

# Multiple Sclerosis

- Multiple perpendicular callososeptal T2 hyperintensities characteristic of MS
- Perivenular extension: "Dawson fingers"
- Bilateral, asymmetric linear/ovoid FLAIR hyperintensities
  - > 85% periventricular/perivenular
  - 50-90% callososeptal interface
  - May also commonly involve subcortical U-fibers, brachium pontis, brainstem, spinal cord common

# Multiple Sclerosis

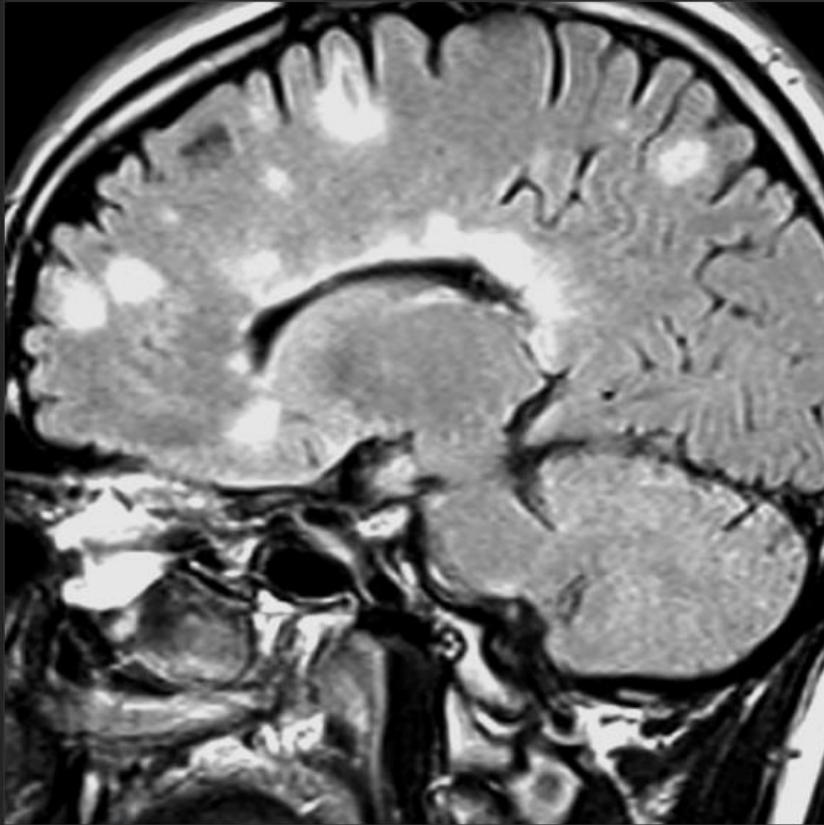
- Transient enhancement during active demyelination
- > 90% disappear within 6 months
- All groups, but Caucasian most common
- Age: 20-40 years
  - Peak onset = 30
  - 3-5% < 15
  - 9% > 50
- Adults: M:F = 1:2; adolescents: M:F = 1:3-5

Callososeptal interface is located on the inferior surface of the corpus callosum, where the septum pellucidum abuts it

## LESIONS AT THE CALLOSOSEPTAL INTERFACE

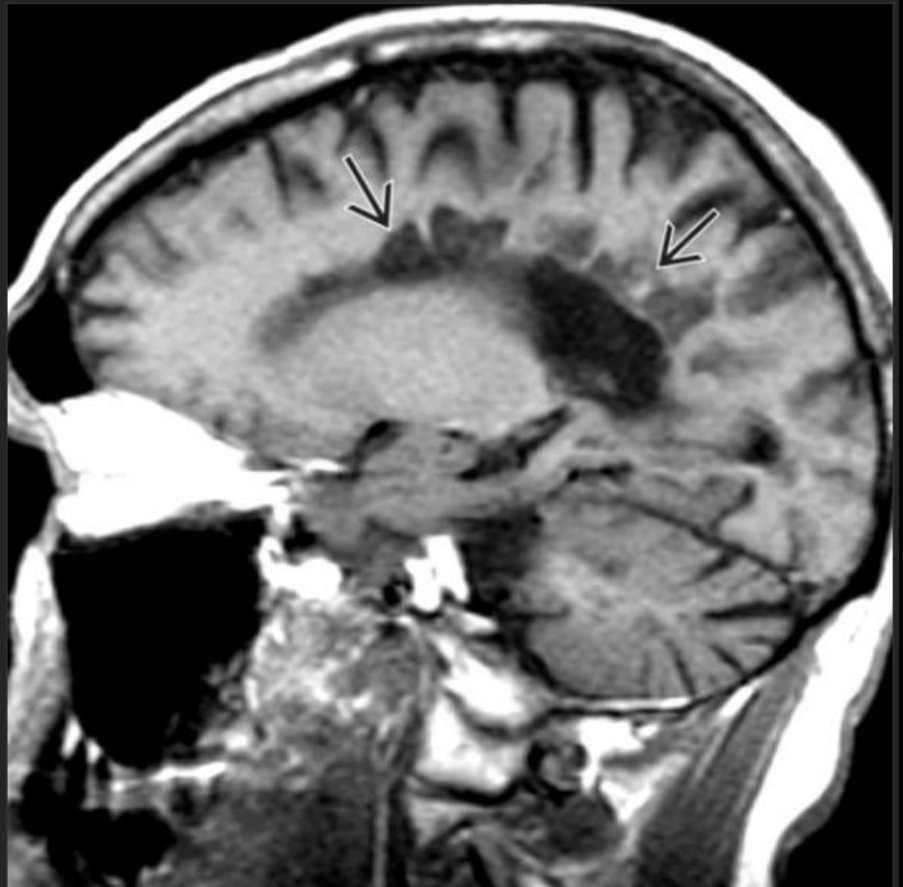


# Multiple Sclerosis



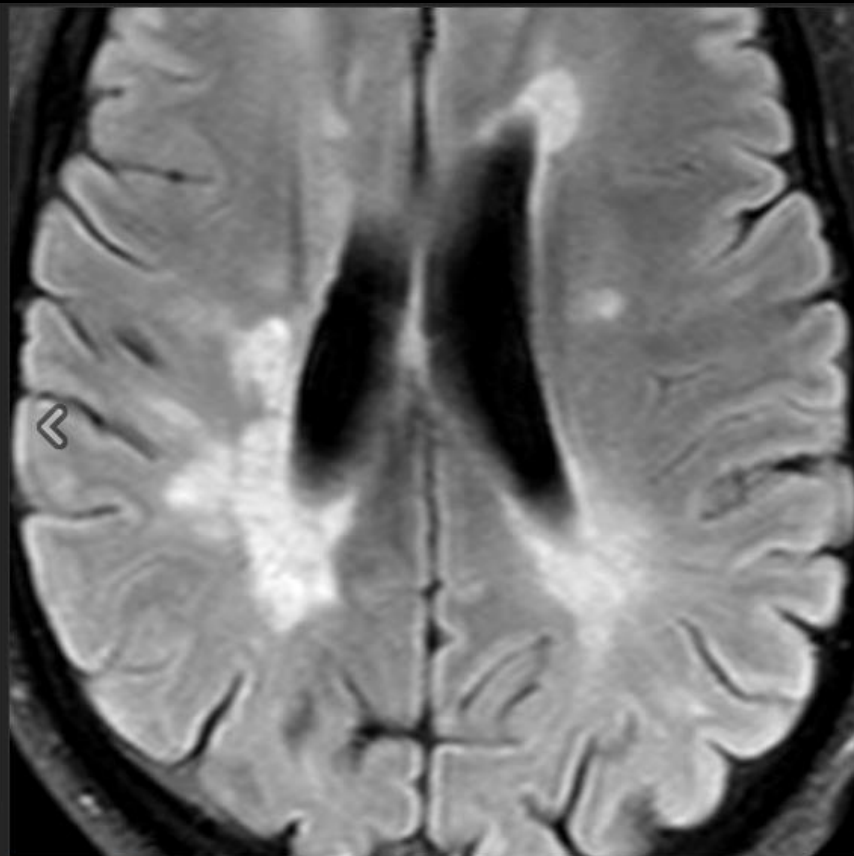
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Sagittal FLAIR MR shows MS plaques with typical perpendicular orientation at the calloseseptal interface along penetrating venules ("Dawson fingers"), as well as involving subcortical white matter.



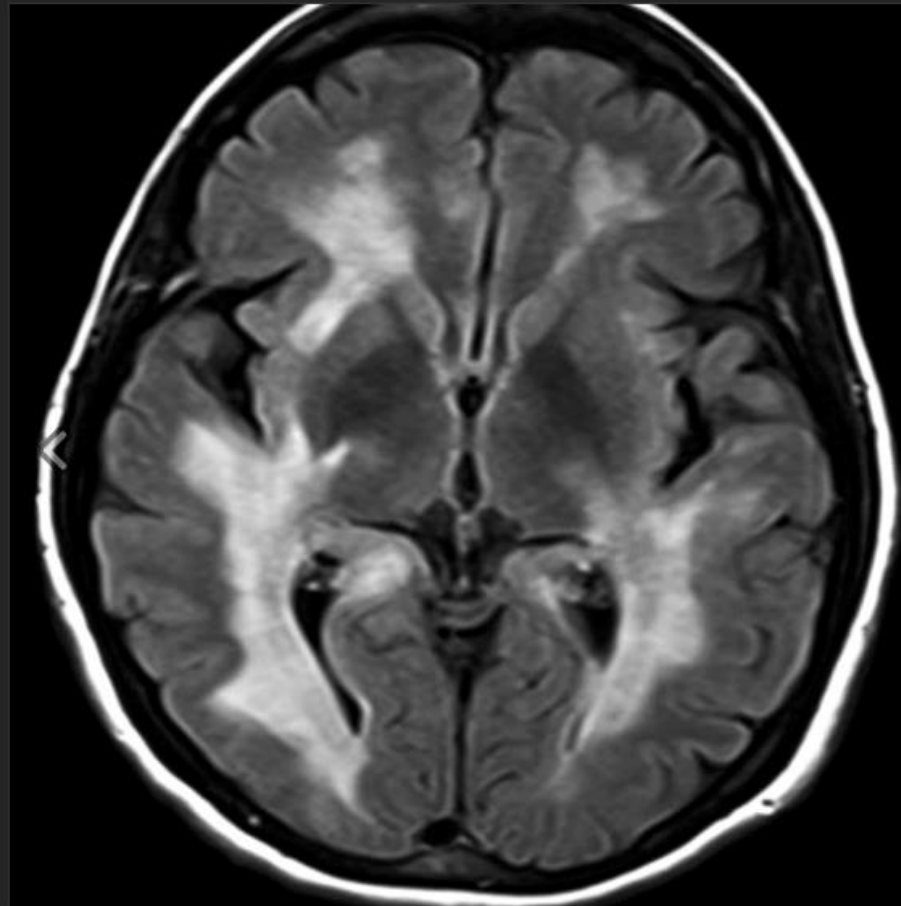
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Sagittal T1WI MR shows multiple hypointense lesions ("black holes") in the deep white matter  $\Rightarrow$  related to axonal destruction. Note the associated moderate ventricular and sulcal enlargement.



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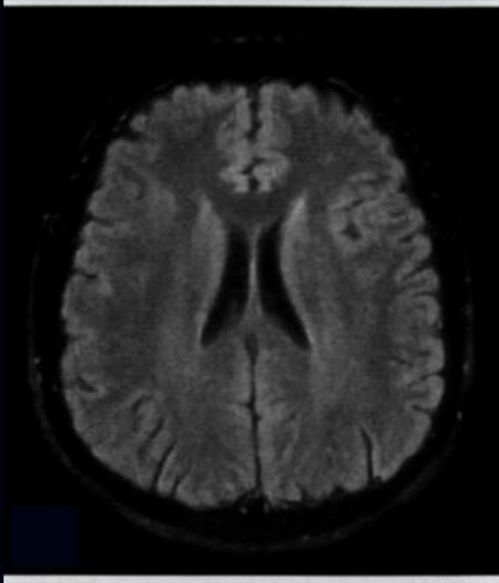
Axial FLAIR MR 3T shows multiple nonenhancing, periventricular, hyperintense MS lesions oriented perpendicular to the callosomarginal interface. These lesions are perivenular, along the path of the deep medullary veins, and represent Dawson fingers. Confluent lesions are also seen along the right periventricular margin.



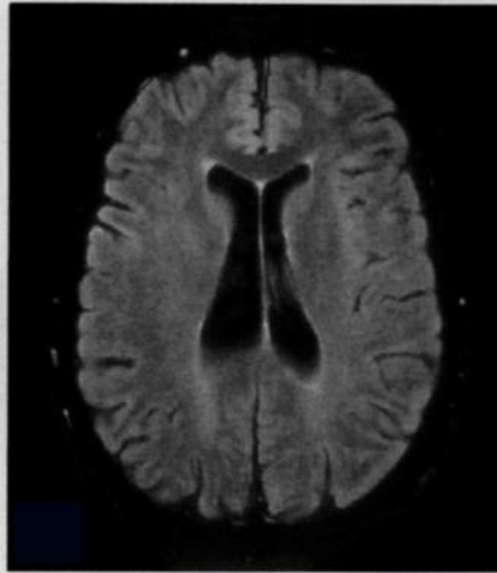
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Axial FLAIR MR shows confluent periventricular white matter hyperintensity typical of advanced, longstanding MS with loss of discrete, linear, periventricular lesions.

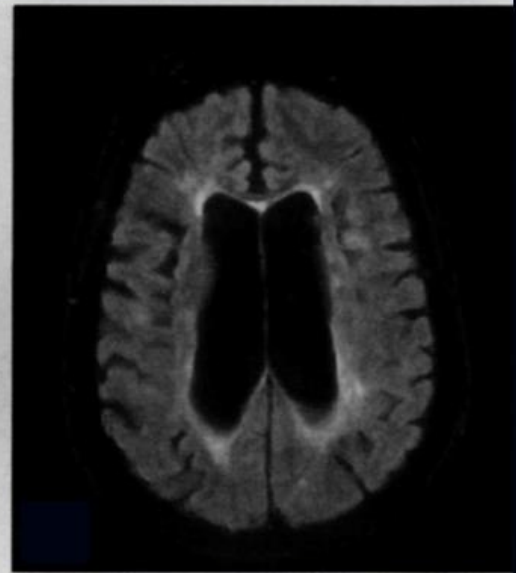
# Neurodegeneration Atrophy



31 yo, control



36 yo, MS x 2 yrs



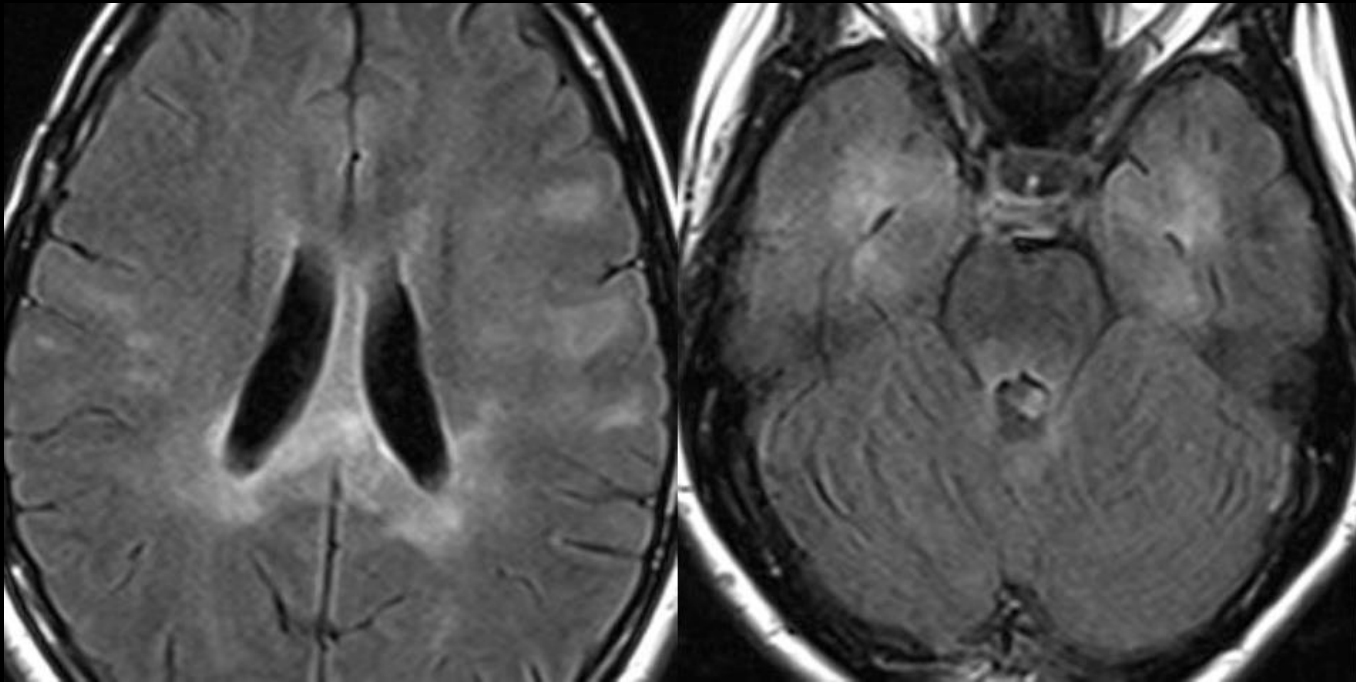
43 yo, MS x 19 yrs

# Multiple Sclerosis Variants

- **Malignant:**
  - Younger patients, febrile prodrome, clinically fulminant, death in months
- **Schilder type ("diffuse sclerosis"):**
  - Extensive, confluent, asymmetric demyelination in bilateral supra-/infratentorial parenchyma
- **Balo type ("concentric sclerosis"):**
  - Large lesions with alternating zones of demyelinated/myelinated WM



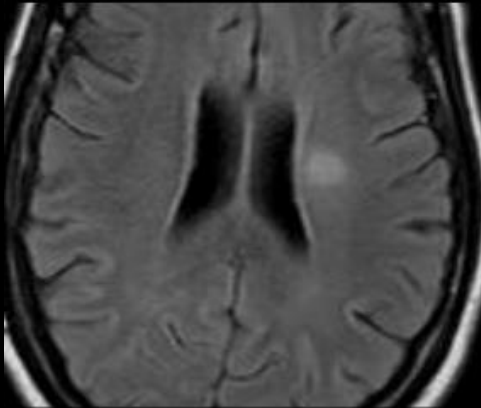
# MS mimicking infiltrating glioma



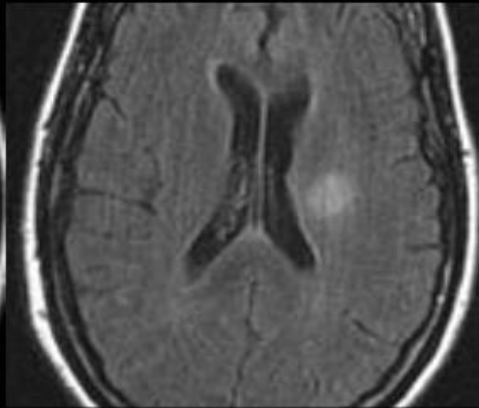


# Glioma mimicking MS

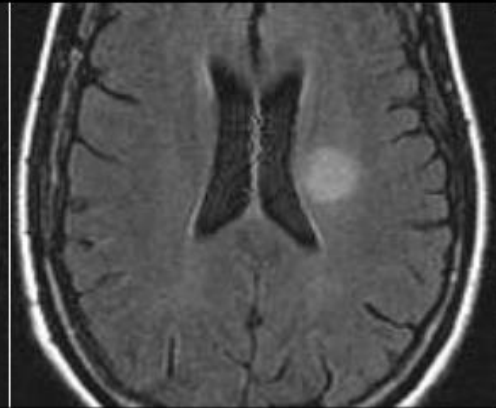
Oct 2009



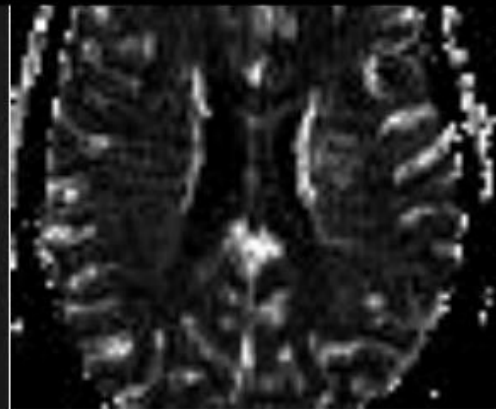
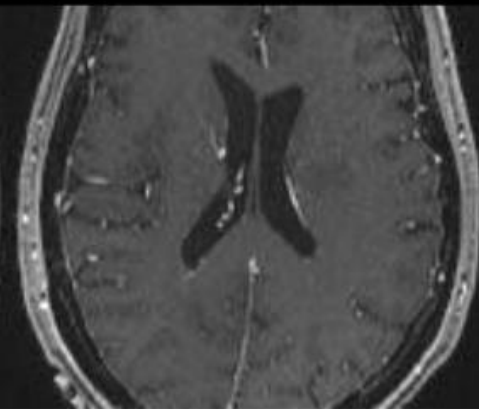
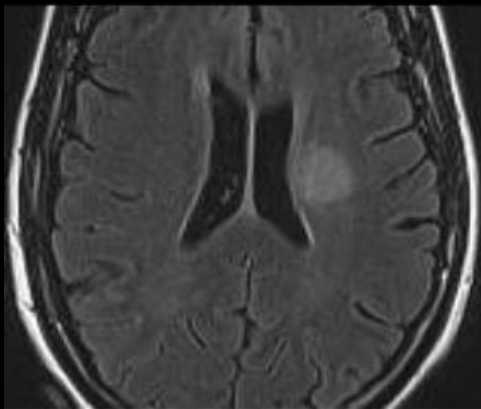
Feb 2010



May 2010



Jun 2010



# MS with PML (on Tysabri)

- Natalizumab (Tysabri <sup>TM</sup>) recently has also been associated with PML, an IgG monoclonal antibody used in the treatment of relapsing remitting multiple sclerosis

