

“White Spot” Disease A RADIOLOGICAL MYTH

Dennis D. Thoen, MD

Director, MS Clinic

Western Neurological Associates, PC

Disclosures

- Speaker Honorarium received from:
 - Teva Neuroscience
 - Biogen Idec and Elan
 - Serono/Pfizer
 - Bayer Healthcare
 - Johnson & Johnson

Principal Conditions Mimicking MS on MRI

- Normal Aging – one white spot per decade
- Migraine
- PFO
- Cerebrovascular diseases
 - Collagen vascular disease
 - Diabetes
 - Hypertension
 - Periventricular leukomalacia
 - Primary central nervous system vasculitis
 - Subcortical atherosclerotic encephalopathy (Binswanger's disease)
 - Susac syndrome

MS Masqueraders Con't

- Infectious and Inflammatory Diseases
 - Abscesses
 - Acute disseminated encephalomyelitis (ADEM)
 - HIV encephalitis
 - Lyme disease
 - Progressive multifocal leukoencephalopathy (PML)
 - Sarcoidosis
 - Subacute sclerosing panencephalitis
 - Syphilis
 - tuberculosis

MS Masqueraders Con't

- Toxic/Metabolic Diseases
 - Chemotherapy or radiotherapy effects
 - Leukodystrophies
 - Mitochondrial diseases
 - Osmotic myelinolysis
 - Toluene toxicity
 - Vitamin B-12 deficiency

MS Masqueraders Con't

- Neoplastic Disease
 - Metastases
 - Primary brain or intravascular lymphoma
- **Plus 70 other conditions with neurological expression**

BP: 119.8
ST: 5.0
sp: 5.5
16

H

A

P

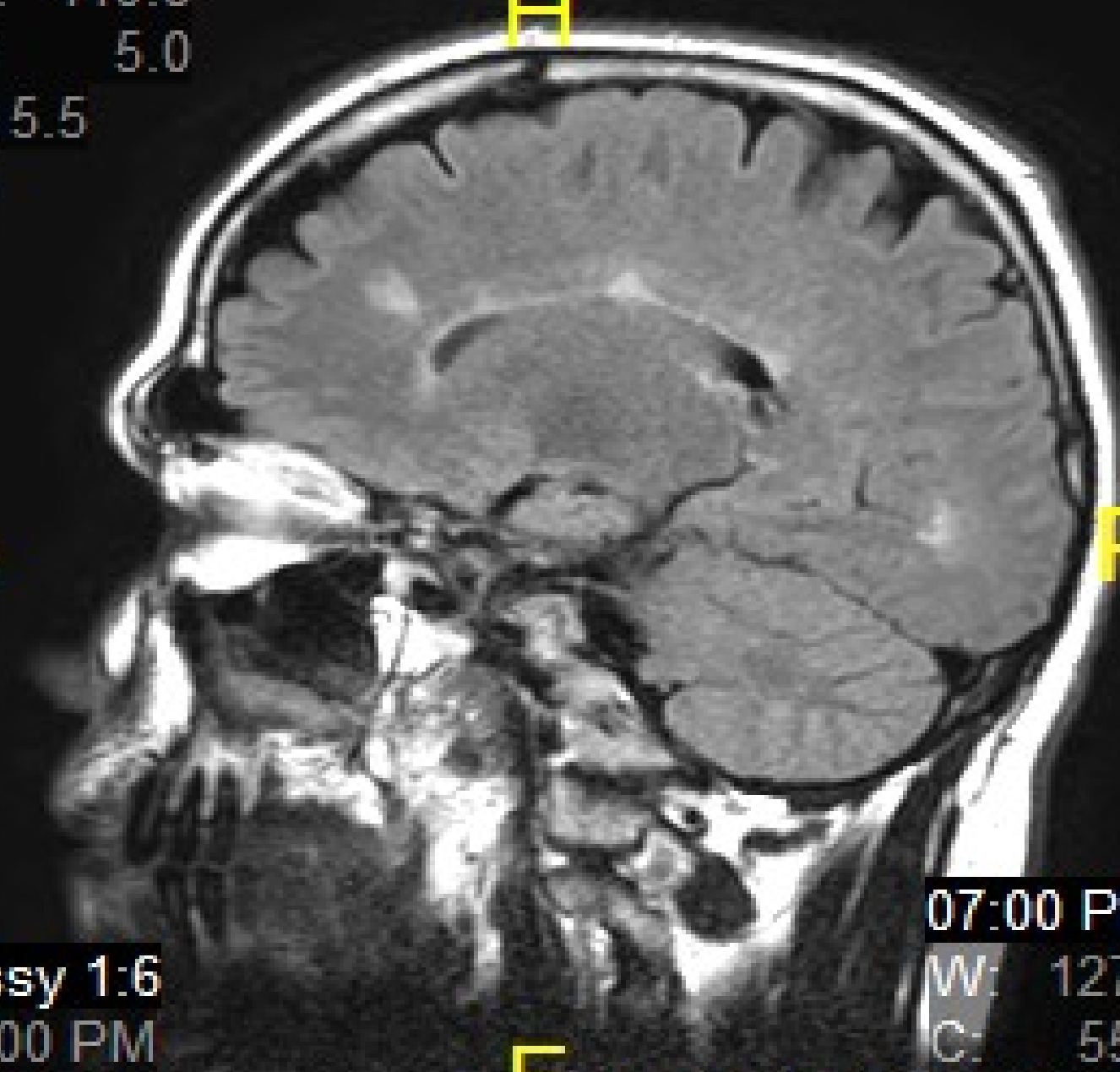
Typical
MS

Lossy 1:6
07:00 PM
Zoom:1.2

07:00 PM
W: 1271
C: 551

F

Fast Brain *SAG FLAIR



Typical
MS

BP: 65.3
ST: 5.0
sp: 5.0
18



R

L

A

P

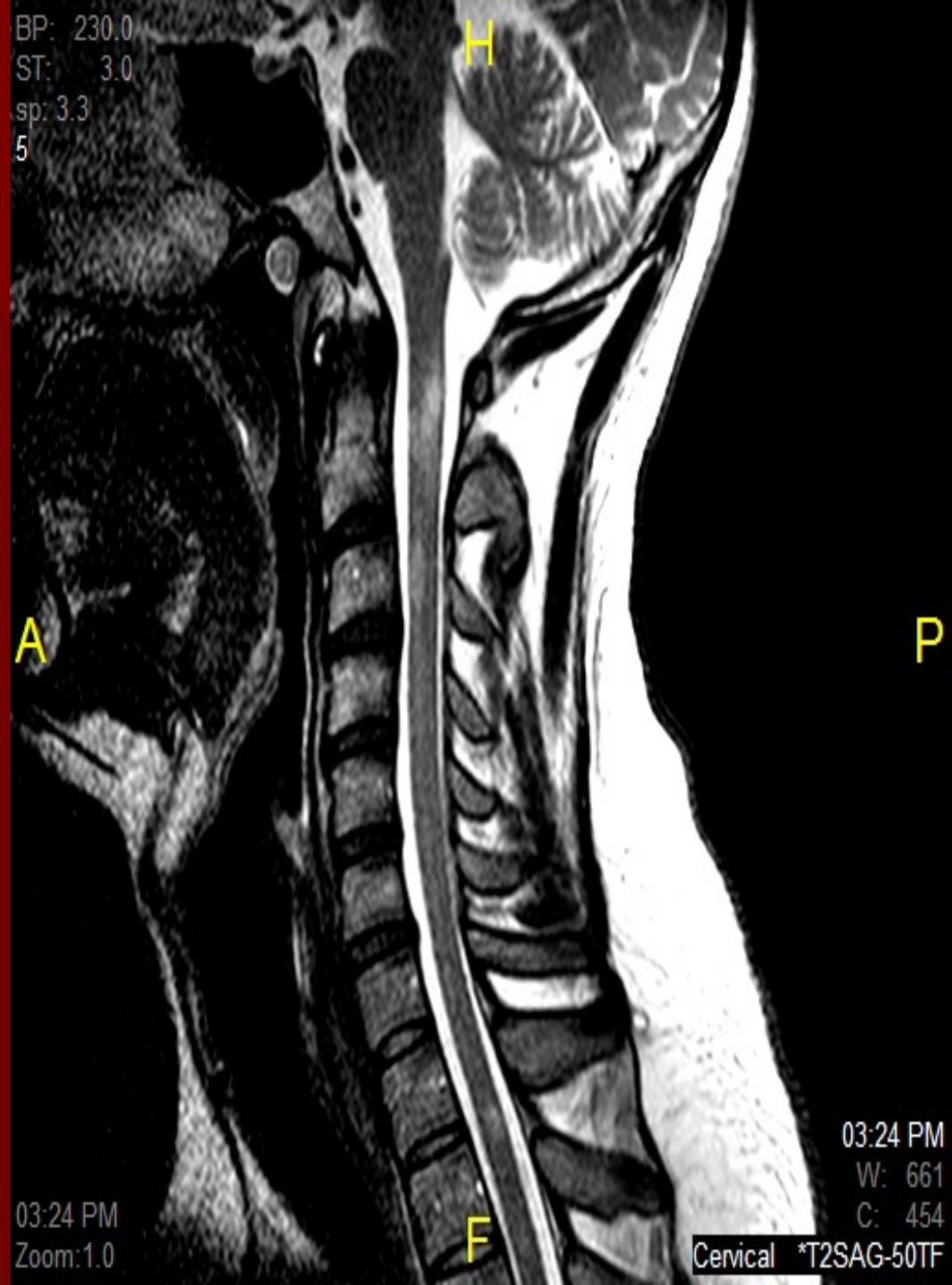
03:12 PM
Zoom:1.0

03:12 PM
W: 1253
C: 613

Fast Brain *TRANS FLAIR

Sag T2 FLAIR

Cervical & Upper Thoracic Lesions



BP: 42.6
ST: 5.0
sp: 6.0
17

A

Migraine
?PFO

R



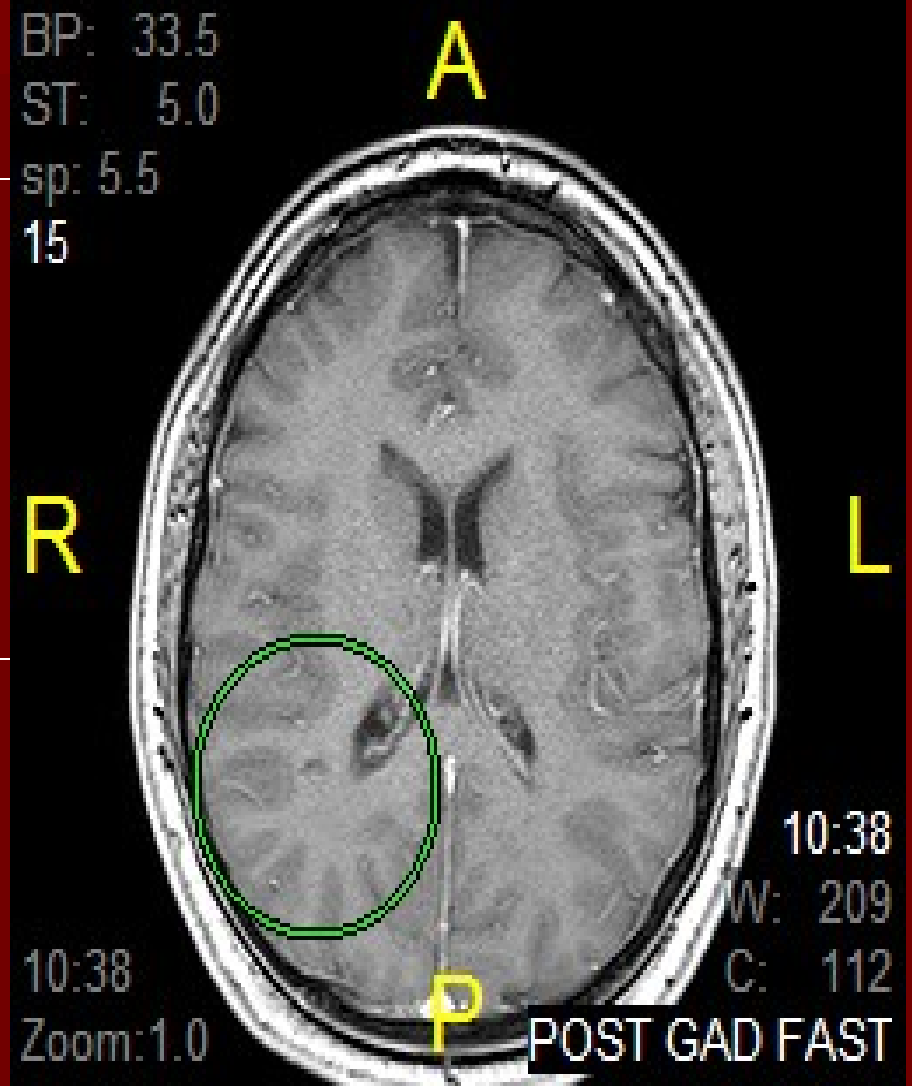
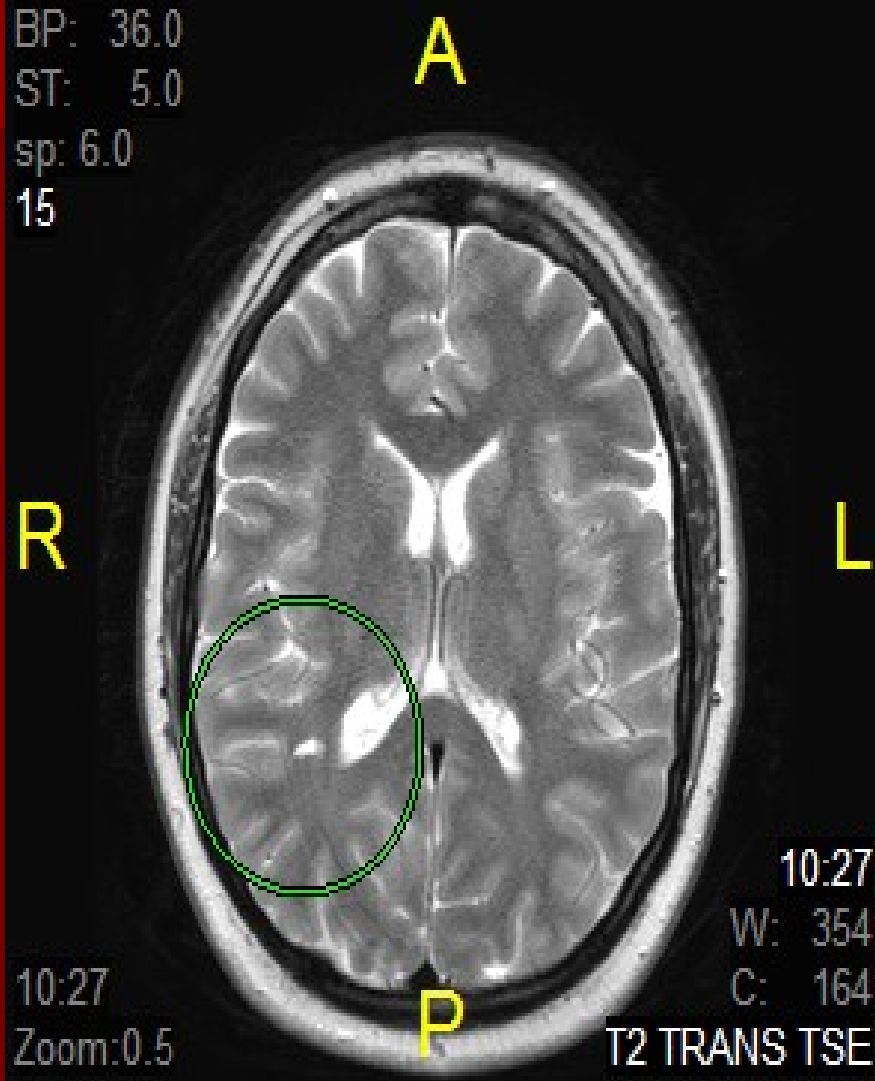
L

06:55
Zoom:1.1

P

06:55
W: 160
C: 157
TRANS FLAIR

Single White Spot



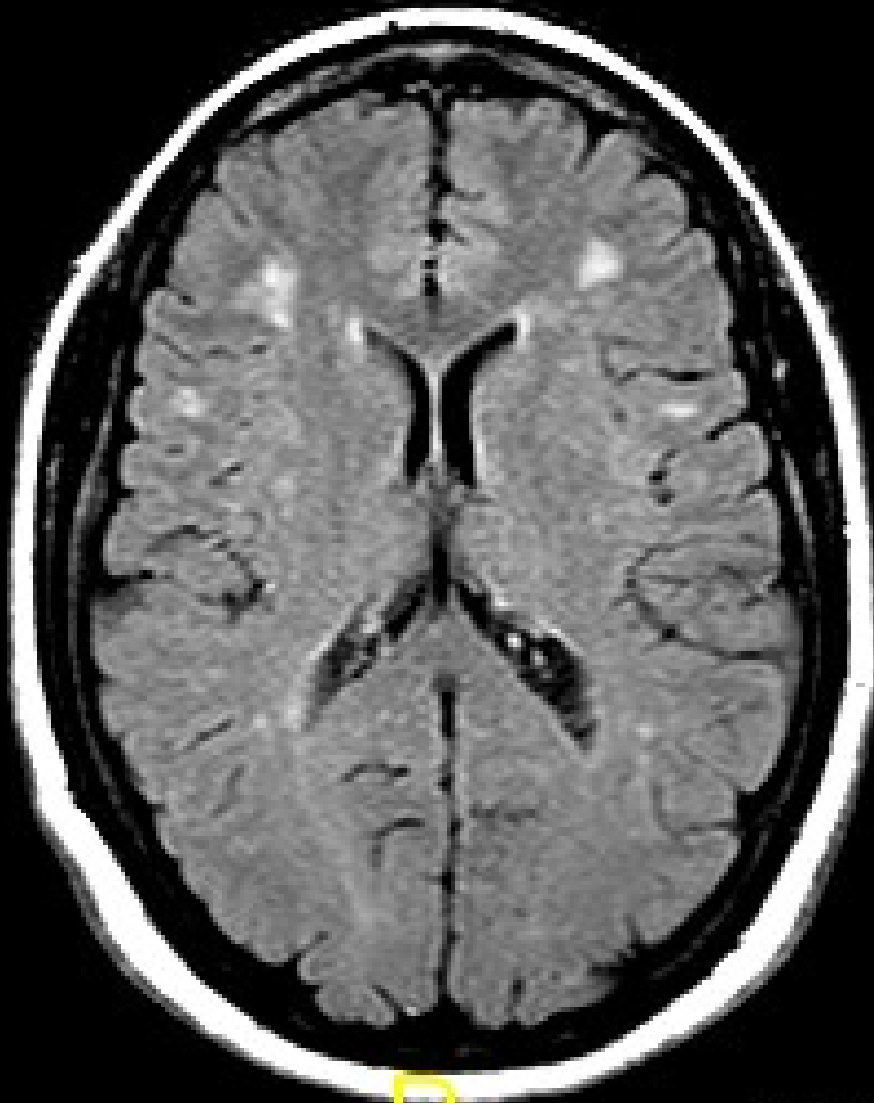
BP: 16.0
ST: 5.0
sp: 6.0
14

A

Diffuse
micro-
vascular
disease

R

L



15:40
Zoom:1.0

P

15:40
W: 189
C: 170
TRANS FLAIR

How to Sort out?

1. Lumbar Puncture – CSF – MS Panel
2. PFO Studies/MR angiograms/US

CSF Studies

MS Panel (oligoclonal bands, IgG indices)

CSF Panel (cells, protein, glucose)

VDRL

Cytology

Lyme PCR

Routine Fluid Culture

Fungus & TB Culture

Blood Studies

ANA Direct

SED Rate

Lipid Profile

Sjogren's Anti-dsDNA

Sjogren's Muscle ABS/RNP

Smooth Muscle ABS/RNP

Lupus Anticoagulant Panel

Anticardiolipin AB Titer

Lyme AB Titer

Homocysteine

CBC w/diff

CMP

Vitamin B-12

Folate

Glucose

TSH & Free T4

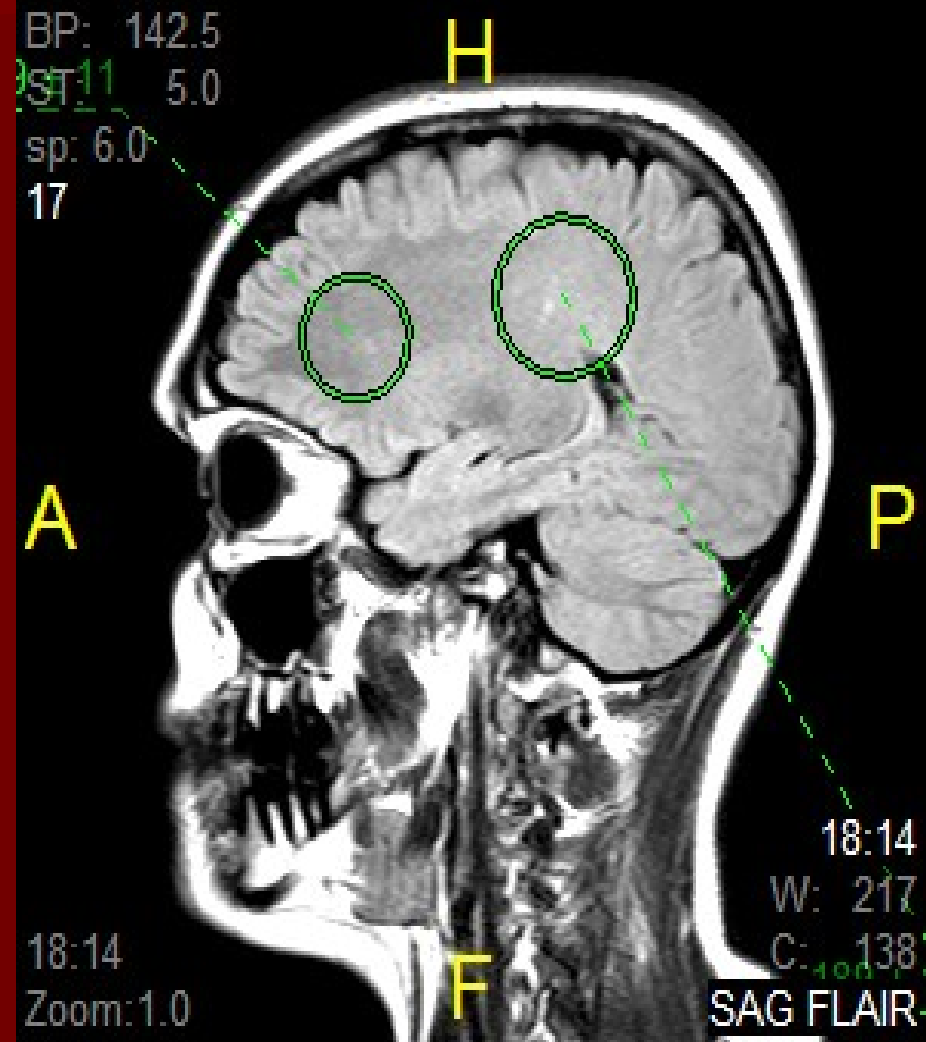
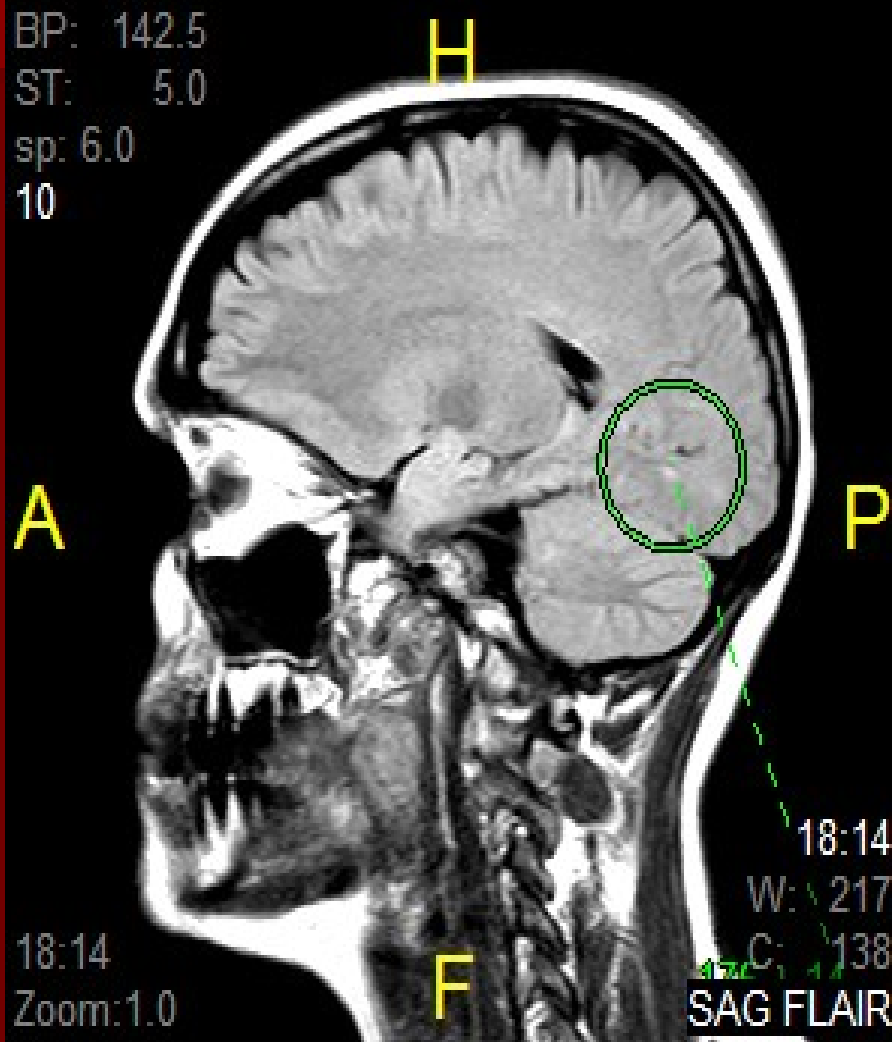
ANCA

ACE

CASE PRESENTATION

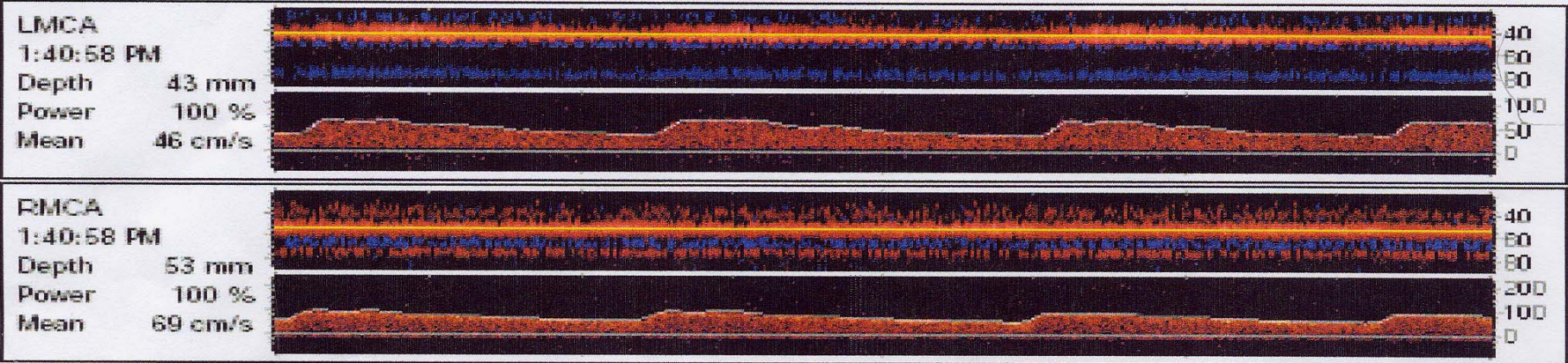
- 29 y/o WF hx of migraines
- Optic Neuritis R eye 2000 and L eye 2003
- MRI shows rare white spots near corpus callosum
- Initial LP neg for MS
- Hx single episode of chest wall paresthesias
- Scuba diver
- Repeat LP 1/30/08 positive for oligoclonal bands
- TCD Bubble 2/8/08 evidence of large shunt
- 4/2/08 PFO closed

WHITE MATTER LESIONS SECONDARY TO ?????

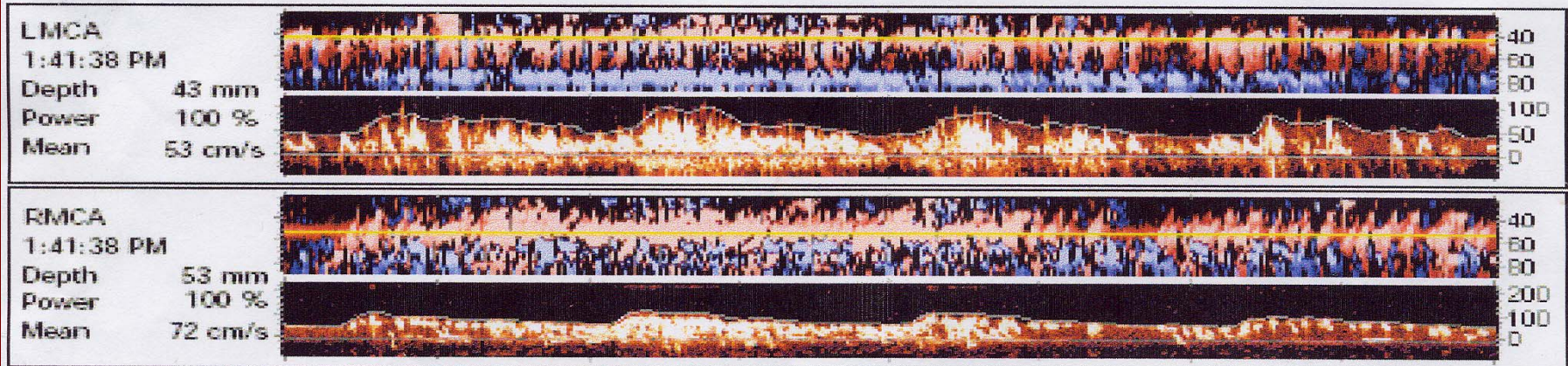




Normal Respiration



Valsalva Strain



Findings

- During normal respiration, with contrast, there was a conductance grade of 0/5.
- During calibrated respiratory strain, with contrast, there was a conductance grade of 5/5.
- These findings represent evidence of a **high** probability of a cardiac/pulmonary shunt.
- TCD induced symptoms: None.**

THANK YOU!