Atypical Presentation of Neuroleptic Malignant Syndrome in a Patient with Autism Spectrum Disorder Requiring ECT

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Background

- Patients with autism spectrum disorder (ASD) may be more susceptible to catatonia/neuroleptic malignant syndrome (NMS).
- Patients with ASD who are diagnosed with NMS may have physical exam findings that are atypical.
- In this case report, a patient with ASD who developed NMS with atypical features required electroconvulsive therapy following a failed trial of benzodiazepines.

History Prior to UVA

- 29 y.o, PMH of ASD, ID, ADHD, and depression presented with AMS and autonomic instability in the setting of recent rapid upititration of antipsychotics In addition to his risperidone 3 mg daily, he was also started on haloperidol 2 mg TID.
- Prior to transfer, he had a fever, leukocytosis, elevated CK, and lead-pipe rigidity soon after admission. There was no documentation of a baseline exam that included ankle clonus or reflexes.
- Pharmacotherapy initiated for NMS:
  - Lorazepam 8mg, daily (10-day course)
  - Cyproheptadine 12mg, daily (12-day course)
  - Bromocriptine 15mg, daily(4-day course)
  - Dantrolene 110mg, daily (3-day course)
  - High-dose methylprednisolone (3-day course)
- MRI, lumbar puncture, and EEG were benign; however, imaging was not clear due to artifact.
- Transferred to UVA for treatment of refractory NMS with ECT.

Timeline at UVA and Other Data

Neuro Consult: INO, CN VI palsy, impaired upward gaze, generalized weakness in all extremities

Decision Point: ECT or more work up given atypical exam findings?

Day 2: ECT #1 on 1/24. Increase in HR and Temp

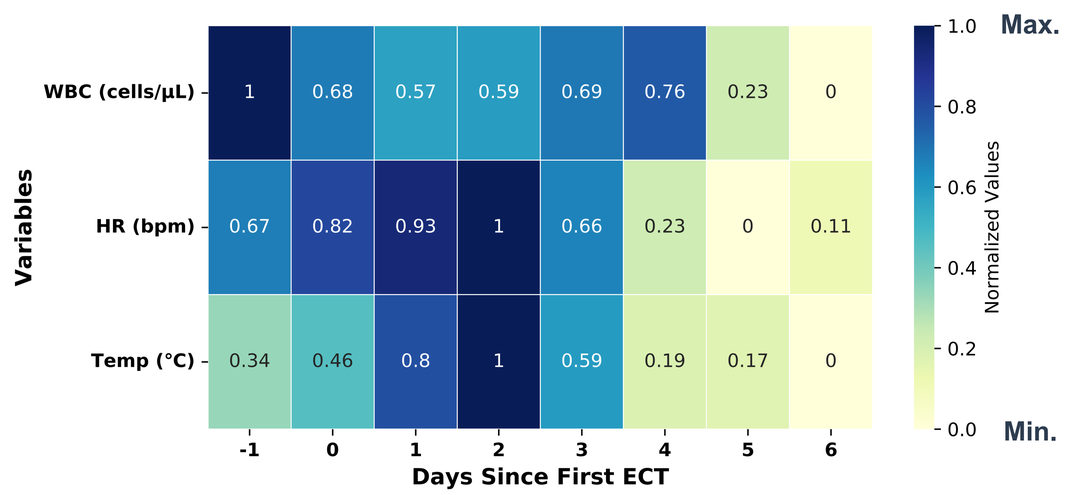
Day 6: Extubated. Same exam findings

Day 7: ECT #3 on 1/29. Improved VS, alertness

Day 14: ECT #6 on 2/5. Able to verbalize

Day 21: ECT #9 on 2/12. Stable for DC

Heatmap of Temperature, Heart Rate, and WBC over Time



$$Normalized\ Value = \frac{X - X_{min}}{X_{max} - X_{min}}$$

Our Initial Physical Examination at UVA

Motor

- Rigidity: Lead-pipe rigidity in bilateral upper extremities, no rigidity in LE
- Clonus: Sustained RLE ankle clonus, and 3 beats in LLE

Reflexes

	R	L
Brachioradialis	3+	3+
Patellar	3+	3+
Plantar Reflex	Downgoing	Downgoing

Discussion

- ECT is indicated for cases of refractory NMS after failure of pharmacotherapy. Differences in mortality have not been shown across all cases of NMS, however treatment with ECT had 0% mortality, while bromocriptine and dantrolene had 8.5%, and supportive care alone showed 10.2% mortality (Kuhlwilm 2020).
- This highlights the necessity of urgent ECT for patients with refractory NMS, even if it delays diagnostic workup. Further workup was considered given the presence of atypical physical exam findings (retrospectively, these were red herrings)
- If the team had known that clonus, hyperreflexia, and other findings were parts of the baseline exam, there would've been greater diagnostic clarity in his clinical picture.

Conclusion

- Clinicians should have a lower threshold for starting ECT, particularly in patients with a poor response to BZD, as it can dramatically impact hospital LOS and morbidity/mortality.
- Certain risk factors should encourage physicians to begin ECT sooner, which include younger age, severe autonomic dysregulation, and baseline psychiatric disorders such as ASD.

References & Link to Abstract

1. Kuhlwilm L, Schönfeldt-Lecuona C, Gahr M, Connemann BJ, Keller F, Sartorius A. The neuroleptic malignant syndrome-a systematic case series analysis focusing on therapy regimes and outcome. Acta Psychiatr Scand. 2020 Sep;142(3):233-241. doi: 10.1111/acps.13215. Epub 2020 Aug 2. PMID: 32659853.
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