



Fever or Hyperthermia?

Tempering the Approach to Fever in a Socially Vulnerable Patient

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INTRODUCTION

- Initially during the COVID-19 pandemic, many hospitals limited visitors for infection control purposes, including caregivers of patients with disabilities.
- Autism spectrum disorder affects approximately 1 in 54 children. [1] Comorbidities of ASD are overrepresented in this population even when compared to tertiary health centers. [2]
- Neuroleptic malignant syndrome (NMS) is associated with dopamine receptor blockade, particularly by antipsychotics and antiemetics. It can occur with first- or second-generation antipsychotics independently of duration of use. [3]

CASE OVERVIEW

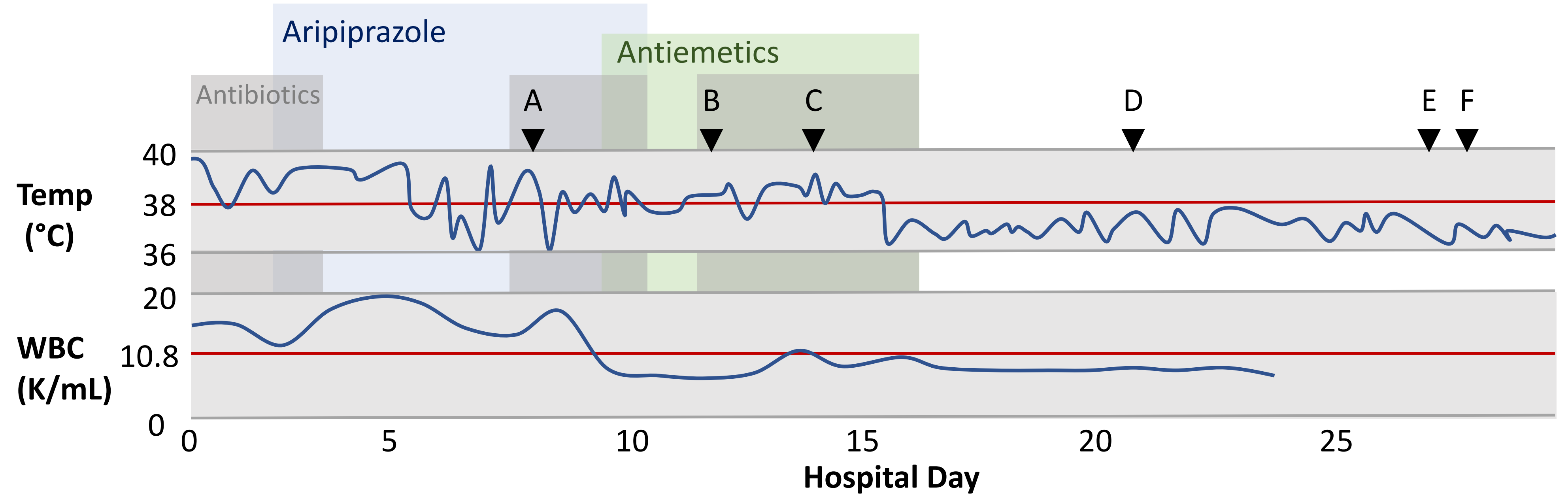
HPI: A 23-year-old man with autism, asthma, and type 2 diabetes was admitted from an outside hospital with hypoxic respiratory failure due to COVID-19 ARDS. After 3 weeks of support by mechanical ventilation he was successfully liberated and 3 days later transferred out of the ICU with persistent fever.

- Fevers occurred every day from the day of admission.
- Possible secondary MRSA pneumonia and bilateral lower extremity DVTs had been appropriately treated.
- Course complicated by agitation, dysphagia, frequent emesis, persistent sinus tachycardia, labile blood pressures, and mutism.
- Primary caregiver unable to visit.

Vitals: T 38.6°C, P 124, RR 22, BP 139/80, SpO₂ 97% on 2L NC

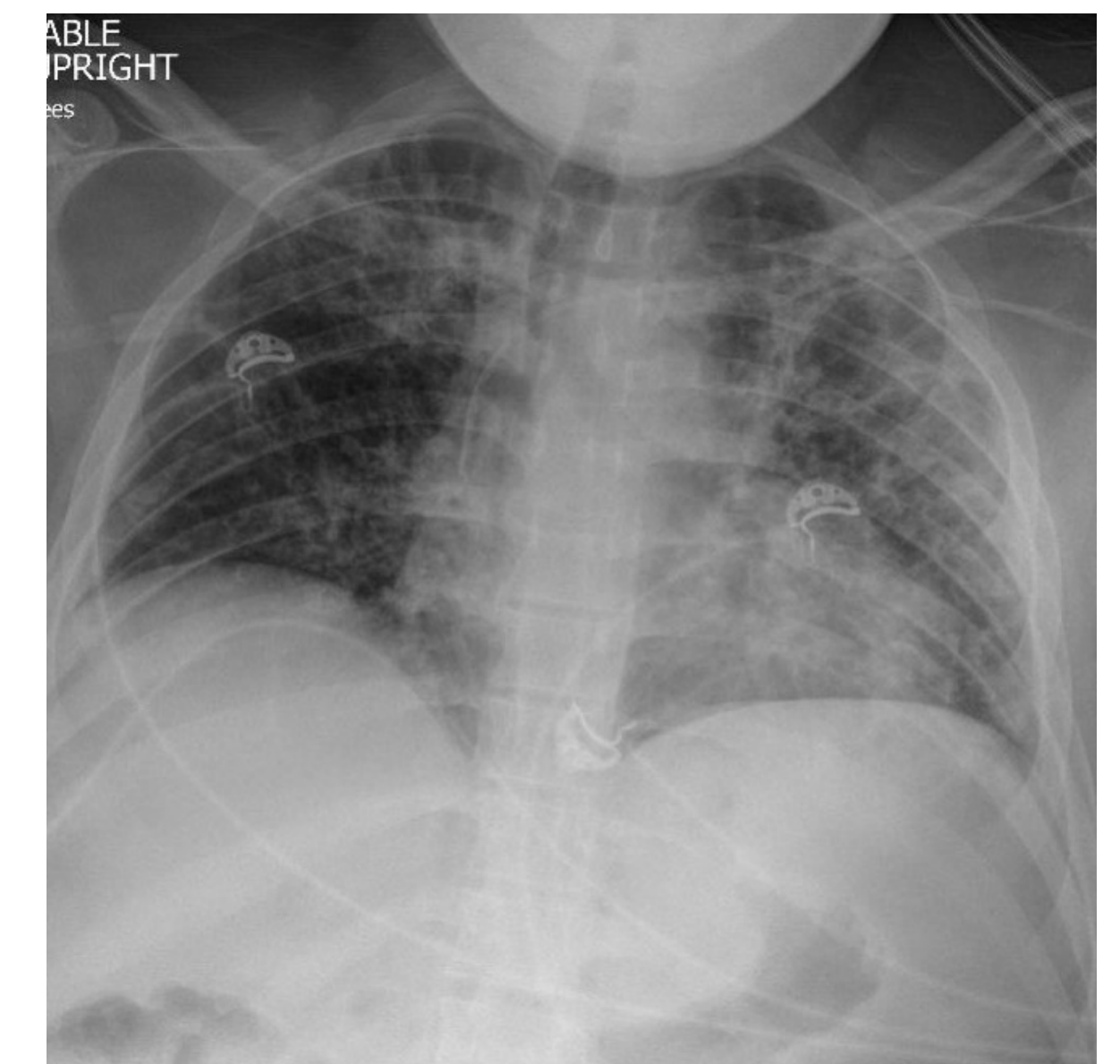
Physical Exam: Severe diaphoresis and sialorrhea. Nonverbal. Able to track and regard the examiner, intermittently followed instructions, and had muscle rigidity, bradykinesia, a resting tremor, and hyporeflexia.

CLINICAL COURSE



Events:	A. DVTs diagnosed	D. Speaking 1-2 words
	B. Extubated	E. Speaking sentences & playing video games
	C. Foley catheter temp probe removed	F. Dysphagia resolved

- Notable Labs:** AST 204 / ALT 486 / CK normal
- Sputum Culture:** (Day 1 & 9) + MRSA and 1+ oral flora
- CT chest with contrast:** (Day 9) Extensive bilateral upper lobe and peripheral groundglass and consolidative opacities most consistent with diffuse alveolar damage in the setting of Covid pneumonia.
- CXR:** (Day 13) Streaky left greater than right peripheral and upper lobe predominant mixed groundglass/consolidative opacities.
- Diagnosis and intervention:** Diagnosed with NMS in the setting of D2 antagonist exposure and clinical syndrome. Antibiotics and antidopaminergic antiemetics were stopped. Over the next several days, his temperature normalized and dysautonomia resolved.



DISCUSSION

- Altered mental status can be difficult to identify in patients with developmental disorders, particularly when familiar caregivers are not present. In this case recent critical illness, sedation for mechanical ventilation, and pandemic precautions were a perfect storm for obscuring this symptom.
- Recognition of NMS may have also been delayed by additional more common causes of fever. A fever which persists despite appropriate treatment and source control should prompt the internist to re-broaden the differential diagnosis.
- NMS provided a unifying diagnosis for sialorrhea, diaphoresis, dysphagia, mutism, and hyporeflexia.
- It is unclear why CK was not elevated in this case. However, the patient's mental status and autonomic symptoms were more prominent than muscular rigidity, and it is possible that an earlier elevation was missed. CK elevation is not required for the diagnosis. Additionally, muscle rigidity may have been blunted by incidental treatment with IV and PO benzodiazepines (Day 1 – 16).

LEARNING POINTS

- Hyperthermia and mental status changes** should prompt a neurologic assessment and review of medications for possible serotonin syndrome (SS) or NMS.
- NMS is distinguished from SS** by hyporeflexia, severe rigidity, and onset/resolution each over days to weeks. SS conversely presents with hyperactivity (tremor, reflexes, clonus), and onset/resolution over 24 hours each.
- There is no definitive test for NMS. If there is a reasonable suspicion for NMS, antidopaminergic medications should be stopped.

REFERENCES

- [1] Maenner et al Prevalence of Autism Spectrum Disorder Among Children Aged 8 Years - Autism and Developmental Disabilities Monitoring Network, 11 Sites, United States, 2016 [published correction appears in MMWR Morb Mortal Wkly Rep. 2020 Apr 24;69(16):503]. *MMWR Surveill Summ.* 2020;69(4):1-12.
- [2] Kohane IS, McMurry A, Weber G, et al. The co-morbidity burden of children and young adults with autism spectrum disorders. *PLoS One.* 2012;7(4):e33224.
- [3] Pope HG Jr, Aizley HG, Keck PE Jr, McElroy SL. Neuroleptic malignant syndrome: long-term follow-up of 20 cases. *J Clin Psychiatry.* 1991;52(5):208-212.