"Well, that shocked me": the relationship between Catatonia and Epileptic Seizures as illustrated by case series

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Introduction

- Catatonia is a neuropsychiatric disorder characterized by abnormal movements and behavior that continues to be underdiagnosed due to the previous belief it was primarily seen in schizophrenia.
- The association between epilepsy and catatonia dates to the 19th century with Kahlbaum's definition of catatonia and its association with "organic brain disease."
- De Mille, in 1962 connected the two conditions by studying post lobectomy seizures and their relationship to new onset catatonia.
- Numerous case reports indicate possible connections between epileptic foci, neuronal inflammation and catatonic presentation.

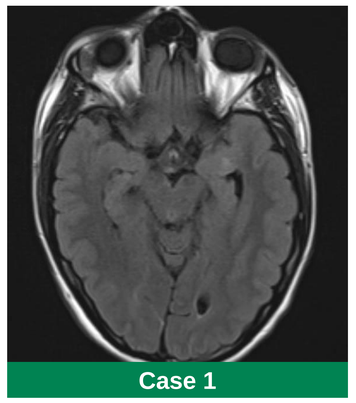
Case Series Presentation

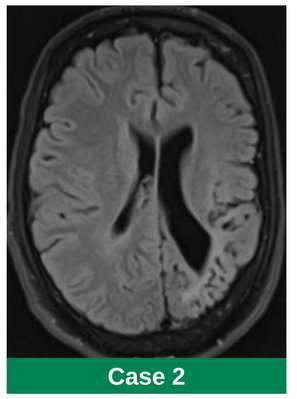
	CASE 1	CASE 2	CASE 3
HISTORY	35-year-old female with history of prematurity, neonatal intracerebral hemorrhage, psychogenic dystonia vs cerebral palsy, developmental delay, PNES, and catatonia	24-year-old male with history of childhood focal epilepsy secondary to intrauterine ischemic infarct, cerebral palsy, PNES, catatonia	16-year-old female with history of intractable juvenile myoclonic epilepsy, PNES, and depression
EXAM	BFCRS: Severity Score 12 • Posturing • Mannerisms • Rigidity • Waxy Flexibility Excitement • Impulsivity • Perseveration	BFCRS: Severity Score 26 • Stupor • Mutism • Staring • Posturing • Rigidity • Waxy Flexibility • Withdrawal • Passive Obedience • Automatic Obedience • Muscle resistance • Ambitendency	BFCRS: Severity Score 12 • Stupor • Mutism • Staring • Stereotypy • Mannerisms • Withdrawal • Ambitendency
DATA	MRI Brain wo/w: Enlargement of left amygdala consistent with cortical dysplasia vs low-grade neoplasm EEG: • Obscured EEG seizure • Axial tonic seizure	MRI Brain wo/w: Left sided cerebral hemiatrophy with calvarial thickening and encephalomalacia/gliosis involving posterior left parietal lobe EEG: • Left frontal EEG seizure without clinical signs	MRI Brain wo/w: Asymmetric sulcation pattern in the frontal lobes but no findings of a discrete cortical malformation. Limited by metal artifact (braces) EEG: • Multiregional sharp waves and bifrontal poly spikes • Generalized EEG seizure
DX	Non-localizable epilepsy PNES	Left hemisphere focal epilepsy	Intractable Generalized Epilepsy with Tonic Clonic Seizures
TX	• Lorazepam 2 mg TID • Levetiracetam 750 mg BID • Baclofen 20 mg TID • Mirtazapine 7.5 mg QHS	• Lorazepam 2 mg TID • Carbamazepine XR 400 mg BID • Valproate 750 mg BID • Memantine 10 mg BID • Zolpidem 10 mg QHS • Aripiprazole 5 mg BID • Sertraline 50 mg daily ECT: Acute Series, Bifrontal, 6 treatments	• Lorazepam 1 mg IV TID • Valproate 1750 mg total daily • Ethosuximide 750 mg total daily • Zonisamide 300 mg total daily • Prednisone 30 mg daily • Sertraline 50 mg QHS • Olanzapine 15 mg QHS
OUTCOME	Full remission in catatonic symptoms from lorazepam. Has since had reoccurrence of seizures and escalation of ASMs	Partial remission in catatonic symptoms with Lorazepam and 6 treatments of ECT with plan to pursue maintenance. Discharged out of state and lost to follow up	Partial remission in catatonic symptoms with Lorazepam and optimization of ASMs. Has since had reoccurrence of seizures and escalation of ASMs

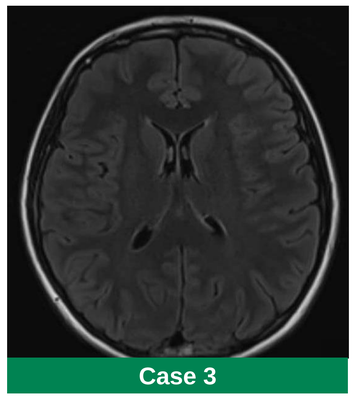
PNES = Psychogenic non-epileptic seizures; BFCRS = Bush-Francis Catatonia Rating Scale; ASMs = anti-seizure medications

Graphics

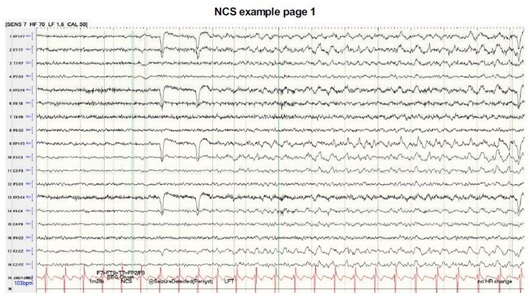
Graphics 1-3: Examples of MRI Brain with associated imaging abnormality for cases 1-3

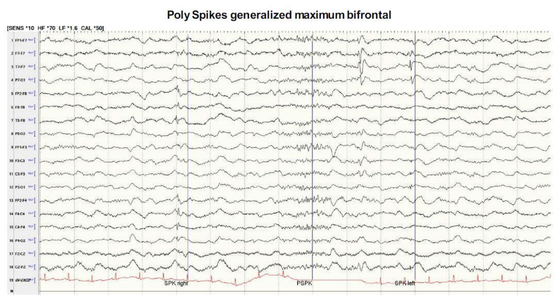

Case 1


Case 2


Case 3

Graphics 4-5: Examples of EEG seizures for Case 2 (left, NCS = no clinical signs) and Case 3 (right)





Discussion

Each case was initially diagnosed with or suspected to have PNES due to:
- Negative infectious and metabolic work up
- Atypical presentations of seizures with altered mentation and at times, no definitive EEG correlate

Shared features:
- Brain anomalies
- EEG seizures
- Positive response to lorazepam challenge

Diagnostic challenges:
- Case 1 required EEG with sphenoidal electrodes due to suspected subcortical involvement
- Case 2 pursued ECT but unable to use Flumazenil due to risk of status epilepticus
- Case 3 transferred to medical from inpatient psychiatry due to intractable seizures
- Unclear if catatonic symptoms related to pre-ictal, interictal, or post-ictal states or potentially forced normalization, a rare phenomenon of epileptic seizures presenting as behavior changes rather than EEG changes due to ASM treatment
- Limited in up-titration of lorazepam due to seizure monitoring/diagnosis and therefore, utilization of ASMs for seizure control

Conclusion

Overall, interdisciplinary care between neurology and psychiatry is paramount for patients presenting with catatonic symptoms with a history of epilepsy and/or PNES.

Future Recommendations:
- MRI brain imaging
- Continuous video EEG monitoring for at least 24 hours
- Consider sphenoidal electrode placement when there are subcortical abnormalities on imaging and/or consistent clinical seizures despite prior negative EEGs
- Low threshold to give lorazepam as initial treatment in assessing treatment response and alleviating symptoms to prevent delays in treatment course and to return to improved functioning

References

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2. Repchak, A. T., & Quinn, D. K. (2016). Epileptic catatonia: a case series and systematic review. *Psychosomatics*, *57*(2), 217-225.
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