

# Mild Encephalitis with Reversible Splenial Lesion (MERS) and Catatonia without Comorbid Mental Illness



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## INTRODUCTION:

- Catatonia is often associated with psychiatric disorders.
- 20% of cases are associated with a somatic etiology.<sup>1</sup>
- Within that ~20%, over two thirds are associated with a CNS-specific disease process.<sup>1</sup>
- The following case presents a rare neuroradiological finding, Mild Encephalitis with Reversible Splenial Lesion (MERS), in a patient with catatonic features and no history of psychiatric disorder.

## CASE DESCRIPTION:

### History:

44-year-old Haitian male with a history of TB infection (completed treatment in Haiti) and no psychiatric history who presented to an outside hospital emergency department (ED) after several days of no appetite and mutism.

### ED Course:

- Patient appeared ill and labs revealed acute renal failure and hepatitis
- He was observed verbalizing nonsensically and was placed in restraints for pulling at IV lines.
- Head CT was negative for acute findings and CT Abdomen/Pelvis without cirrhosis
- Patient was transferred to UMMC for ICU-level of care and was placed on broad-spectrum antibiotics.

### Initial Hospital Course:

- Neurology consult recommended continuous EEG (cEEG) and MRI.
- Infectious Disease consult for concern for meningitis/encephalitis with “low suspicion for Polyarteritis Nodosa” related to Hep B. On Hospital Day 6, antibiotics were narrowed to a 7-day course of Doxycycline.

### Test Results:

- LP collected at outside ED revealed elevated WBCs. Repeat LP in the ICU showed normal WBC, suggesting an initial traumatic tap. Both had no microbial growth throughout.
- Labs were suggestive of Chronic Hepatitis B infection.
- cEEG showed no epileptiform activity, but fast beta frequency consistent with benzodiazepine treatment.
- Contrast MRI Brain on Hospital Day 1: “punctate focus of restricted diffusion in the splenium of the corpus callosum.”
- Send-out test results (post-discharge) on CSF revealed Caspr2 IgG+, which is associated with a “wide spectrum of clinical manifestations including acquired neuromyotonia, limbic encephalitis, painful neuropathy, and Morvan Syndrome.”

### Psychiatry Consult:

- Psychiatry consulted on Hospital Day 3 when he improved after receiving Ativan to manage aggressive behaviors, raising concern for catatonia.
- Bush Francis Catatonia Rating Scale (BFCRS) on initial evaluation was 18 (refer to Table 1). Patient was titrated up to 1mg Ativan TID.
- The patient was re-evaluated on Hospital Day 8 with a Haitian-Creole interpreter. He was calm and cooperative with largely appropriate interaction, but at times appeared confused. BFCRS was 4 (refer to Table 1).
- Follow-up by psychiatry on Hospital Day 12: Translation services were not available, but the patient was observed with appropriate gait and responding to nursing directions.
- Discharge on Hospital Day 15 with resolution of renal crisis and down-trending hepatic labs. Repeat MRI prior to discharge showed resolution of the area of restricted diffusion in the splenium.

## FINDINGS:

Figure 1: MRI Hospital Day 1

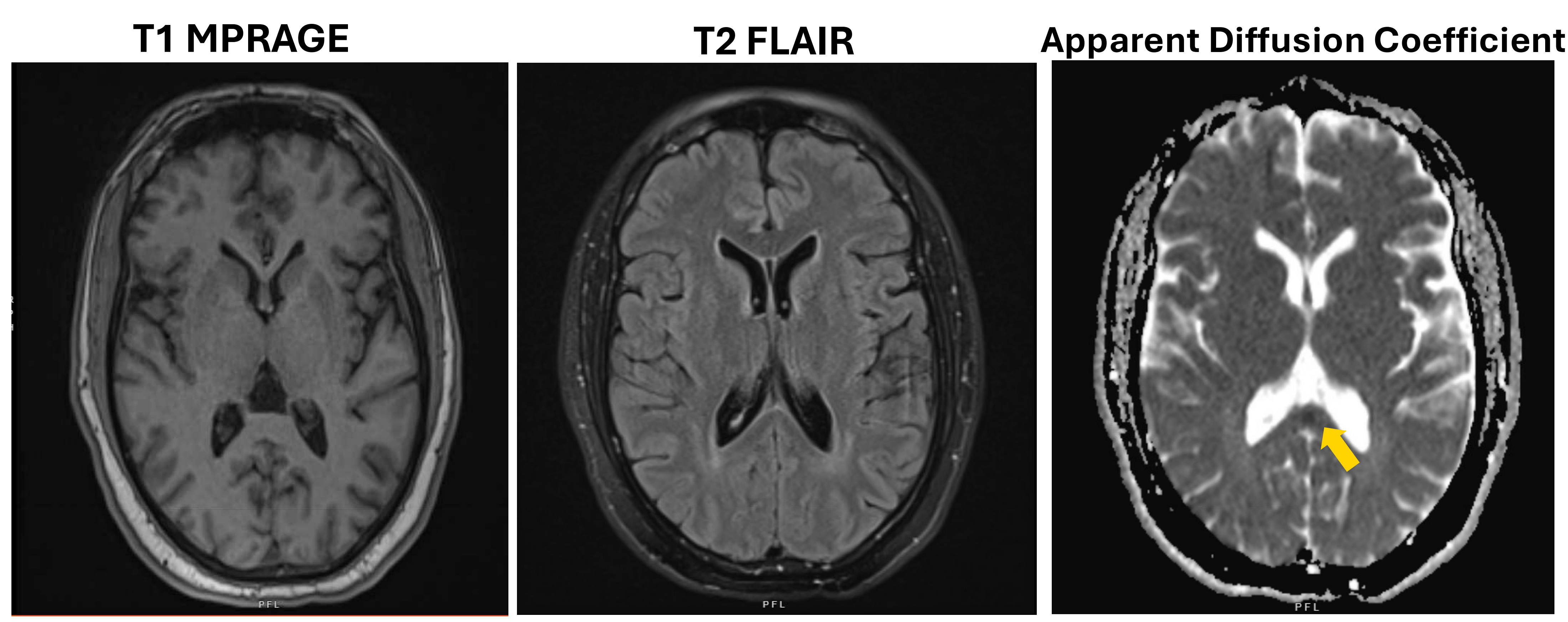


Figure 2: MRI Hospital Day 14

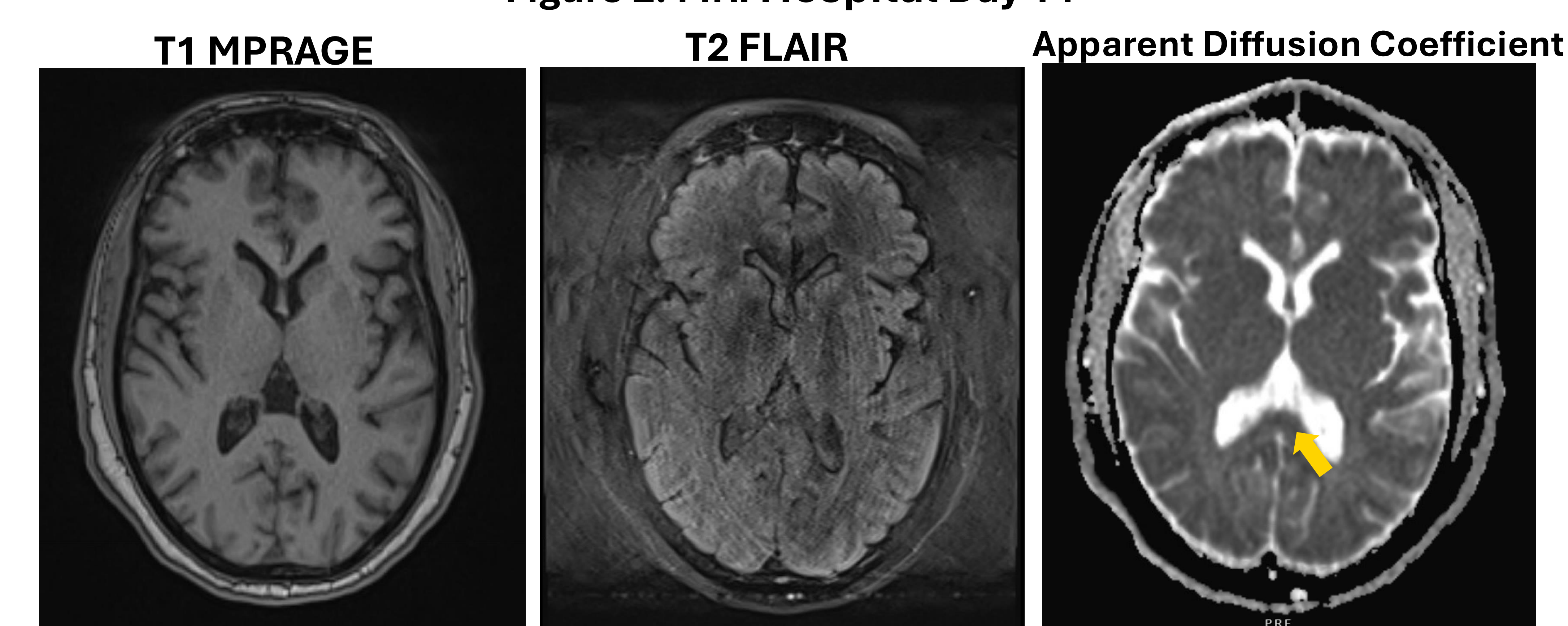


Figure 3: Sagittal View from Hospital Day 1

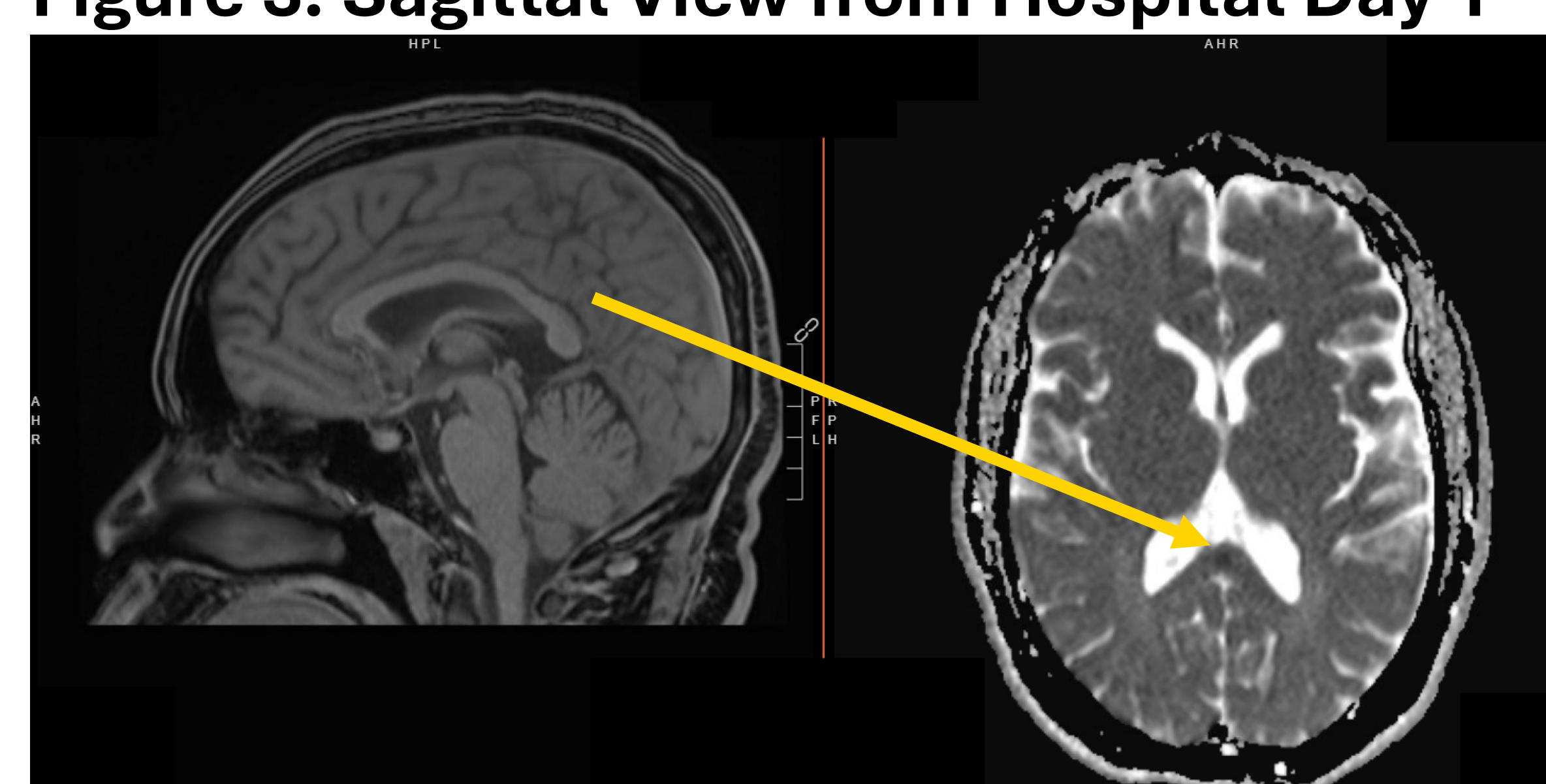


Figure 4: Tractography of the Corpus Callosum

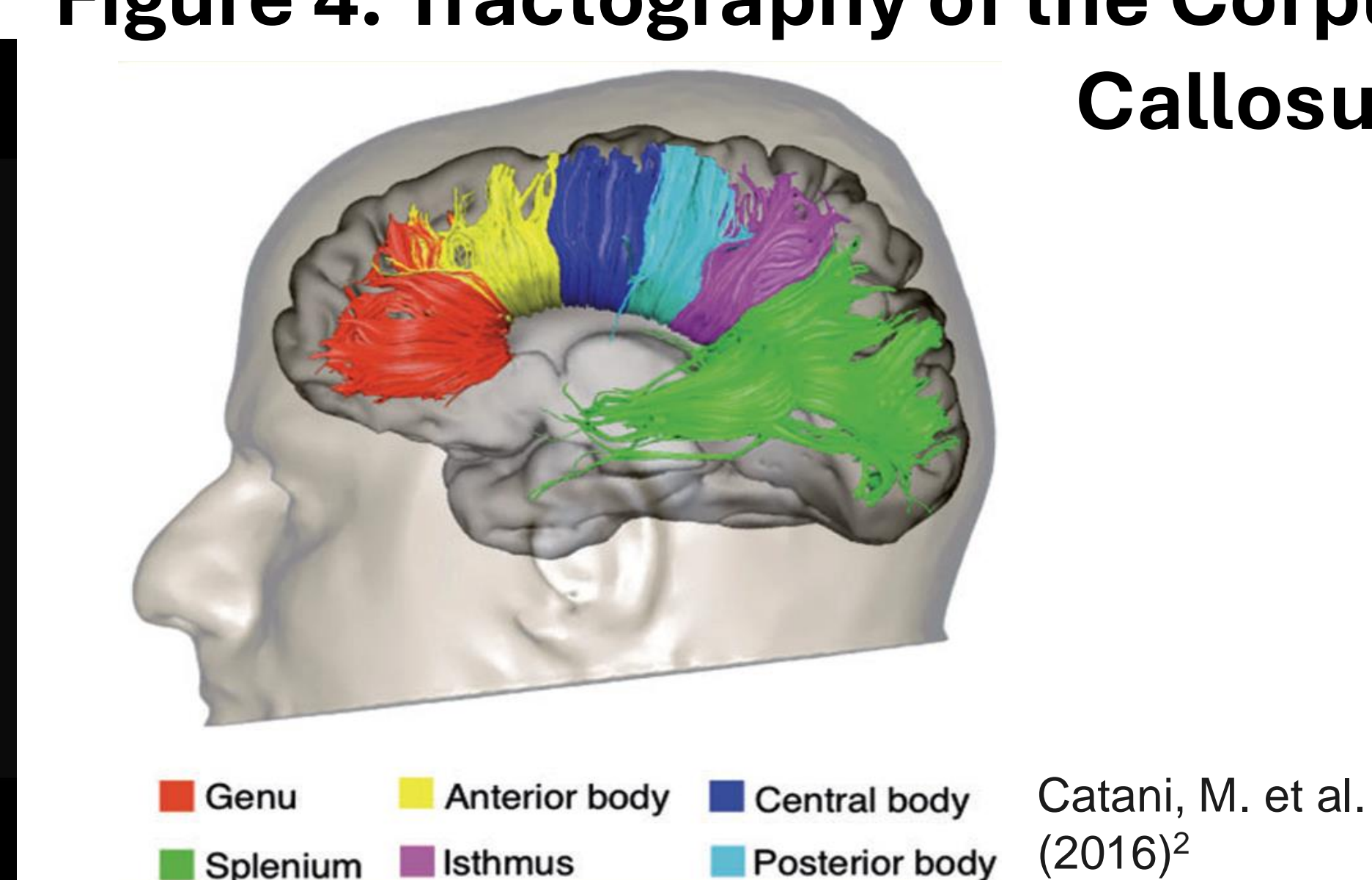


Table 1: Bush Francis Catatonia Rating Scales

BFCRS Items	Hospital Day 3	Hospital Day 8	BFCRS Items	Hospital Day 3	Hospital Day 8
Excitement	0	0	Negativism	1	0
Immobility/Stupor	1	0	Waxy Flexibility	3	0
Mutism	2	0	Withdrawal	0 (on NG Tube Feeds)	0
Staring	0	1	Impulsivity	0	0
Posturing	0	0	Automatic Obedience	0	2
Grimacing	2	0	Mitgehen	0	0
Echopraxia/Echolalia	0	0	Gegenhalten	3	0
Stereotypy	1	0	Ambitendency	0	0
Mannerisms	0	0	Grasp Reflex	0 (in mitts)	0
Verbigeration	0	0	Perseveration	0	0
Rigidity	2	0	Autonomic Instability	3 (tachycardic, febrile, tachypneic)	1 (tachycardic)
<b>TOTAL SCORE</b>	<b>18</b>	<b>4</b>			

## DISCUSSION:

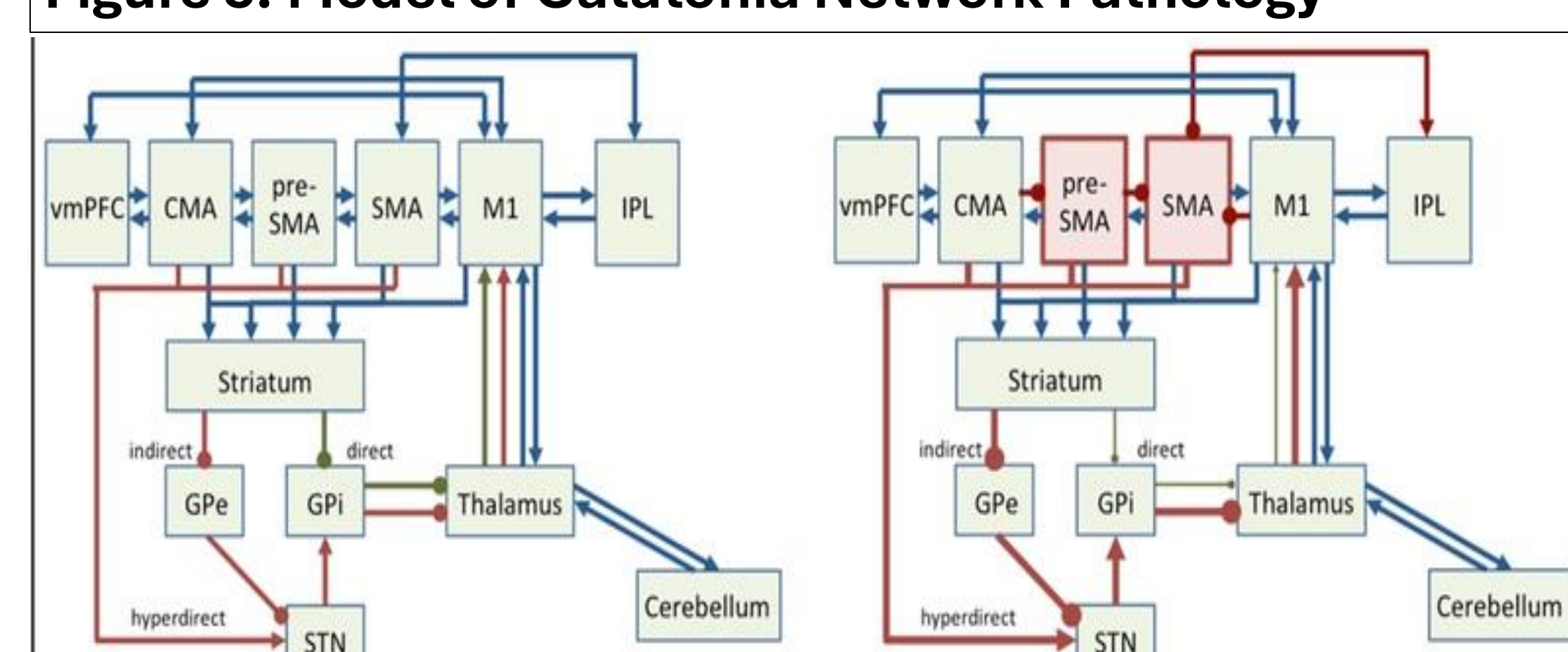
### Role of the Splenium of the Corpus Callosum:

- The corpus callosum is the main white matter tract connecting the two cerebral hemispheres.
- The splenium conveys widespread fibers from both parietal and occipital lobes, and is thus, well positioned to give rise to the broad range of CNS symptoms seen in callosal syndromes associated with severe neuropsychiatric disorders.<sup>2,3</sup>

### Pathophysiology of Catatonia:

- Functional MRI shows increased neuronal activity in premotor areas and the supplementary motor area.<sup>4</sup>
- Functional connectivity has shown disruption in motor circuits.<sup>4</sup>
- Additionally, reduced GABA-A receptor density has been observed in patients with catatonia.<sup>4</sup>
- Altered diffusion has been observed in both the splenium and body of the corpus callosum in patients with schizophrenia and catatonia.<sup>5</sup>

### Figure 5: Model of Catatonia Network Pathology



### MERS and Catatonia:

- MERS was first described in a population with primary common findings of delirium, hyperintensity on Diffusion-Weighted Imaging, and reduced Apparent Diffusion Coefficient MRI.<sup>6</sup>
- The hypothesized mechanism for the reversible lesion is separation of myelin layers from intramyelinic edema.<sup>6</sup>
- Additional reports of neuropsychiatric symptoms associated with MERS now include changes in consciousness, cognitive impairment, visual hallucinations, negativism, and mania.<sup>7</sup>
- Catatonia and MERS has previously been described in one patient with schizophrenia, but no such combined presentation, with catatonia per se has been described in a patient without severe mental illness.<sup>7</sup>

## CONCLUSION:

Although more research is needed to identify the pathophysiology of catatonia, this presentation of MERS highlights a role of the splenium and suggests that disruption to this widespread network likely underlies the symptoms. This formulation is supported by the reversal of behavioral symptoms coinciding with the reversal of the splenial lesion. Given that a significant portion of cases of catatonia are not associated with a psychiatric disorder, this report emphasizes broadening a differential to include even rare CNS findings such as MERS.

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## DISCLOSURES:

Nicolas D. Iadarola holds stock in Scilex Holding Company (SCLX) and Trevena Inc (TRVN), both biopharmaceutical companies.