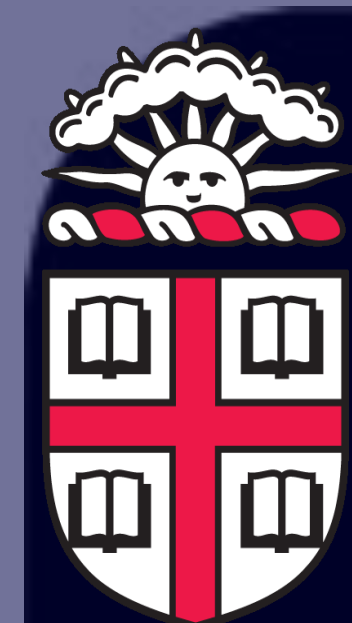
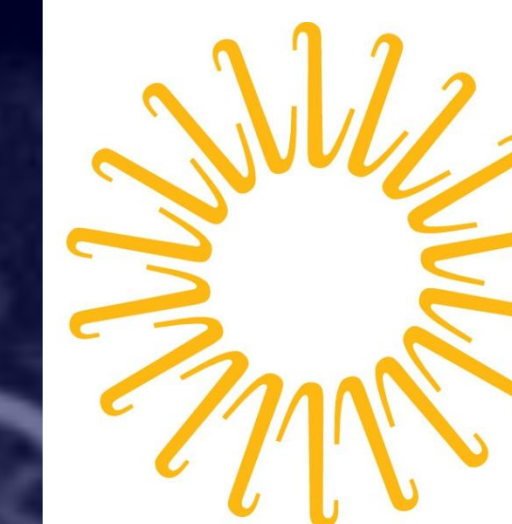




Altered Mental Status (AMS) in the Setting of Anemia, Pneumonia, and a Neurosarcoidosis Flare



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Learning Objectives

Cognitive impairment and delirium are presenting features of diverse disorders including:

- Infection
- Psychiatric Illness
- Seizure
- Electrolyte Imb.
- Stroke
- CVD
- Anemia
- Intoxication



Fig 1: AMS Differential

When approaching a patient with multiple causes of AMS, care must be taken to balance treatment between each etiology. Treatment for one cause may precipitate another, exacerbating the clinical picture.

History of Present Illness

A 37 year-old African-American man with history of neuro/pulmonary sarcoidosis, DM and HTN presented with four-week history of exacerbating confusion, weakness, visual impairment, dry cough, and hearing impairment.

Symptoms started following a complex-partial seizure contemporaneous to a likely neurosarcoidosis flare one week after the patient “stopped all medication.”

Was found unconscious on floor by mother on day of admission.

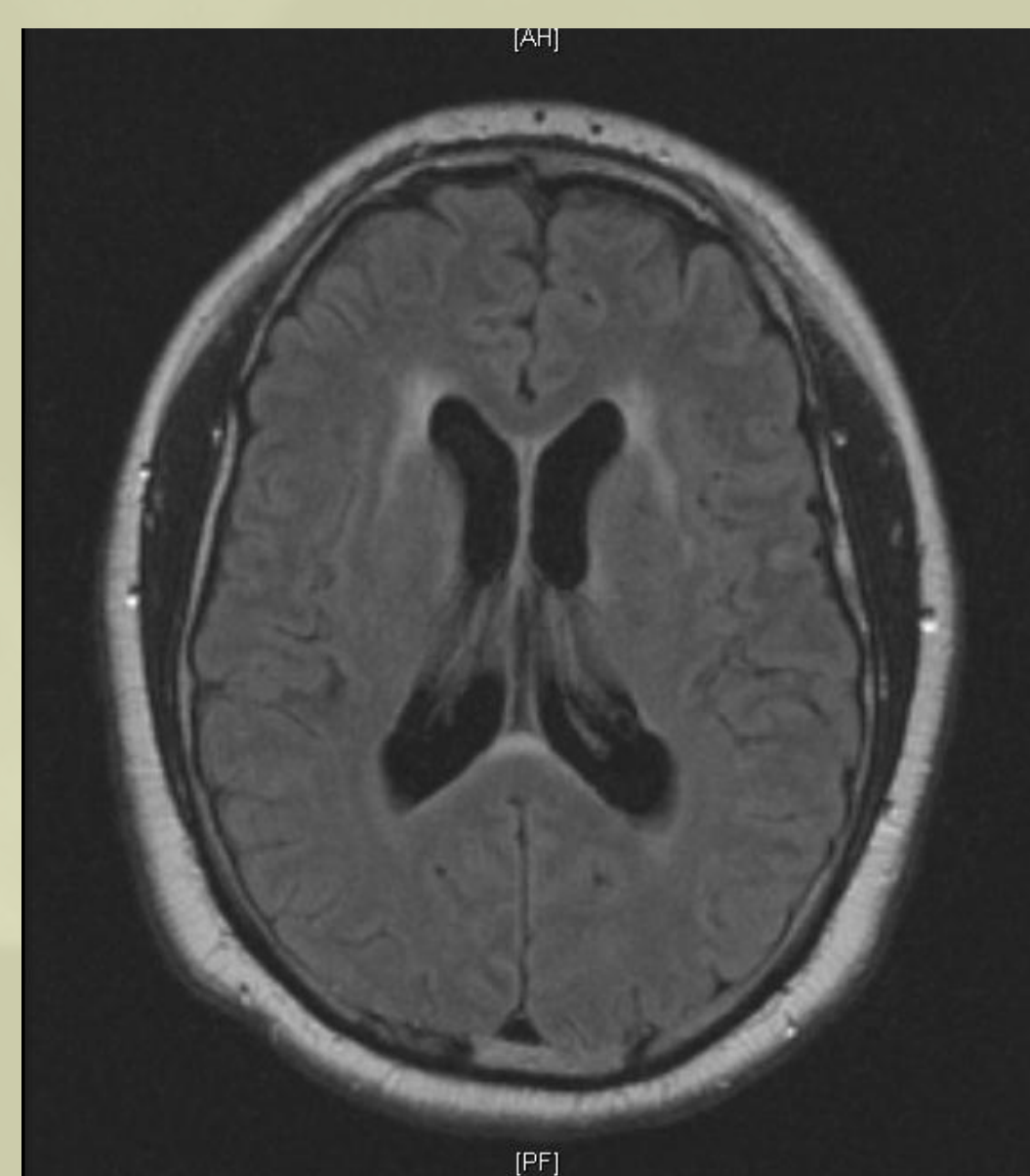


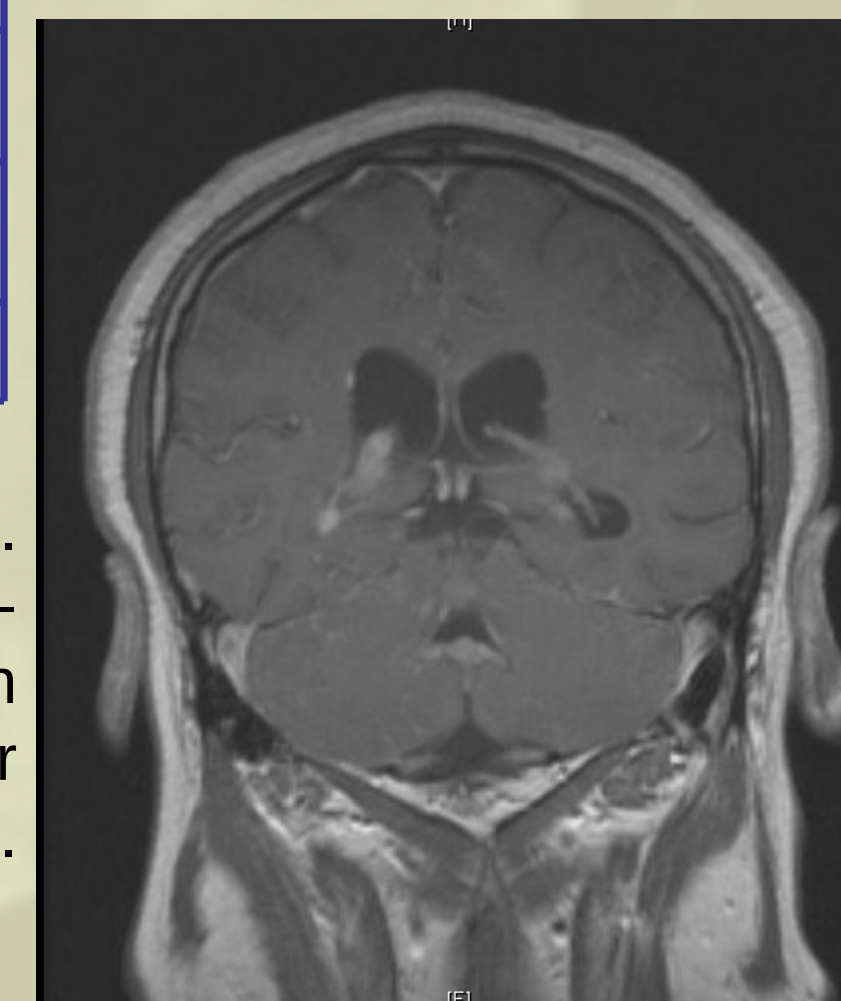
Fig 2: Pt. Neurosarcoid Flare

Home Medications

- Azathioprine 100 mg BID*
- Phenytoin 100 mg BID*
- Valproic Acid 500 mg Q8H*
- Prednisone 5 mg BID
- Lisinopril 20 mg QD
- Metformin 1000 mg BID
- Omeprazole 40 mg BID

*=Leukopenia and/or Thrombocytopenia Risk

Fig 3: Pt. Neurosarcoidosis-Axial Cut with Ventricular Involvement.

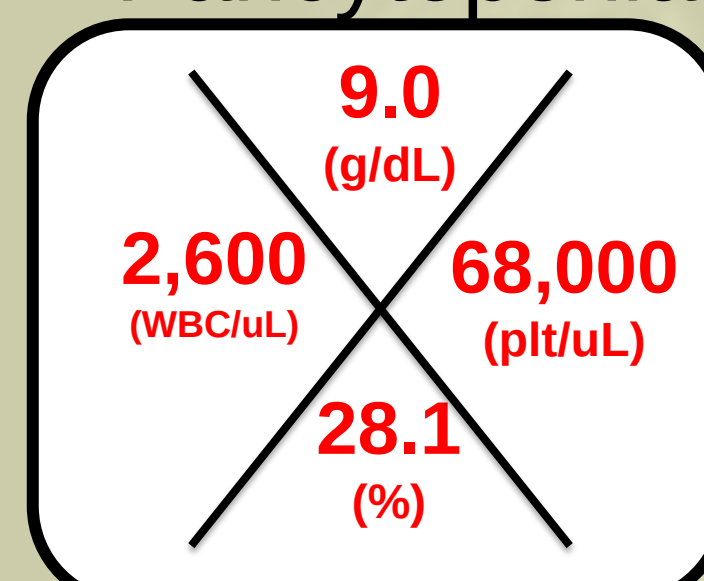


Case Information

- Afebrile, horizontal nystagmus, decreased hearing in his right ear AC>BC, blurry vision, delirium.
- Cranial nerves were otherwise intact.
- Strength 3/5 in the left lower-extremity, 5/5 in all others.
- No photophobia, neck stiffness, or rash

Initial Labs

- Pancytopenia, Phenytoin Toxicity:



Free Phenytoin: **3.6 ug/mL**
(Normal: 1.0-2.0 ug/mL)

- Chem-7 and head-CT non-contributory.
- Phenytoin toxicity was considered a likely cause of nystagmus and stopped.

CBC During Hospital Course with Significant Events

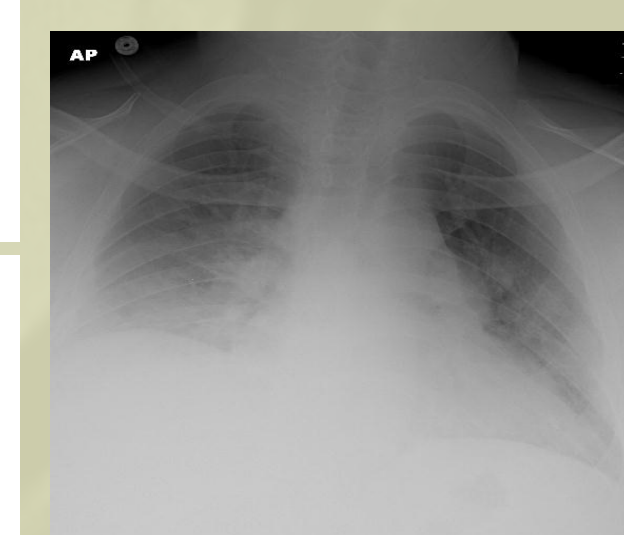
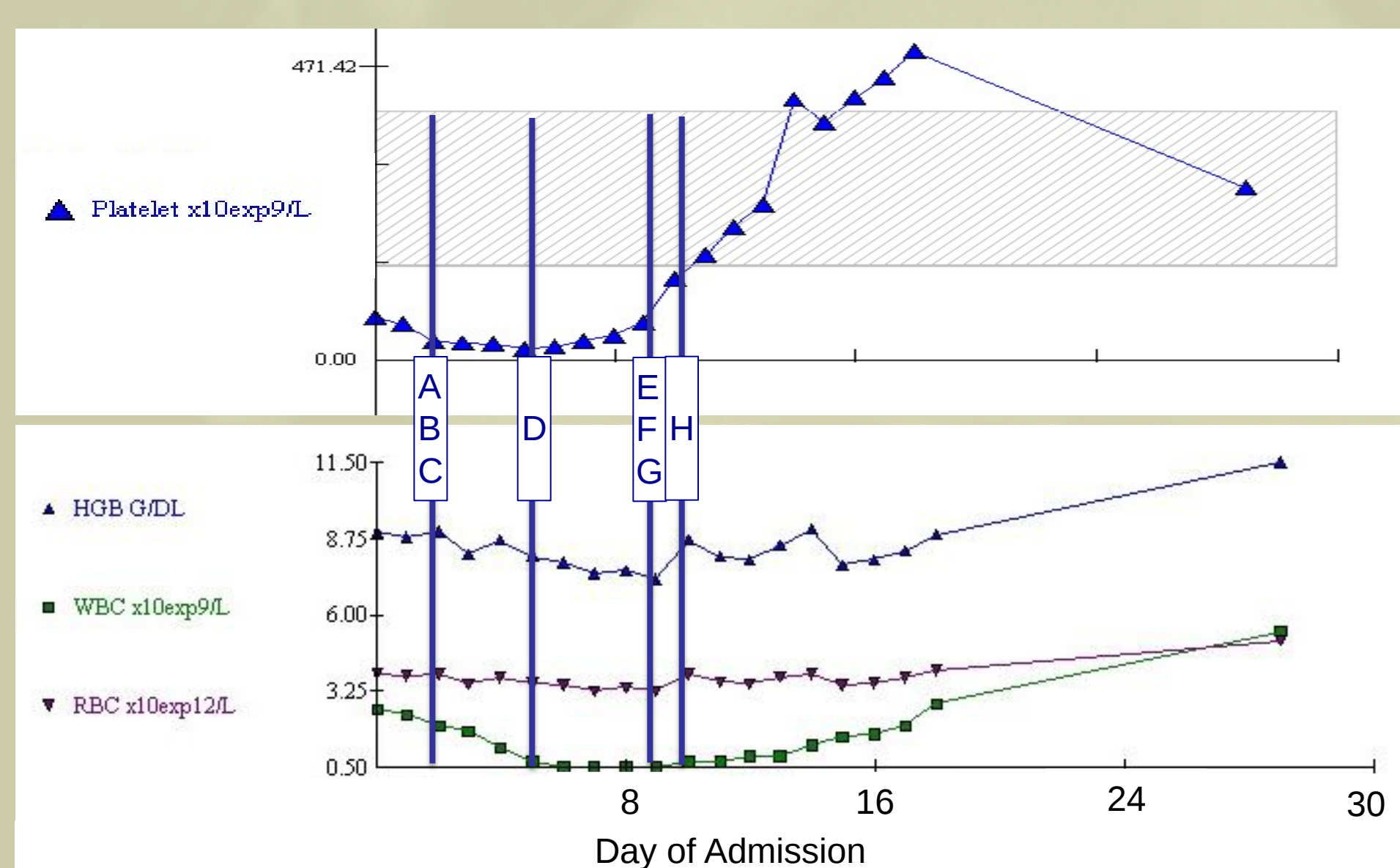


Fig 4: RLL consolidation on day 3 of admission (A at left).

Hospital Course

- Day 3 of admission: Patient developed a wet cough, fever(100.2), bandemia (19%), and right lower-lobe opacity on chest x-ray. (See Fig. 4)
- Treated w/ broad spectrum abx since immunosuppressed: vancomycin and piperacillin/tazobactam.
- Azathioprine considered cause of baseline pancytopenia, stopped.
- Pancytopenia worsened, drug-induced, most cytopenic drugs stopped.
 - Vancomycin was switched to meropenem.
 - Per neurology c/s VPA not d/c.
- Phenytoin → non-toxic range, cognitive function slowly improved.
- Neutropenia worsened; VPA d/c → levetiracetam.
- Fever resolution, Wet cough→Dry cough
- Cognitive functioning→ Baseline.

Discussion

This patient presented with altered mental status (AMS) initially likely due to seizure and neurosarcoidosis. He was thus restarted on immunosuppressant medications including azathioprine. Ironically, this treatment of altered mental status secondary to neurosarcoidosis seemed to have contributed to his cognitive impairment *vis a vis* immune suppression which may have prolonged the course of pneumonia. VPA was initially not stopped due to fear of recurrent seizure. However, with prolongation of the pancytopenia, all drugs which caused immune suppression were stopped. VPA was switched to levetiracetam with subsequent recovery. Nonetheless, causality of his AMS is not definite as WHO criteria for “certain” causation was not met. Symptoms could have occurred secondary to a neurosarcoid flare, drug toxicity, or pneumonia. As hospitalization progressed, each etiologic association seemed more probable than others at times. Care must be taken when balancing treatments or assigning mono-causality of AMS.

