, M.D., Timmothy Kaufmann, M.D., M.S., Rachael Vaubel, M.D., Ph.D.
Mayo Clinic, Rochester, Minnesota, USA

Case presented by:

Carolyne Lemieux, M.B.B.S., M.Sc.
Neuropathology Fellow, Anatomic and Forensic Pathologist

Clinical History:

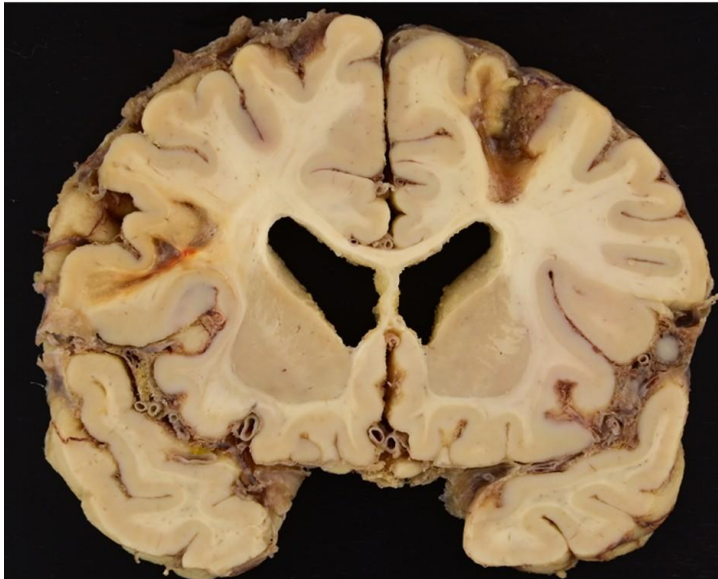
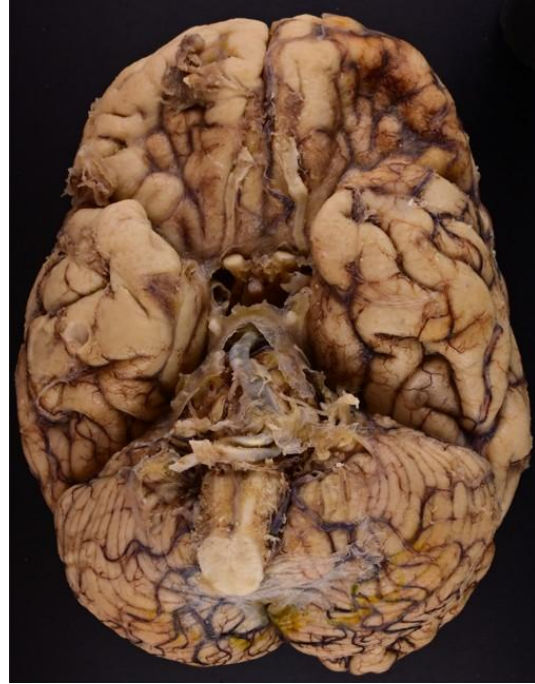
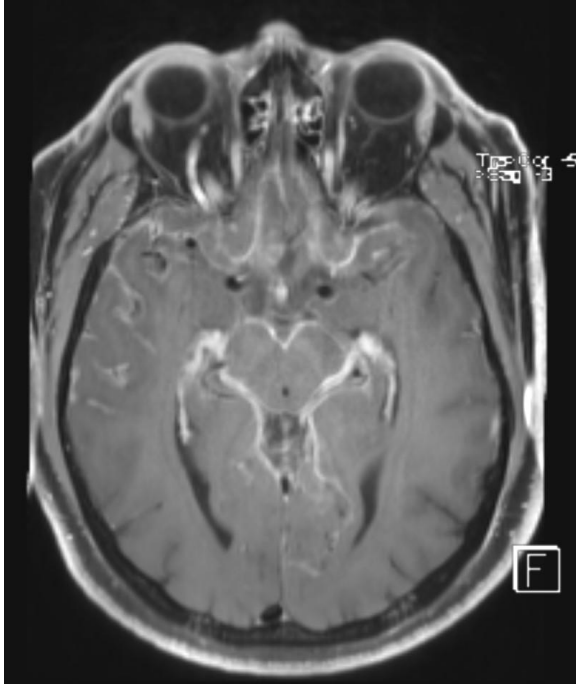
The decedent is a 64-year-old male with a history of hypertension, type II diabetes mellitus, osteoarthritis, and remote solvent contaminated water exposure in the military. In his early 50s he developed a complex partial seizure disorder with progressive neurologic symptoms including non-localizing diffuse numbness, expressive aphasic spells lasting minutes to hours in duration, Parkinsonism (managed with carbidopa/levodopa), and cognitive and personality changes. At age 60, he fell and sustained a traumatic brain injury resulting in encephalomalacia of right frontal lobe.

He underwent extensive neurologic workup, but no definitive diagnosis was established. Head MRI showed diffuse progressive leptomenigeal enhancement. EEG at age 52 was normal. A left frontal lobe open biopsy was performed at age 56 which showed severe gliosis. Repeat EEG at age 57 showed nonspecific left cortical dysfunction. Lyme serology was positive, but infectious and autoimmune panels were otherwise negative. CSF studies showed elevated protein.

At age 64, he developed a urinary tract infection and influenza precipitating septicemia and pneumonia and was transitioned to palliative care. A brain only autopsy was performed.

Material submitted for audience review:

- H&E stained sections from the right frontal lobe and midbrain
- 1 MRI image (performed at age 58)
- 2 Autopsy gross images



Points of Discussion:

1. Differential diagnosis
2. Diagnostic ancillary studies
3. Disease presentation and heterogeneity

67th ANNUAL DIAGNOSTIC SLIDE SESSION 2026
DSS Case 2026-02

Submitted by:

Katherine A. DiScipio, M.D., Ph.D. and Suzanne Powell M.D.
Department of Pathology and Genomic Medicine, Houston Methodist Hospital

Case presented by:

Dr. Katherine DiScipio, M.D., Ph.D., Pathology Resident, AP/CP, PGY3

Clinical History:

The patient is a 62-year-old female status post kidney transplant for end stage renal disease secondary to type 2 diabetes. Approximately 3 months following her transplant, she was admitted for new onset of fever. During her hospitalization, she was noted to be more withdrawn with a flat affect, decreased verbal fluency, irritability, poor eye contact, and decreased mobility. She also exhibited a decline in her mental status with the development of encephalopathy.

An extensive infectious disease work up was performed, which was negative. MRI and CT imaging of the brain was obtained, which showed an acute/subacute right cerebellar infarct. No other acute findings were identified.

After a prolonged hospital stay (~two months), the patient ultimately passed away with severe sepsis, coagulopathy, multiorgan dysfunction, and clinical concern for hemophagocytic lymphohistiocytosis (HLH). A complete autopsy was performed including neuropathologic examination.

Material submitted for audience review:

- 1 H&E section from the right cerebellar lesion
- 1 H&E section from medulla
- 1 H&E section from hippocampus

Points of Discussion:

1. Key histological features
2. Differential diagnosis
3. Ancillary studies

67th ANNUAL DIAGNOSTIC SLIDE SESSION 2026
DSS Case 2026-03

Submitted by:

Emery L. Price, M.D.¹; Jeremy R. Wang, Ph.D.¹; Dimitri G. Trembath, M.D., Ph.D.²; Benjamin B. Cho, M.D.¹.

¹ University of North Carolina School of Medicine

² Foundation Medicine

Case presented by:

Emery L. Price, M.D., Anatomic & Clinical Pathology Resident, PGY2

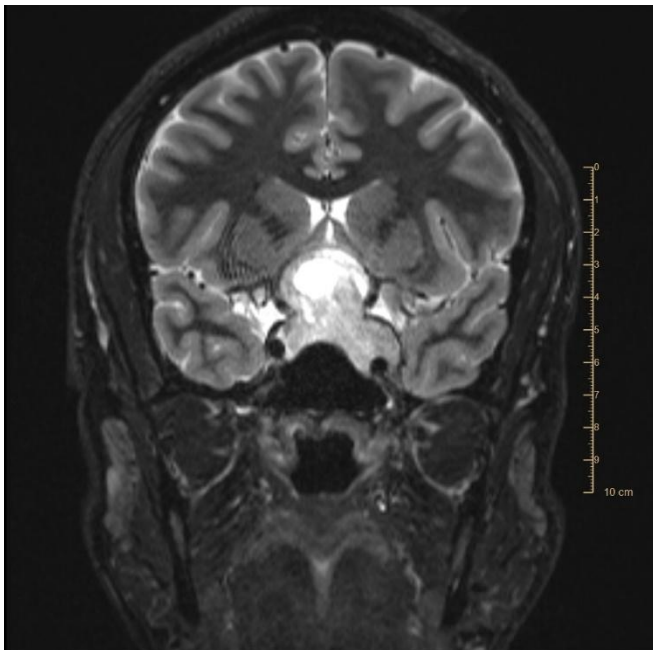
Clinical History:

40-year-old male with schizophrenia, depression, polysubstance use disorder, and cervical radiculopathy who presented with four years of progressive vision loss and several weeks of worsening, including subacute loss of peripheral vision. He denied headaches, speech or balance difficulty, weakness, fatigue, weight loss or gain, numbness, tingling, nausea, and vomiting. Labs revealed low serum testosterone and slightly low free T4.

Imaging revealed a 3.8 x 3.5 x 1.7 cm mixed cystic and solid sellar mass with suprasellar extension, heterogeneous contrast enhancement, and bilateral extension to the cavernous sinus (left greater than right) with encasement of the left cavernous internal carotid artery.

Material submitted for audience review:

- 1 H&E representative slide of the lesion
- 1 MRI T2/STIR coronal image without contrast



Points of Discussion:

1. Differential diagnosis
2. Ancillary studies

67th ANNUAL DIAGNOSTIC SLIDE SESSION 2026
DSS Case 2026-04

Submitted by:

Ilay Caliskan M.D. M.Sc., Marta Margeta M.D., Ph.D.
Department of Pathology, Division of Neuropathology, University of California San Francisco (UCSF)

Case presented by:

Ilay Caliskan, M.D., M.Sc., Neuropathology Fellow

Clinical History:

61-year-old female presented with an approximately 1.5-3-year history of slowly progressive muscle weakness. Medical history notable for hyperlipidemia (managed with statin for 3 years), fibromyalgia, chronic back pain, and B12 deficiency.

Serum creatinine kinase (CK) has been chronically very mildly elevated (~200, most recently 272 U/L), with low serum carnitine (16 $\mu\text{mol/L}$ total, 11 $\mu\text{mol/L}$ free).

Electromyography showed a chronic myopathic process affecting the upper and lower extremities, involving proximal more than distal muscles, and without clear evidence of muscle membrane irritability.

A deltoid muscle biopsy was performed.

Material submitted for audience review:

- 1 H&E (Frozen)
- 1 Trichrome (Frozen)

Points of Discussion:

1. What additional details would you like to know about the patient's history?
2. What additional stains or ancillary studies would you like to review?

67th ANNUAL DIAGNOSTIC SLIDE SESSION 2026

DSS Case 2026-05

Submitted by:

Levi Endelman, M.D. and Karra A. Jones, M.D., Ph.D.
Duke University, Department of Pathology, Durham, NC

Case presented by:

Levi Endelman, M.D., Neuropathology Fellow

Clinical History:

At the age of 70, this patient with a history of colon cancer was transferred from an outside cardiac ICU after presenting with syncope, proptosis, wide-complex tachycardia, and complete heart block. Upon examination, she was found to have proximal upper and lower extremity skeletal muscle weakness and an elevated CK above 3000 U/L which trended down with steroid therapy. Aldolase was also elevated. Biopsy of the right deltoid was obtained.

Material submitted for audience review:

- 1 H&E-stained frozen section of right deltoid biopsy

Points of Discussion:

1. Diagnosis and differential considerations
2. Ancillary studies
3. Histologic features related to the diagnosis

67th ANNUAL DIAGNOSTIC SLIDE SESSION 2026
DSS Case 2026-06

Submitted by:

Mark A. Rudolf, M.D. Ph.D., and Kyle S. Conway, M.D., J.D.
Department of Pathology, Section of Neuropathology, University of Michigan Medicine, Ann Arbor, MI

Case presented by:

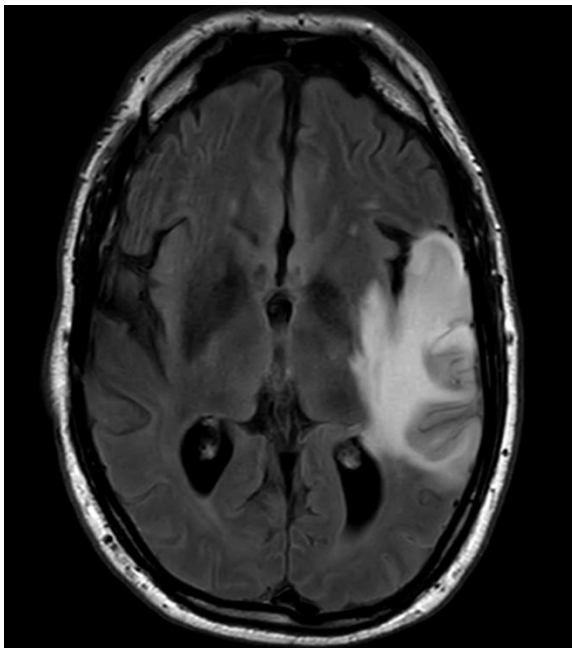
Mark A. Rudolf, M.D., Ph.D., Neuropathology Fellow

Clinical History:

A 42-year-old man with a 2-year history of focal seizures presented with recurrent seizure activity and a new left temporal lobe FLAIR hyperintense lesion. At age 40, he developed seizures associated with a right temporal lobe FLAIR hyperintensity and underwent biopsy, which was non-diagnostic. Given the interval development of a contralateral temporal lesion and persistent clinical concern, biopsy of the left temporal lesion was performed.

Material submitted for audience review:

- 1 H&E section of left temporal biopsy
- Preoperative MRI FLAIR



Points of Discussion:

1. Diagnosis and differential considerations
2. Correlation between histopathology and clinical laboratory values

67th ANNUAL DIAGNOSTIC SLIDE SESSION 2026
DSS Case 2026-07

Submitted by:

Daphne T. Huynh, M.D.¹, Chunfeng Tan, M.D., Ph.D.², Alana Kirby, M.D.³, Bryan Killinger, Ph.D.³, Hidehiro Takei, M.D.¹, Kent A. Heck, M.D.¹, Xinhai R. Zhang, M.D., Ph.D.¹

¹Department of Pathology and Laboratory Medicine, McGovern Medical School, The University of Texas Health Science Center, Houston, TX 77030

²Department of Neurology, McGovern Medical School, The University of Texas Health Science Center, Houston, TX 77030

³Department of Neurology, Rush University, Chicago, IL 60612

Case presented by:

Daphne T. Huynh, M.D. Pathology resident AP/CP PYG2

Clinical History:

A 62-year-old female who initially presented with balance issues, frequent dizziness when bending, inability to walk fast, slower writing speed and problems sleeping. At 64, when she was on vacation, her daughter described an episode of festination associated with dizziness. MRI brain demonstrated marked generalized cerebral and cerebellar atrophy and diffuse chronic small vessel ischemic changes. At 67, she was diagnosed with sleep apnea and was recommended CPAP. Sleep issues continued. Lab work for WNV, Lyme, EBV, ANA, ESR, CBC, autoimmune panel and SCA testing were all negative. MRI brain showed extensive white matter lesions in pons and periventricular areas. She started taking Amantadine, but balance issues continued to worsen even with physical therapy. At 72, she started Sinemet, which helped her somewhat with hesitation to walk. She could walk with a walker but preferred to be in the wheelchair. Family reported tremor while she held silverware. The patient passed away at age 78. A brain only autopsy was performed.

Autopsy Findings:

A brain autopsy was performed. The fixed brain weight was 1,182.4 g. The cerebral cortex showed atrophy, most prominent in the pericentral gyri. Marked atrophy was also noted in the pons, cerebellar peduncles, and cerebellar white matter.

Material Submitted:

- H&E-stained sections from cerebellum, basal ganglia, hippocampus, and pons/midbrain

Points for Discussion:

1. Histopathologic features
2. Diagnosis and molecular findings

67th ANNUAL DIAGNOSTIC SLIDE SESSION 2026
DSS Case 2026-08

Submitted by:

Sara Hayama, M.D., Bartholomew White, M.D.

Department of Pathology, Beth Israel Deaconess Medical Center, 330 Brookline Avenue, Boston, MA 02215

Case presented by:

Sara Hayama, M.D., Neuropathology Fellow

Clinical History:

The decedent was a 62-year-old man with a past medical history of spontaneous bilateral subdural hematomas at the age of 57. At the age of 59, his wife reported the onset of confusional episodes. Neuropsychological testing revealed multiple executive and language-processing impairments, relatively intact visual-spatial functioning and broadly preserved memory. Brain MRI showed mild diffuse atrophy and small remote subdural collections. FDG-PET demonstrated frontotemporal hypoperfusion. At the age of 60, his speech output dramatically decreased; his sparse speech was fluent and grammatical with normal articulation, most consistent with logopenic variant primary progressive aphasia. Shortly before death, he was nonverbal, exhibited worsening compulsive behavior, new pseudojocular affect and mild paratonia.

Autopsy findings:

A brain-restricted autopsy was performed. The fresh brain weight was 1,310 g. External evaluation showed moderate predominant frontal atrophy. Coronal sections revealed moderate symmetric dilatation of the lateral ventricles and thinning of the cortical ribbon, most prominent at the frontal and temporal poles. The hippocampus and amygdala appeared grossly unremarkable. The substantia nigra and locus ceruleus were well pigmented.



Material submitted for audience review:

- Gross image
- H&E section from the frontal lobe

Points of Discussion:

1. Histopathologic features
2. Diagnostic categorization

67th ANNUAL DIAGNOSTIC SLIDE SESSION 2026
DSS Case 2026-09

Submitted by:

Joyce Opara, MD, Caitlin Latimer, M.D., Ph.D., Amber Nolan, M.D., Ph.D.
University of Washington

Case presented by:

Joyce Opara, M.D. Neuropathology Fellow

Clinical History:

A 65-year-old individual with a family history notable for neurodegenerative disease presented with a decade-long history of progressive neuropsychiatric symptoms beginning in the mid-50s, characterized by mild cognitive impairment and prominent mood and behavioral changes. Family history was significant for multiple affected first-degree relatives with diverse neurologic phenotypes, including motor neuron disease, parkinsonism, and frontotemporal dementia. Neuroimaging demonstrated mild diffuse cerebral volume loss with scattered nonspecific white matter changes.

Material submitted for audience review:

- H&E-stained section
- TDP-43 immunohistochemistry
- p62 immunohistochemistry

Points of Discussion:

1. Diagnosis
2. Genetics
3. Genotype/phenotype

67th ANNUAL DIAGNOSTIC SLIDE SESSION 2026
DSS Case 2026-10

Submitted by:

Simmi Patel, M.D.¹, Jennifer Hammers, D.O.², Julia Kofler, M.D.¹

¹ Division of Neuropathology, University of Pittsburgh Medical Center, Pittsburgh, PA.

² Pathology LLC., Beaver Falls, PA

Case presented by:

Simmi Patel, M.D., Neuropathology Fellow (future Forensic Pathology fellow at OMI, New Mexico).

Clinical History:

61-year-old male with a remote history of traumatic brain injury in 1990s who has been bedridden for over 30 years. The patient was allegedly beaten with a “gun” and was “kicked and punched” in the face, head and the leg. Past medical history includes osteomyelitis, sepsis, decubitus ulcers and a neurogenic bladder with multiple urinary tract infections. Decedent was found unresponsive at a rehabilitation center.

Autopsy findings showed a 1040 grams fixed brain with no overt regional or global cortical atrophy. Additionally, sections of the spinal cord were also unremarkable. This case was received in consultation from the Medical Examiner’s office.

Material submitted for audience review:

- 1 H&E-stained slide from cerebellum
- 1 H&E-stained slide from pons
- 1 H&E-stained slide from primary motor cortex

Points of Discussion:

1. What is the differential diagnosis?
2. What ancillary studies would help?

67th ANNUAL DIAGNOSTIC SLIDE SESSION 2026
DSS Case 2026-11

Submitted by:

Darby BeDell, M.D., Samreen Fathima, M.D., Garrett Fitzpatrick, M.D.
University of Minnesota Medical School Department of Laboratory Medicine and Pathology

Case presented by:

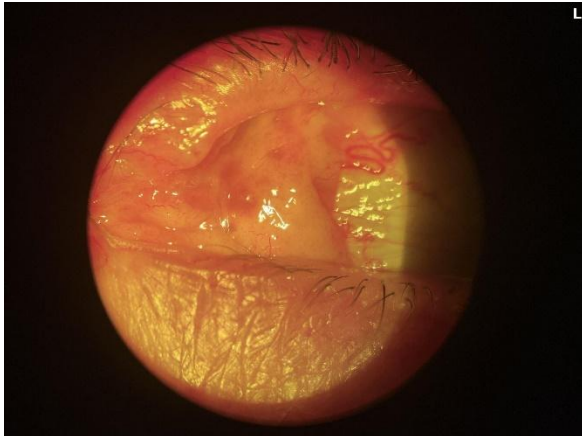
Darby BeDell, M.D., Neuropathology Fellow

Clinical History:

The patient is a 73-year-old female with history of primary open-angle glaucoma, dry eye syndrome, ocular rosacea, nuclear sclerosis, and epithelial basement membrane dystrophy. She presented with a fleshy, painless enlarging bump on the conjunctiva of her left eye for the past three months.

Material submitted for audience review:

- 1 HE
- 1 Gross photo



Points of Discussion:

1. Differential Diagnosis
2. Pathogenesis