

Stop Being So Sensitive: A case study of Altered Mental Status following COVID

Booster

Katie Schroeder DNP, ARNP

Internal Medicine Hospitalist; University of Iowa Hospitals & Clinics



Case Presentation

Background: 85-year-old presented altered mental status with PMH of heart transplant 2002 with immunosuppression, previous fungal infection left mastoid, CKD 4, and ileal conduit admitted for altered mental status and generalized weakness over a few weeks.

Recent left ear Otomycosis and COVID booster shot weeks prior. No fevers or leukocytosis on admission.

Timeline:

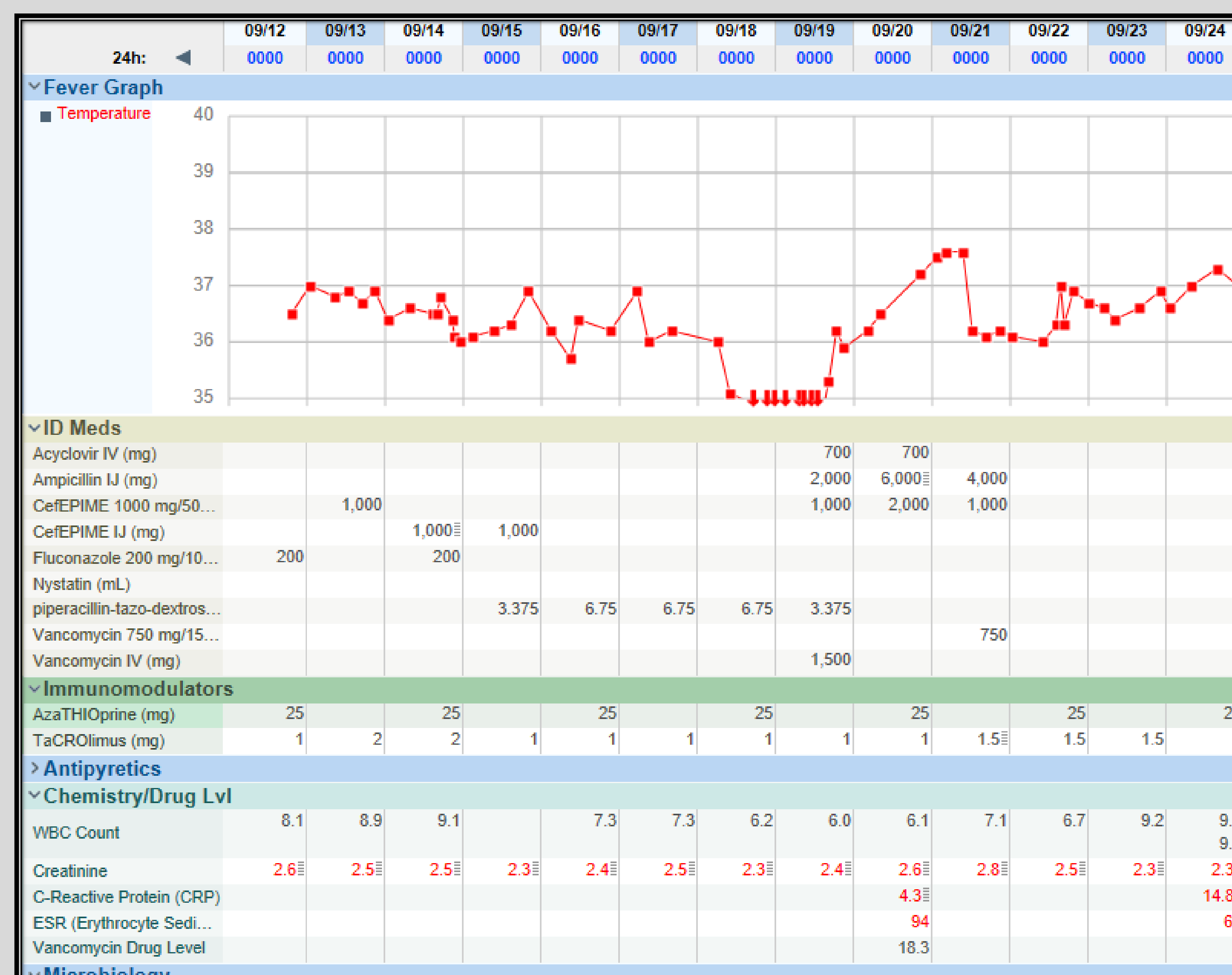
- Day one – four: Negative workup except urine culture ileostomy Gram negative rods and gram-positive cocci on broad spectrum Cefepime. Discontinued anti-fungal
- Day Twelve: finished antibiotics for UTI. Continued to deteriorate
- Day Fourteen-seventeen: Palliative and Complex disease consulted. Hyperimmune response with cytokine levels
- Day Eighteen: One gram methyl prednisone daily for three days
- Day Twenty-one: Alert and oriented. Transitioned to prednisone 60 mg daily with slow taper to 20 mg over the course of 4-6 weeks

Objective:

- Head CT, EEG, Brain MRI, Chest X-ray
- Aerobic, Anerobic, fungal blood cultures, urinalysis with culture ; Lumbar puncture, cortisol levels
- No fevers or leukocytosis
- COVID -19 PCR negative
- **COVID-19 anti-nucleocapsid negative (history natural infection)**
- **COVID-19 anti-spike antibodies positive (vaccine mediated)**
- **IL-10, IL-2, and IL 6 elevated.**
- **Compliments negative**

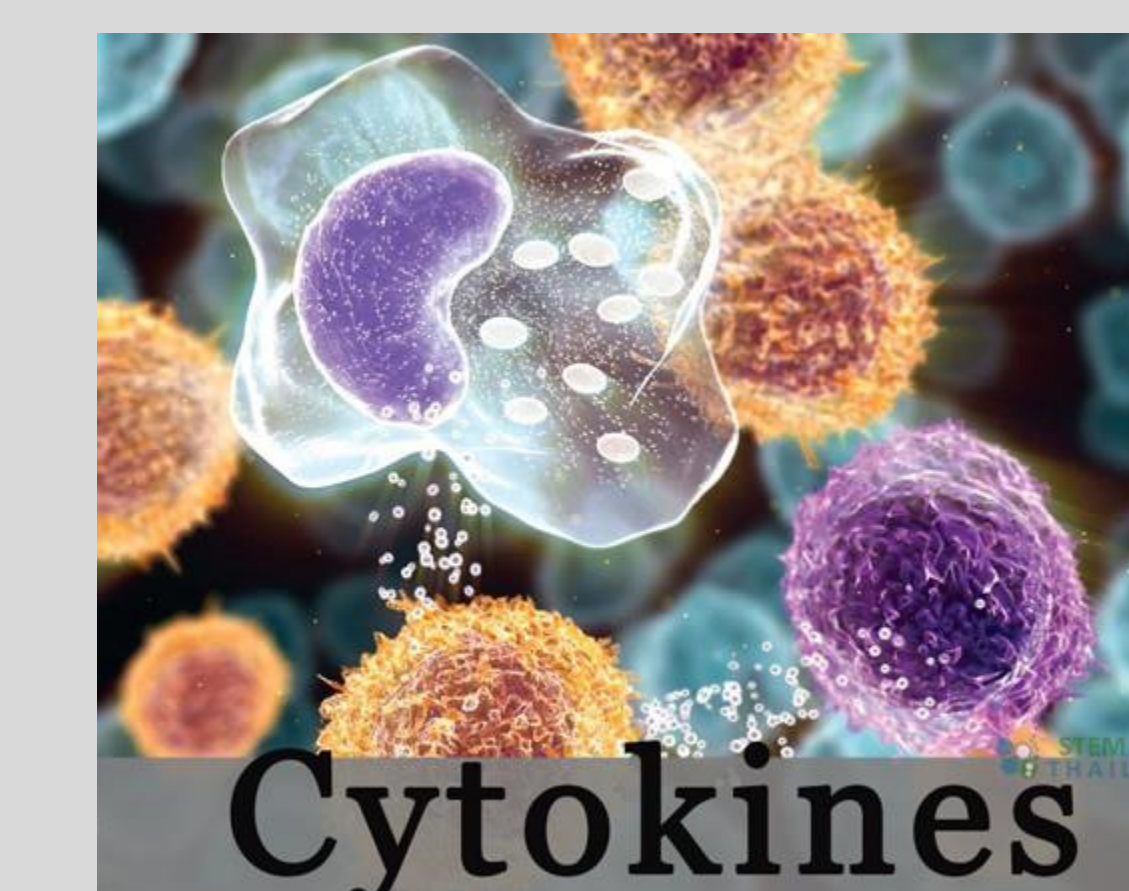
Consider immune dysregulation response to COVID-19 infection or vaccine with cytokine panel and antibodies workup

13.0 ^	Interleukin 10 (IL-10)
<1.9	Interleukin 12 (IL-12)
<1.7	Interleukin 13 (IL-13)
<1.4	Interleukin 17 (IL-17)
<2.1	Interleukin 2 (IL-2)
1308.1 ^	Interleukin 2 (IL-2) Receptor (...)
<2.2	Interleukin 4 (IL-4)
<2.1	Interleukin 5 (IL-5)
31.9 ^	Interleukin 6 (IL-6)
<3.0	Interleukin 8 (IL-8)



Discussion

This case highlights possibility of encephalopathy related to hyperimmune inflammatory response. Severe COVID-19 infections associated with elevations in cytokines and neurotoxicity resulting in acute encephalopathy² Cytokines comprising interleukin (IL)-6 and (IL)-10 correlated with disease progression of severe COVID-19 infections⁴ Neurological dysfunction cytokines detected in CSF³Hyperimmune cytokines correlated with acute encephalopathy following COVID vaccine.¹



Conclusion

Given this patient's symptoms started soon after a booster shot of COVID vaccine along with concurrent infection, a hyper inflammatory response likely occurred. Further studies needed to confirm association. For hospital medicine, if everything else has been ruled out could consider COVID anti-body testing and cytokine panel.

References

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