Primary CNS Lymphoma

- Posterior fossa, sella, pineal region uncommon
- Spine involvement rare (1%)
- Solitary mass or multiple lesions
- May be circumscribed or infiltrative

- Enhancement
  - Immunocompetent: Strong homogeneous enhancement
  - Immunocompromised: Peripheral enhancement with central necrosis or homogeneous enhancement
  - Nonenhancement extremely rare

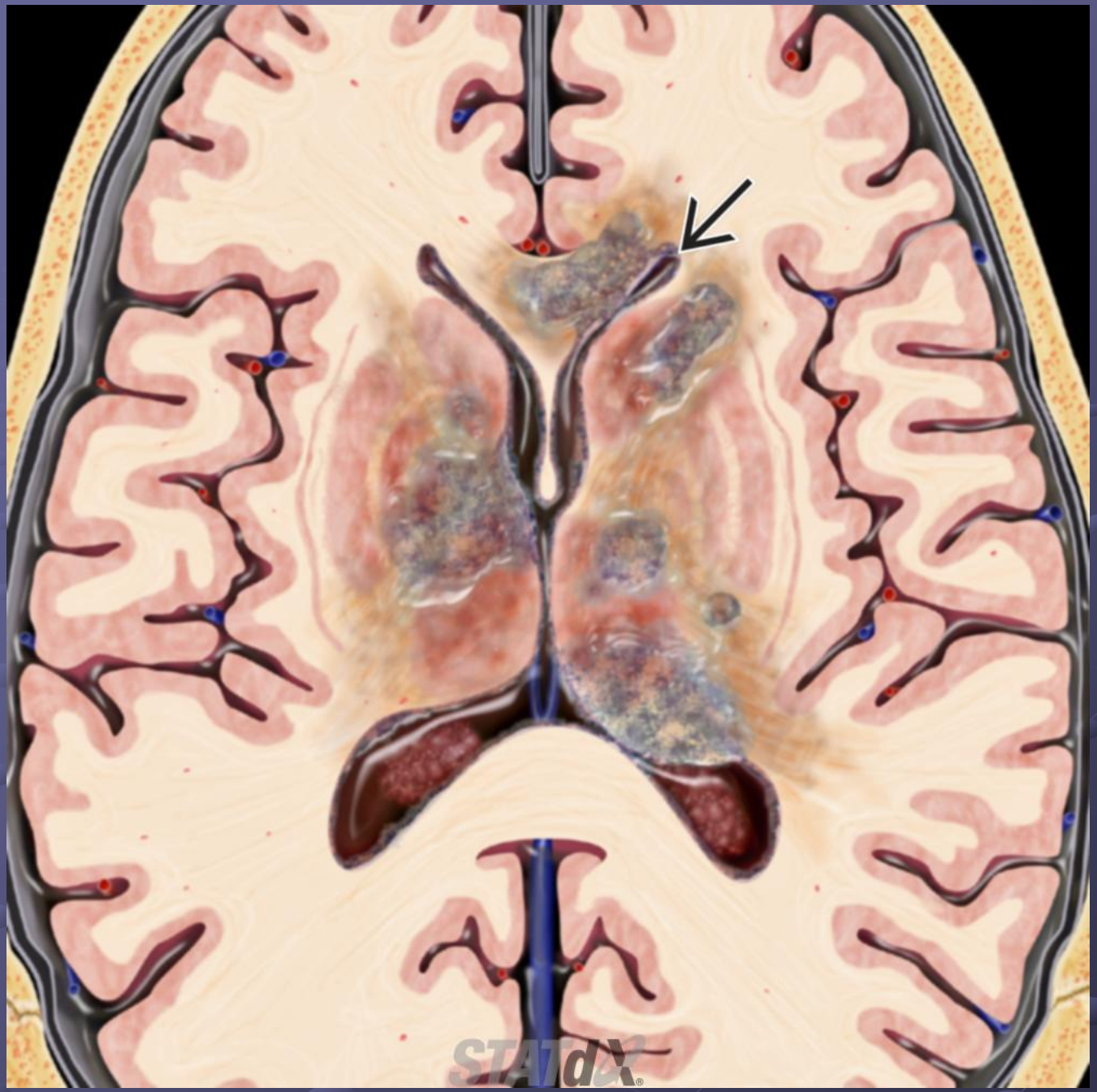
- FDG PET and Tl-201 SPECT: Hypermetabolic (toxo is not)
- Steroids may dramatically ↓ mass, enhancement;
- Secondary CNS lymphoma: Skull, dura, leptomeninges >> parenchymal mass

Imaging

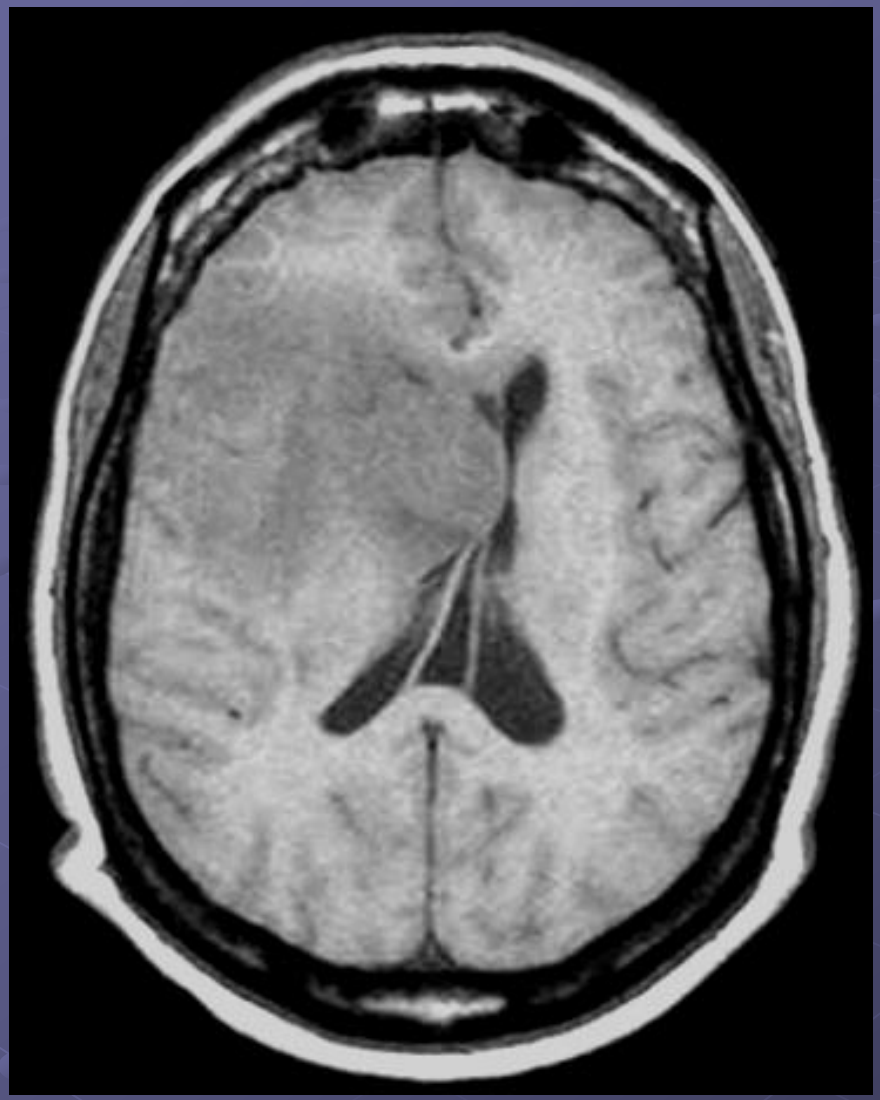
- Best diagnostic clue: Enhancing lesion(s) within basal ganglia &/or periventricular white matter
- 60-80% supratentorial
  - Often involve, cross corpus callosum
  - Frequently contact, extend along ependymal surfaces
- Classically hyperdense on CT (helpful for diagnosis)
- Diffusely enhancing periventricular mass in immunocompetent
- May see hemorrhage or necrosis in immunocompromised
- DWI: Low ADC values
- PWI: Low rCBV ratios
- Periventricular location and subependymal involvement is characteristic of PCNSL
- Corpus callosum involvement may be seen with PCNSL, glioblastoma (GBM), and rarely metastases or demyelination

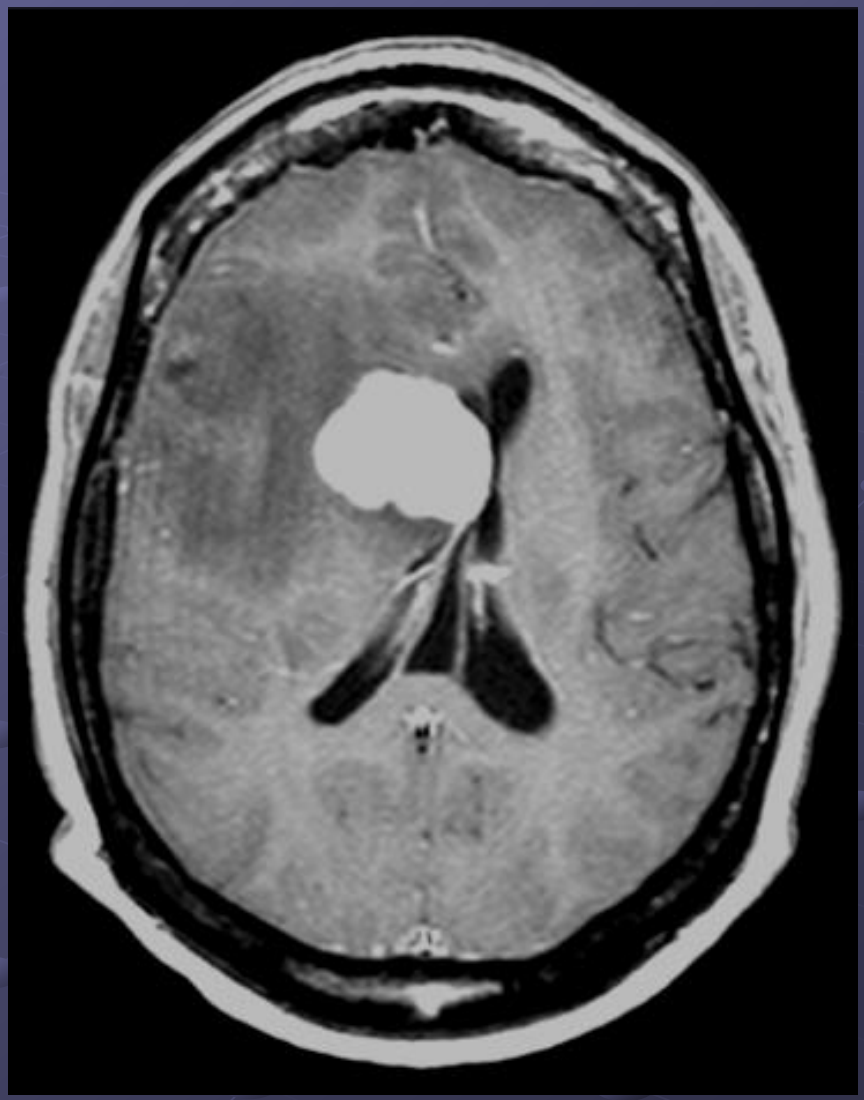
Demographics

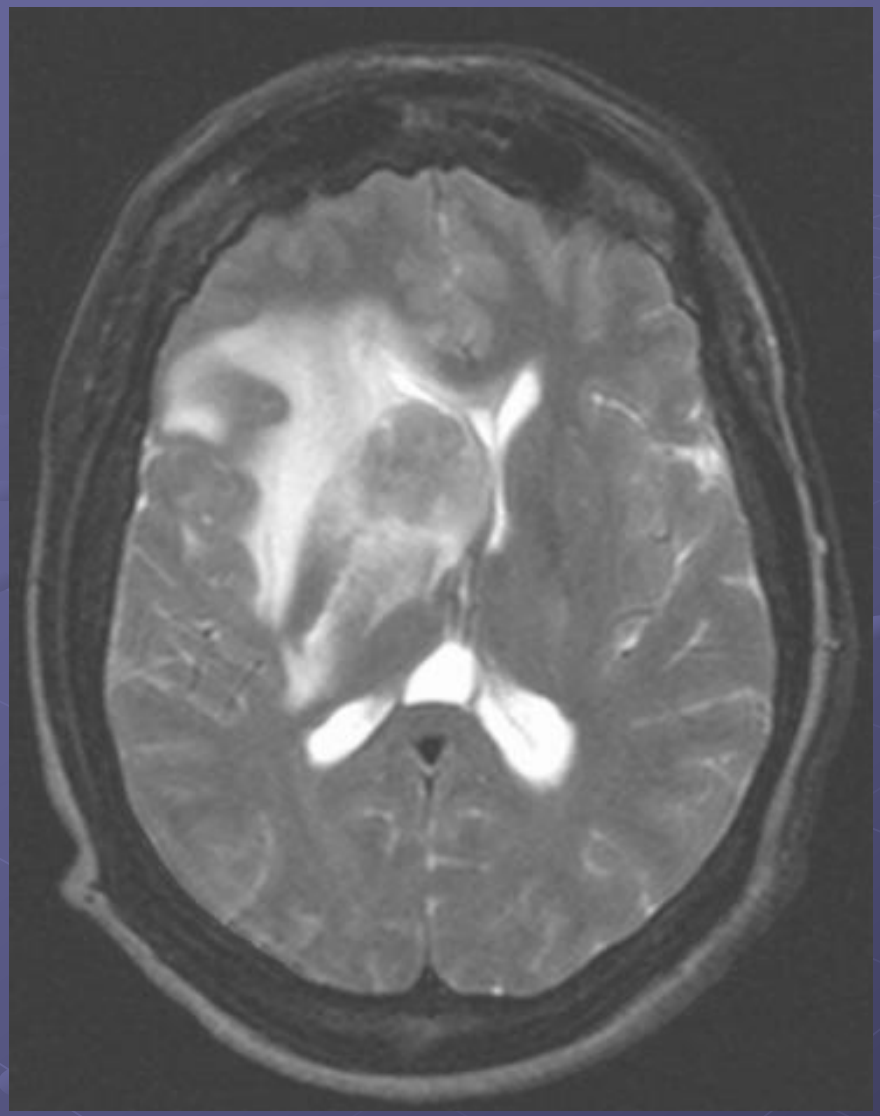
- **Age**
  - Occurs at all ages
  - Immunocompetent: 6th-7th decades, mean 60 years
  - Immunocompromised
    - AIDS: Mean age 39 years
    - Transplant recipients: Mean age 37 years
    - Inherited immunodeficiency: Mean age 10 years
- Gender: Male predominance
- Epidemiology
  - 6.6% of primary brain tumors
    - Incidence increasing in immunocompetent, immunocompromised
  - Represents ~ 1% of lymphomas
  - PCNSL is present in 0.4% of AIDS patients
    - PCNSL is AIDS-defining condition
    - Highly effective antiviral therapy (HAART) has reduced occurrence of all NHL in AIDS patients
  - In post-transplant lymphoma, CNS involvement occurs in 22%
    - 50% appear within 1 year after transplant

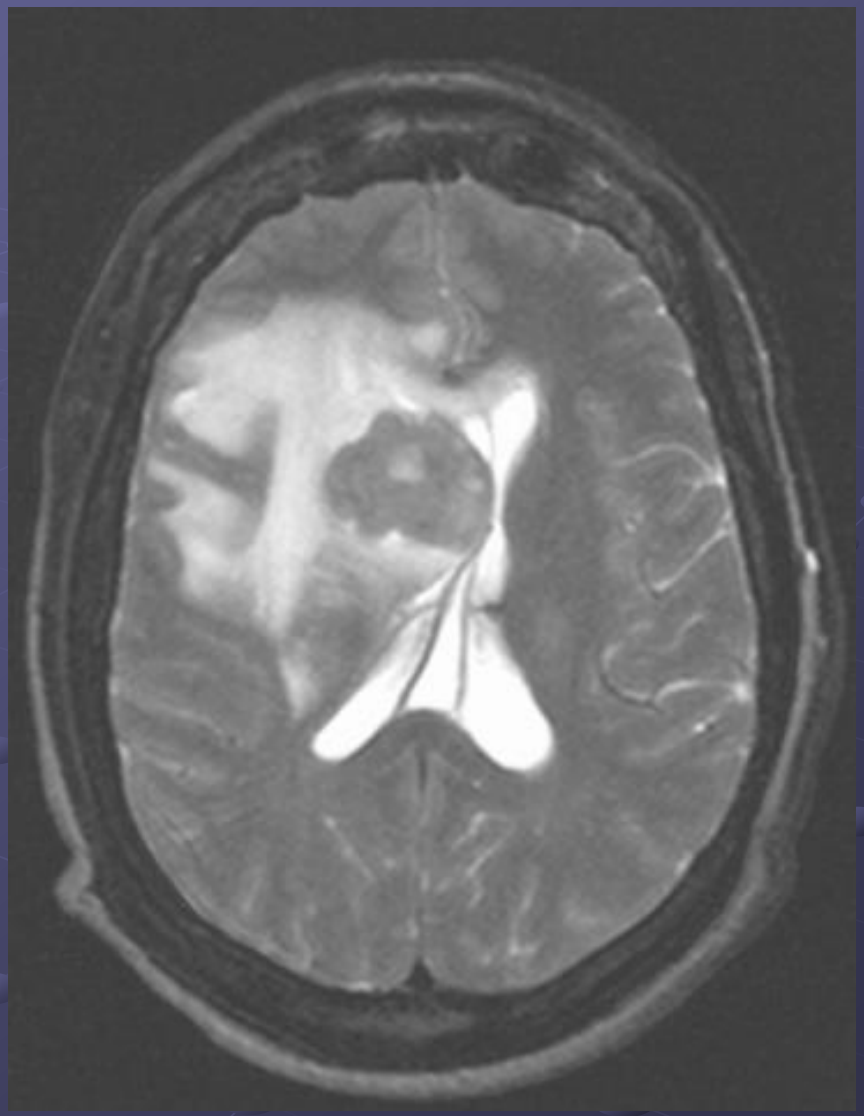


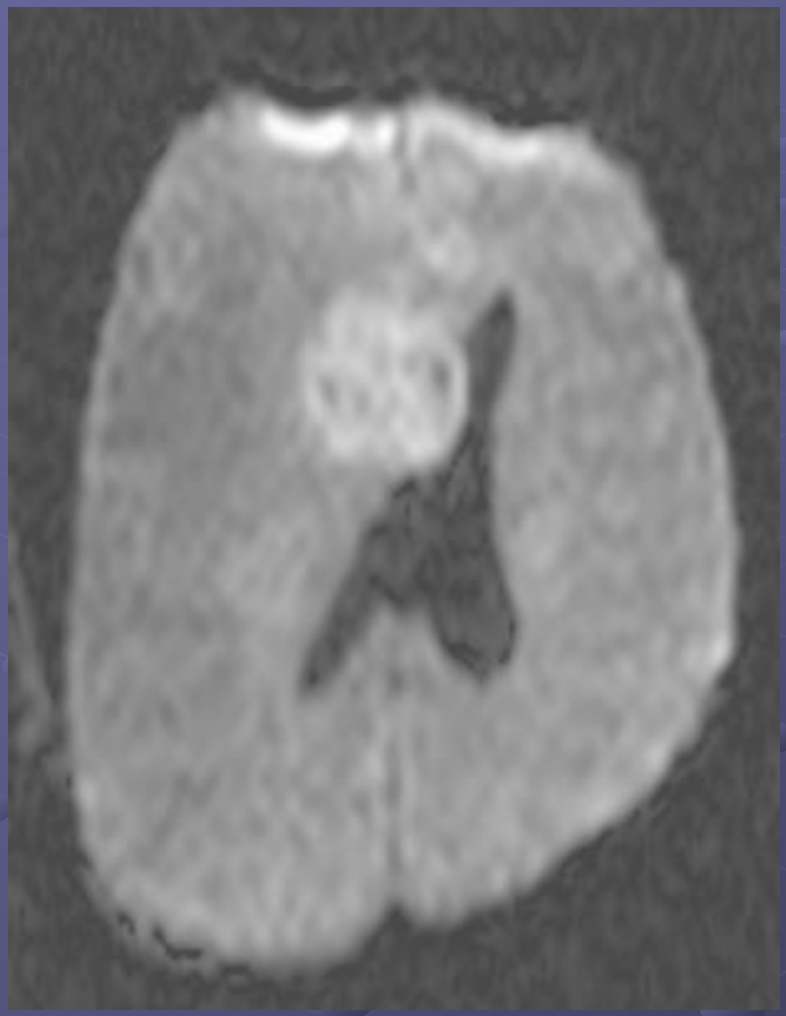
Axial graphic shows multiple periventricular lesions with involvement of the basal ganglia, thalamus, and corpus callosum, typical of primary CNS lymphoma (PCNSL). Note the extensive subependymal spread of the disease (black solid arrow). PCNSL typically extends along ependymal surfaces.

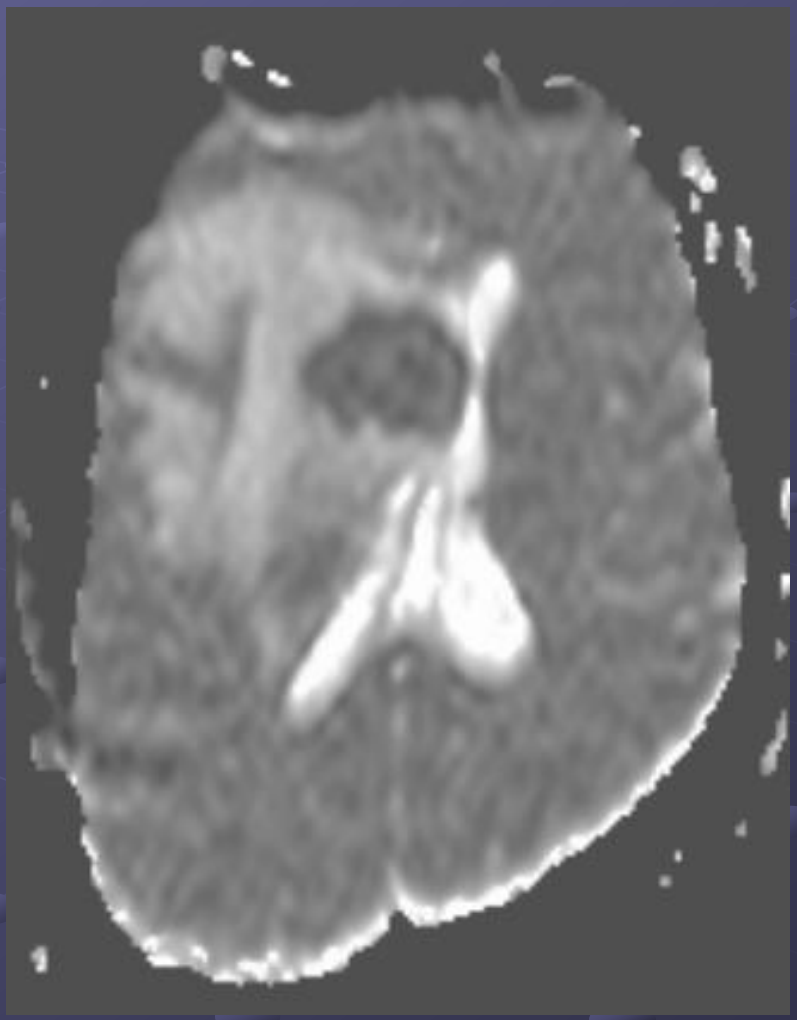


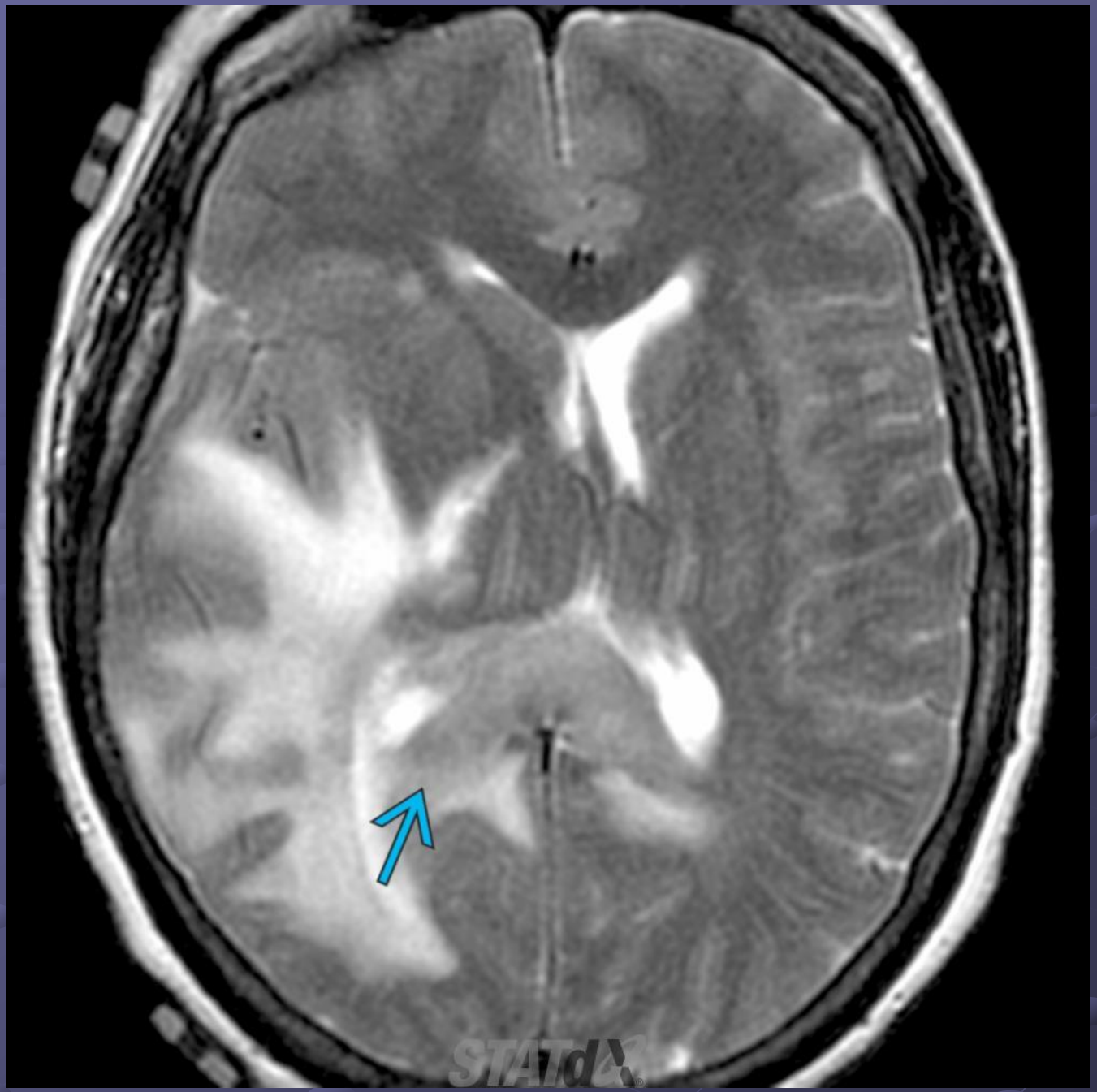






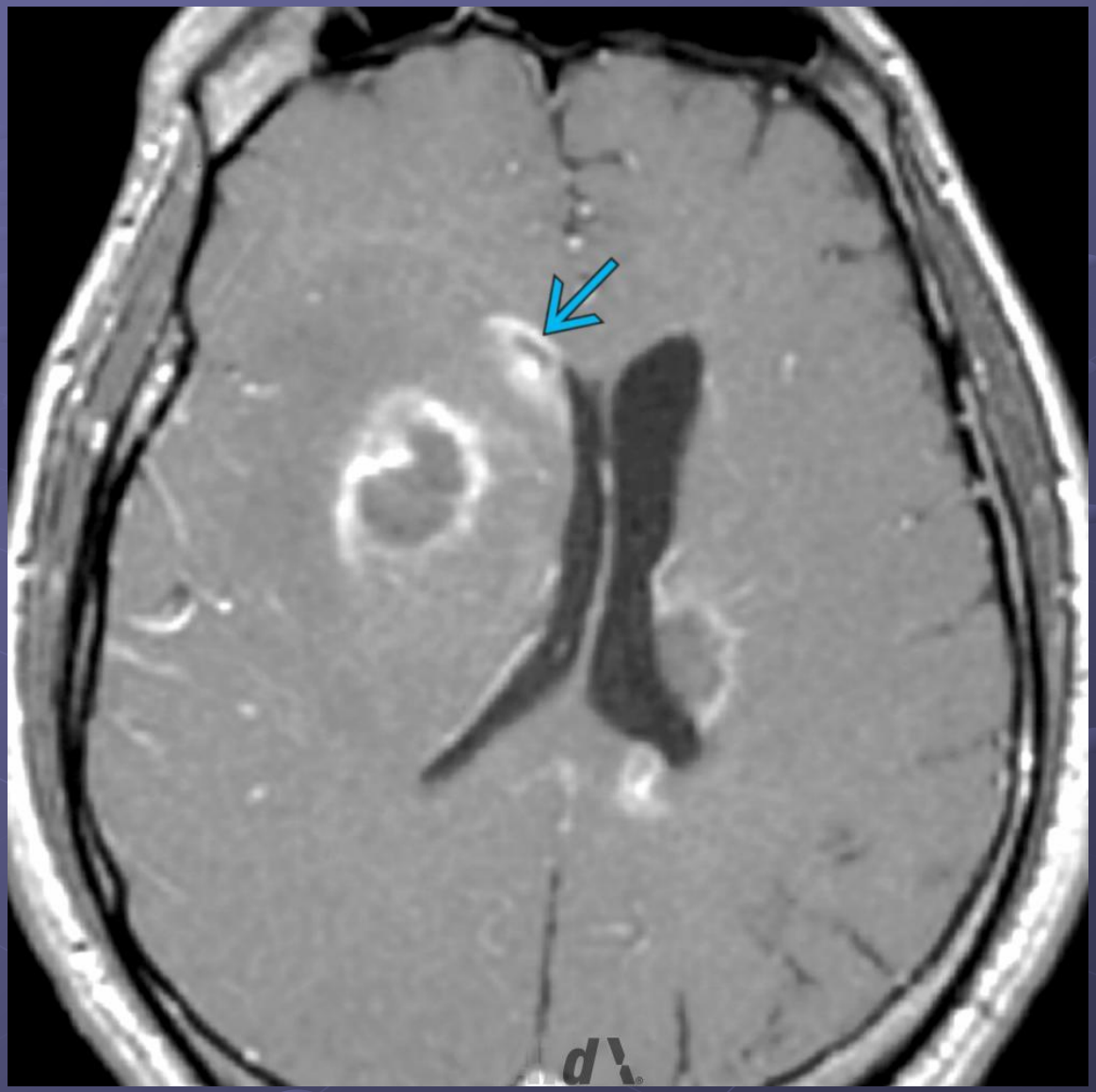






Axial T2WI MR shows a homogeneous isointense mass crossing the corpus callosum (cyan solid arrow) with surrounding vasogenic edema and mass effect. Primary CNS lymphoma in immunocompetent patients is typically homogeneous.

± hemorrhage, necrosis (immunocompromised)



Axial T1WI C+ MR shows a peripherally enhancing mass with central necrosis. The additional ependymal/subependymal enhancement (cyan solid arrow) helps diagnose PCNSL rather than toxoplasmosis in this HIV patient.