A Case of Fluctuating White Matter Disease

John A. Bertelson, MD FAAN

ASN 42ND ANNUAL MEETING
JANUARY 24-26, 2019
PUERTO RICO

RELEVANT DISCLOSURES

None

ASN 42ND ANNUAL MEETING
JANUARY 24-26, 2019
PUERTO RICO

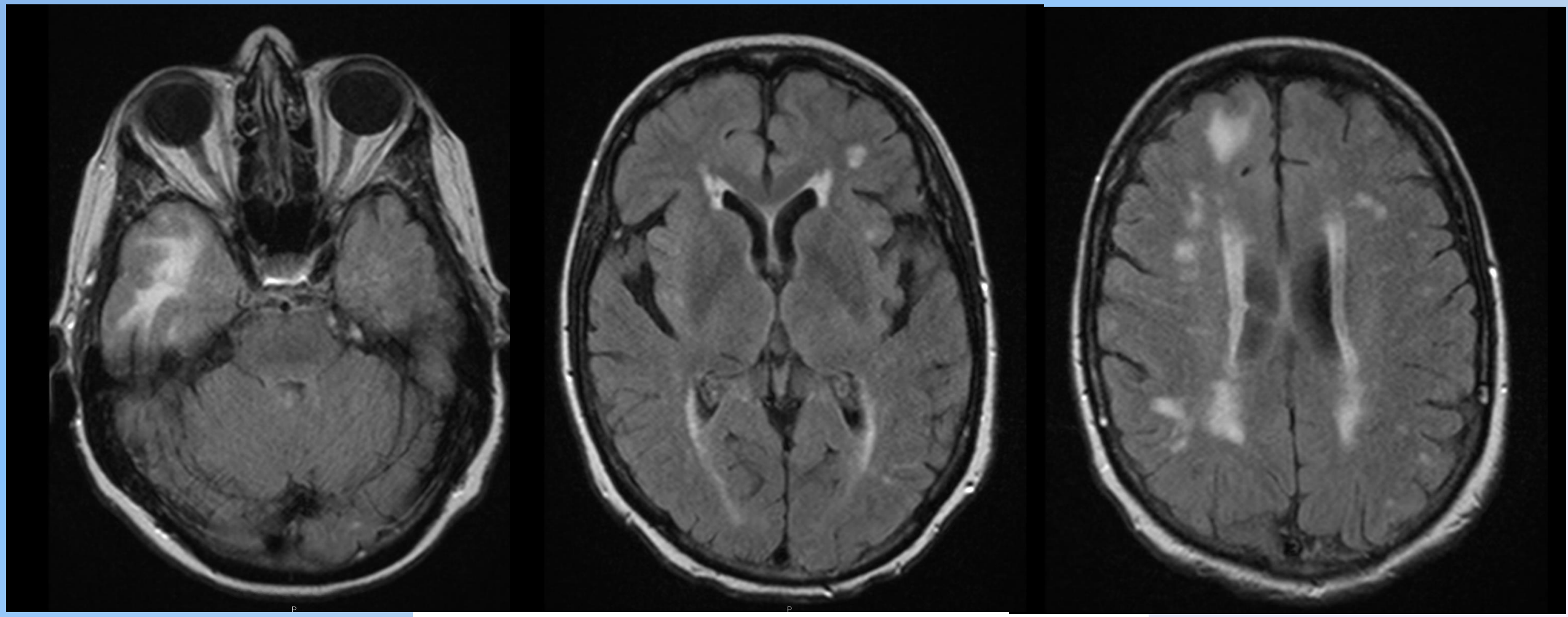
75 year old female with left paresthesia

- Presented to a neurologist in 2007 for left face and arm paresthesias, which resolved after several days
- Retired school teacher
- Distant history of breast cancer
- MRI was performed

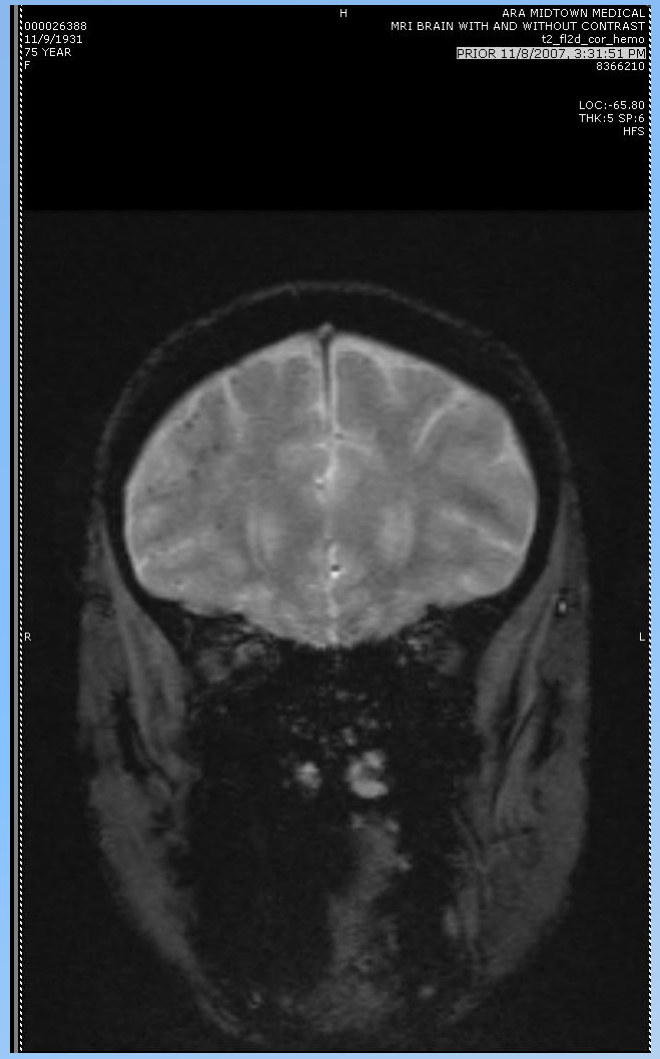
ASN 42ND ANNUAL MEETING
JANUARY 24-26, 2019
PUERTO RICO

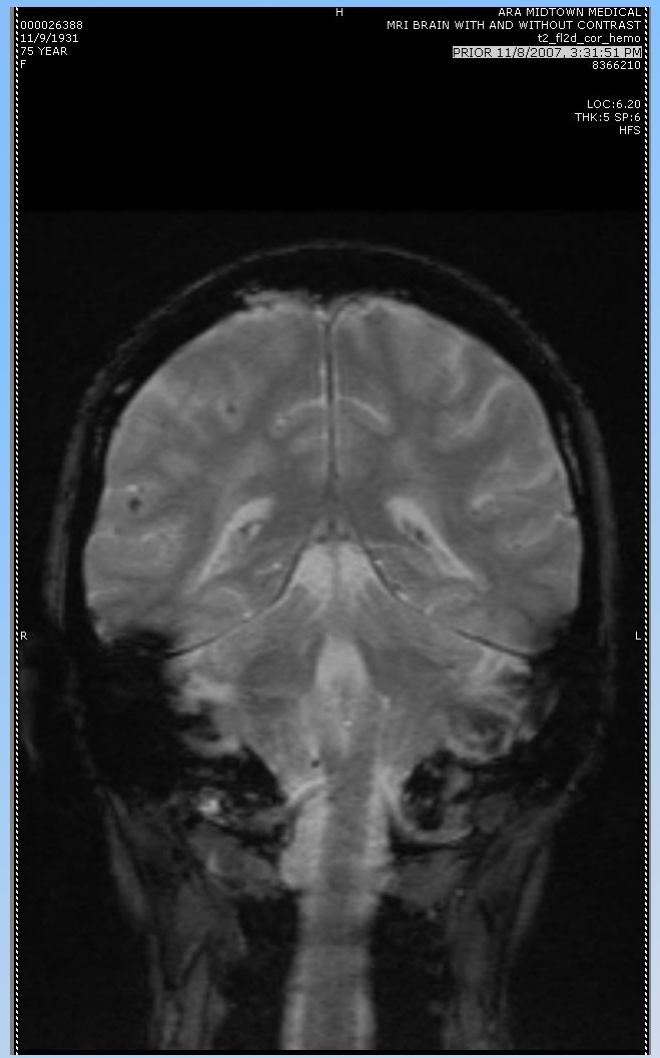
75 year old female (2007)

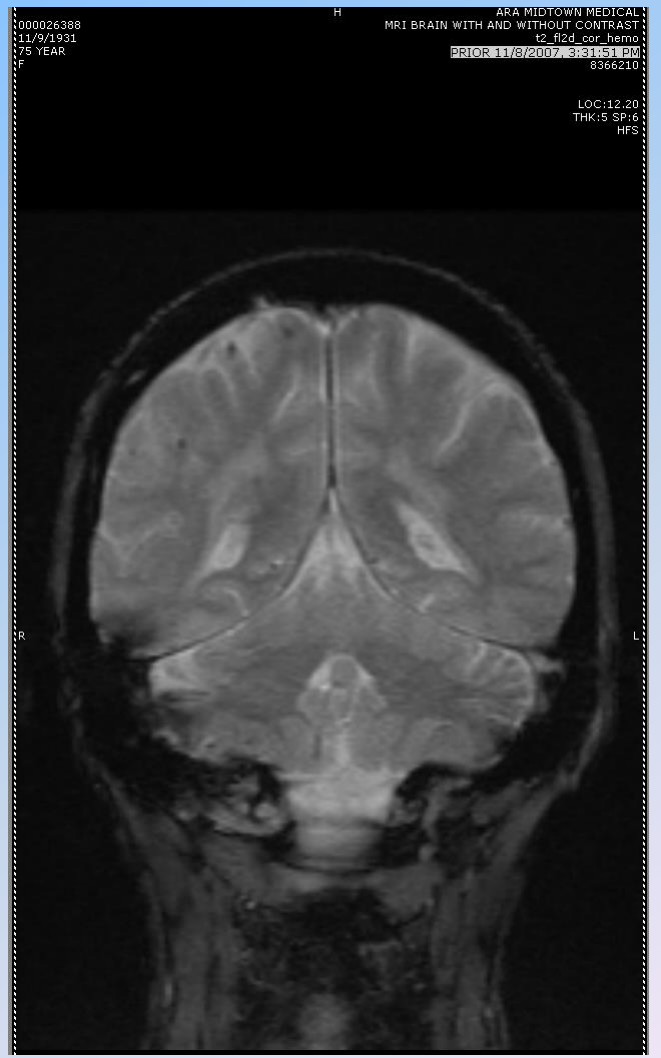
Axial FLAIR



75 year old female (2007)







Clinical Course

- Over the next 10 years, she experienced fluctuations in arousal, cognition, and focal sensori-motor dysfunction
  - 2007: Transient left paresthesia
  - 2009: Transient dysarthria, diagnosed TIA
  - 2012: Febrile illness, determined to be WNV, recovered fully
  - 2015: Diagnosed with MCI, onset of progressive generalized decline

ASN 42ND ANNUAL MEETING
JANUARY 24-26, 2019
PUERTO RICO

Clinical Course

- Multiple inpatient and outpatient evaluations revealed
  - Normal toxicology, RPR, thyroid function, B12, other lab studies
  - Initial spells responded favorably to IV steroids
  - Minimal response to subsequent steroid trials

Serial Axial FLAIR

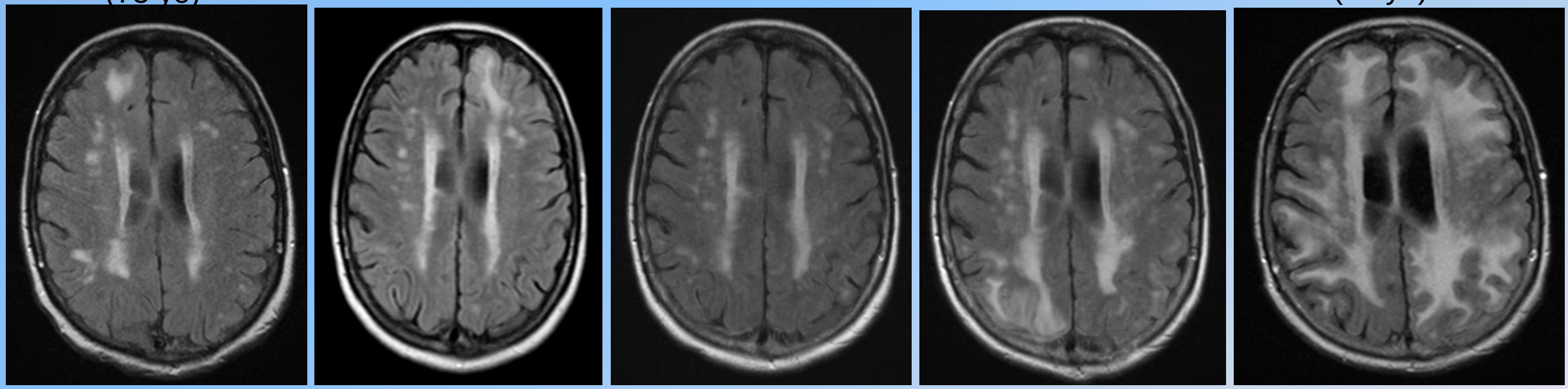
11/8/07
(75 yo)

6/7/09

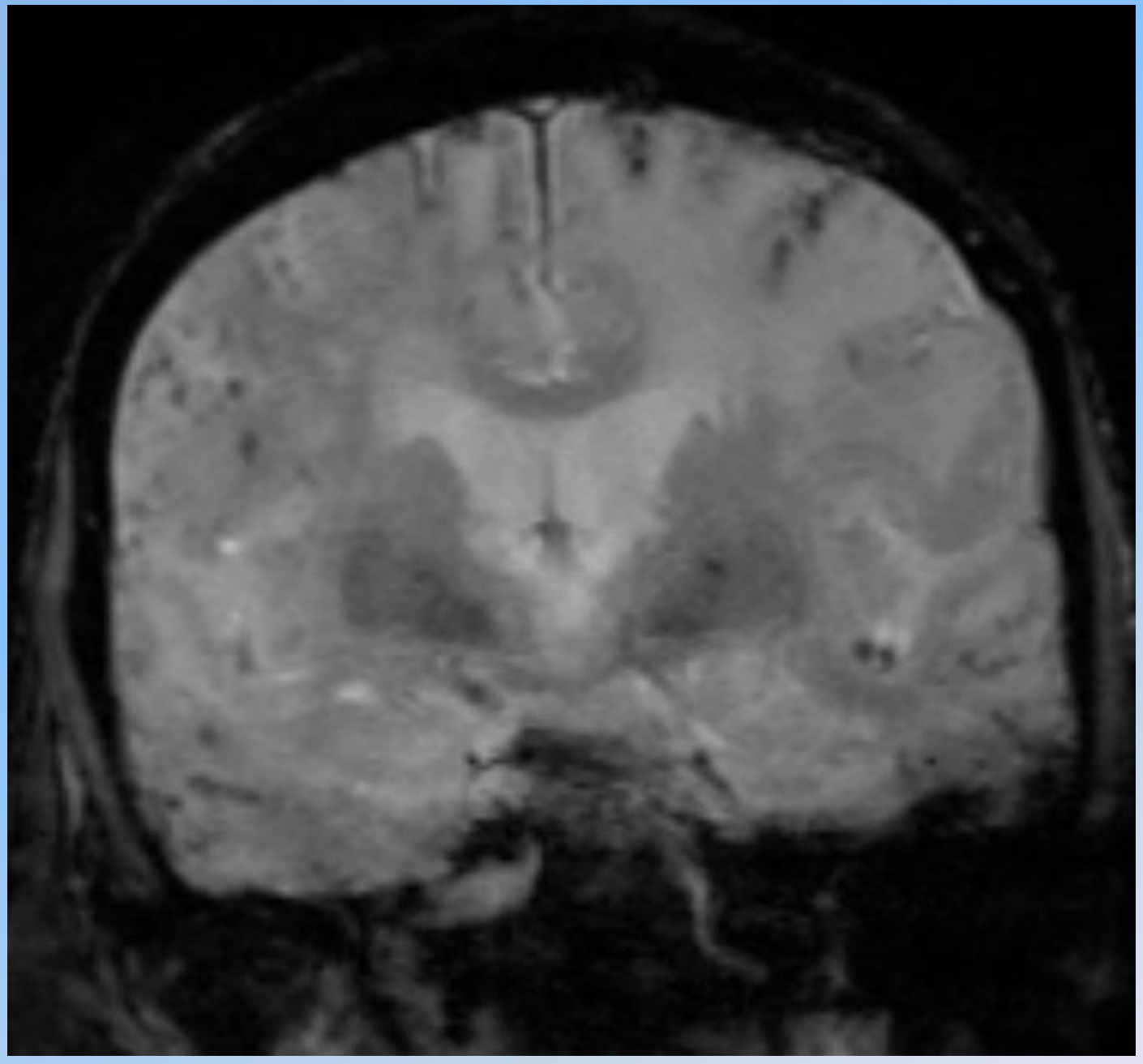
6/14/11

3/25/13

6/1/15
(83 yo)



ASN 42ND ANNUAL MEETING
JANUARY 24-26, 2019
PUERTO RICO



Coronal GRE
2015

MRI Findings

- Increased T2/FLAIR white matter hyperintensities
  - Waxing and waning of smaller lesions
  - Trend for increasing white matter hyperintensity burden
  - Location not classic for chronic microvascular disease
- Numerous foci of microhemorrhage
  - Mild degree of cortical siderosis
  - Lobar hemorrhage not seen
- No abnormal contrast enhancement
  - Variable patchy leptomeningeal enhancement

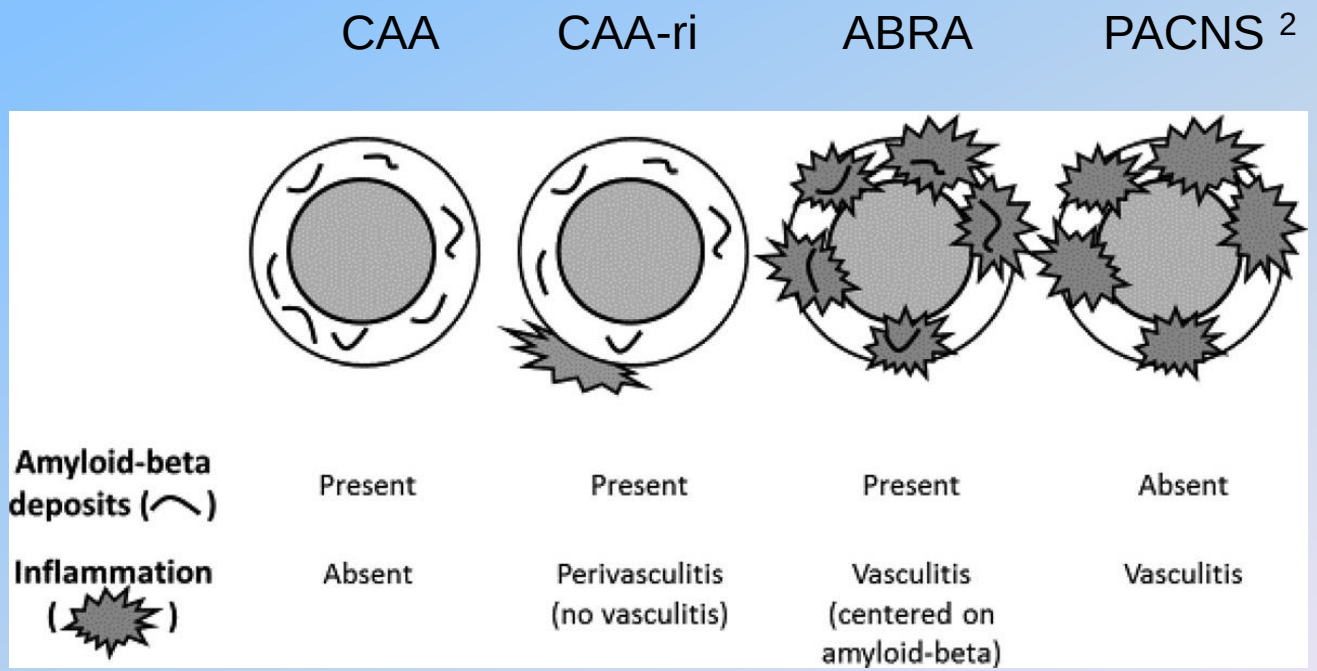
Diagnosis?

Inflammatory Cerebral Amyoid Angiopathy (I-CAA)

ASN 42ND ANNUAL MEETING
JANUARY 24-26, 2019
PUERTO RICO

Inflammatory CAA

- Pathophysiology:
  2 subtypes [1]
  - Amyloid beta-related angiitis (ABRA)
    - Inflammatory, angiodestructive process, often granulomatous
  - CAA-related inflammation (CAA-ri)
    - Inflammatory reaction but not angiodestructive



1. Salvarani et al. 2016
2. Moussaddy et al 2015

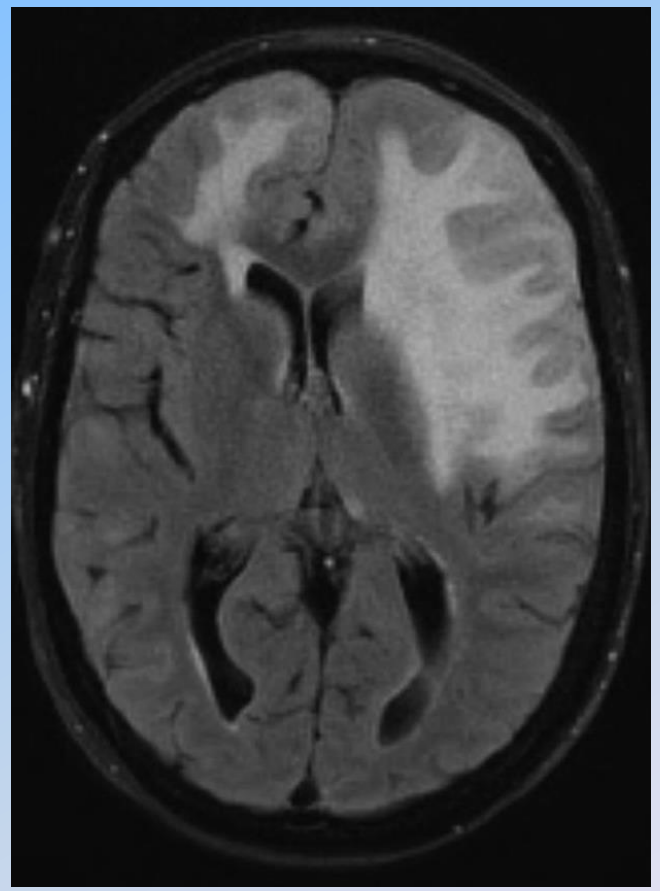
Inflammatory CAA

- Common imaging features
  - Asymmetric edema
    - Often multifocal
    - May produce mass effect
  - Hemorrhage
    - Cortical and subcortical microhemorrhages *
    - Superficial siderosis is common
  - Variable leptomeningeal enhancement *
    - Sometimes in isolation without cortical microbleeds

* Especially in areas of edema

Inflammatory CAA

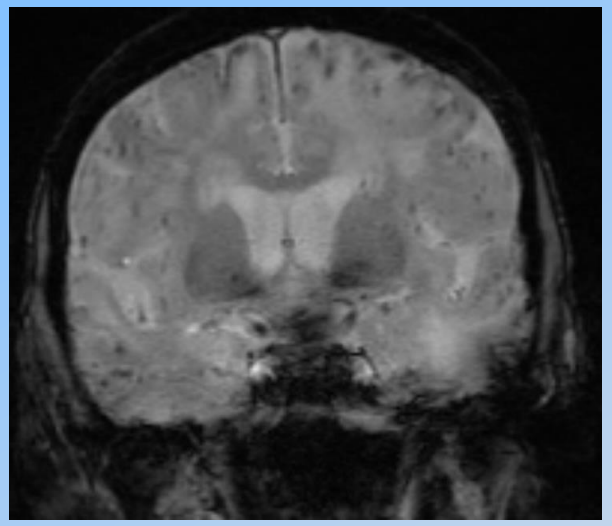
- Common imaging features
  - Asymmetric edema
    - Often multifocal
    - May produce mass effect
  - Hemorrhage
    - Cortical and subcortical microhemorrhages *
    - Superficial siderosis is common
  - Variable leptomeningeal enhancement *
    - Sometimes in isolation without cortical microbleeds

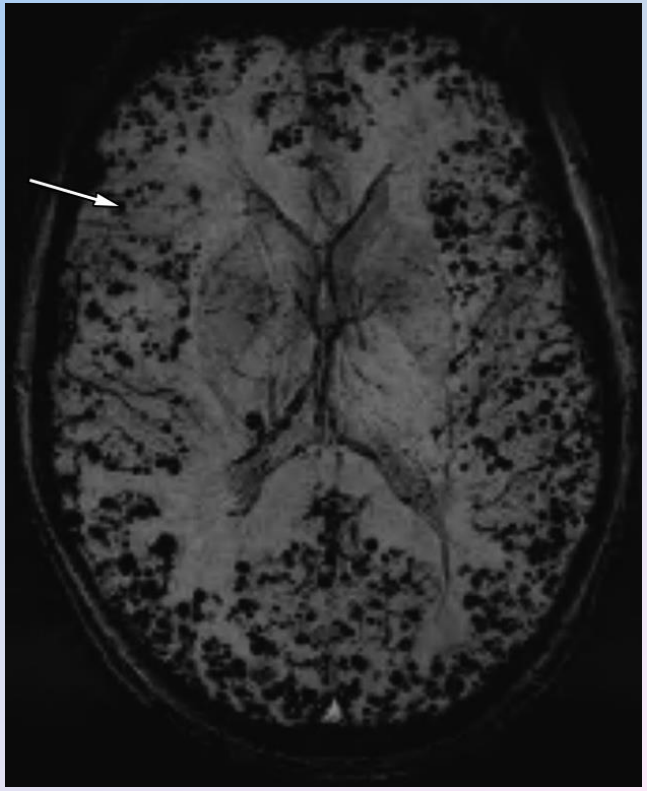


* Especially in areas of edema

Inflammatory CAA

- Common imaging features
  - Asymmetric edema
    - Often multifocal
    - May produce mass effect
  - Hemorrhage
    - Cortical and subcortical microhemorrhages *
    - Superficial siderosis is common
  - Variable leptomeningeal enhancement *
    - Sometimes in isolation without cortical microbleeds

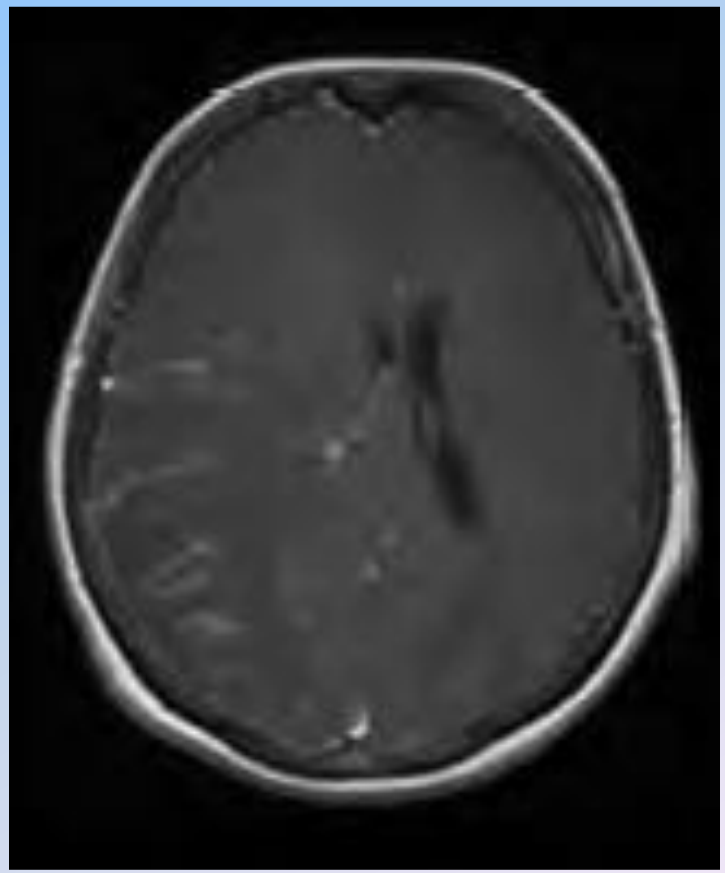




* Especially in areas of edema

Inflammatory CAA

- Common imaging features
  - Asymmetric edema
    - Often multifocal
    - May produce mass effect
  - Hemorrhage
    - Cortical and subcortical microhemorrhages *
    - Superficial siderosis is common
  - Variable leptomeningeal enhancement *



* Especially in areas of edema

Inflammatory CAA

- Clinical presentation
  - Confusion, dementia, focal neurologic deficits, seizures, headaches
- Other diagnostic findings
  - Increased prevalence in patients with APOE4/4
  - Elevated CSF protein
  - Acute infarction relatively uncommon
  - Lack of spinal cord involvement

DDx of I-CAA

	I-CAA	CAA	PRES [2]	CNS Angiitis [2]
Age (years)	60-80	60-80 [1]	Varies	Peak age50
Microbleed	↑↑	↑↑	-	+/-
Siderosis	↑	+/-	-	+/-
Enhancement	Leptomeningeal in over 50%	-	Leptomeningeal or cortical in ~35%	Common
Myelopathy	-	-	-	↑
White matter	Often multifocal, may be tumefactive	Less than seen in I-CAA	Common, variable appearance, usually symmetric and posterior	Common, variable appearance, often associated with acute infarctions
Treatment	Steroids, +/- other immunosuppression	Supportive	Supportive	Steroids, +/- other immunosuppression

1. There is rare form with younger onset, of autosomal dominant inheritance
2. Radiopaedia

Inflammatory CAA

- Treatment
  - Corticosteroids
  - Steroid-sparing immunosuppression unproven but may be considered for relapsing disease

THANK YOU

ASN 42ND ANNUAL MEETING
JANUARY 24-26, 2019
PUERTO RICO