

Neuroradiology

- I. Computed tomography (CT) scan – anatomy
 - A. Non-contrast CT scan
 1. Normal brain anatomy
 2. Normal spinal anatomy
 - B. CT angiography
 1. Intracranial vasculature – branches of internal carotid artery, vertebral artery, circle of Willis
 2. Spinal arterial supply
 - C. CT venogram
 1. Dural venous sinuses
 2. Deep venous drainage of brain
- II. CT scan – pathology
 - A. Sinus and skull base – normal anatomy
 1. Orbit anatomy
 2. Sinus/facial anatomy, ENT
 - a. Cribriform plate, crista galli, ethmoid
 3. Skull base anatomy
 - a. Foramen and the structures transmitted
 - b. Temporal bone anatomy
 4. CT head pathology
 - a. Skull base fractures, CSF leaks
 - b. Lytic lesions of the skull
 5. CT spine pathology including fractures
- III. Magnetic resonance imaging (MRI) brain - anatomy
 - A. Variants – MRA, MRV, DWI, MR spectroscopy, fMRI
 - B. Normal anatomy
 1. Surface and brain anatomy
 - a. White matter tracts
 - b. Ventricular anatomy
 - c. Subarachnoid spaces and cisterns
 2. Basal ganglia and thalamus
 3. Sellar anatomy and cavernous sinus anatomy
 4. Pineal anatomy
 5. Brainstem
 - a. Cranial nerves
 6. Cerebellum
- IV. CT/MRI brain – vascular
 - A. Stroke
 1. Ischemic
 2. Hemorrhagic
 - a. aSAH
 - b. IPH
 - c. Traumatic ICH, including EDH, SDH, SAH, DAI
 3. Sinus thrombosis

- B. Vascular anomalies – aneurysm, AVM, cavernous malformation
- V. CT/MRI brain – neoplasm
 - A. Extra-axial
 1. Meningioma
 2. Schwannoma, fibromas
 3. Pituitary tumors, hypothalamic tumor
 4. Epidermoid, dermoid, lipomas
 5. Meningeal metastases
 - B. Intra-axial
 1. Primary brain tumors – glioma, ependymoma, medulloblastoma, etc.
 2. Metastatic disease
 3. CNS lymphoma – primary and secondary
- VI. CT/MRI brain – congenital
 - A. Cleavage disorders
 1. Holoprosencephaly, lissencephaly, anencephaly, heterotopic migration
 - B. Cysts
 1. Dandy Walker, mega cisterna magna, arachnoid cyst
- VII. CT/MRI brain – infectious and metabolic
 - A. Infectious disease
 1. Abscess – bacterial/TB/fungus
 2. Meningitis
 3. Encephalitis – SSEP/ADEM
 4. Neurocysticercosis
 5. HIV/immunosuppressed
 - B. Metabolic-degenerative
 1. Sarcoid
 2. Normal aging brain
 3. MS
- VIII. Imaging variants
 - A. PET
 - B. SPECT
- IX. MRI spine – normal anatomy
 - A. Cervical – Cranio-cervical junction
 - B. Thoracic
 - C. Lumbar: Cauda equina
- X. MRI spine pathology
 - A. Degenerative
 1. Basilar invagination
 2. Disc herniation
 3. Spinal stenosis
 - B. Trauma
 1. Compression vs burst fractures
 2. Ligamentous injury
 3. Hematoma

C. Neoplasm

1. Metastatic
2. Vertebral bodies
3. Vertebral canal/spinal cord
 - a. Extradural
 - b. Intradural
 1. Extramedullary
 2. Intramedullary

D. Vascular

1. AVM
2. Cavernous malformation

E. Congenital

1. Dysraphism

F. Demyelinating/infectious

1. Guillain Barre syndrome
2. Transverse myelitis
3. Discitis/osteomyelitis
4. Epidural abscess – bacterial/TB/fungal

XI. Angiography – cranial and spinal

A. Normal cerebral anatomy

1. Persistent vessels
2. Pathologies
3. Aneurysms
4. AVIM/dAVF
5. Cavernous sinus anatomy

B. Spinal angiogram

1. Normal anatomy
2. Pathologies

XII. Miscellaneous

- A. Ultrasound
- B. Myelography
- C. Radioisotope imaging, nuclear medicine
- D. X-ray – skull, spine