

Cerebellar Hippocampal and Basal Nuclei Transient Edema with Restricted Diffusion (CHANTER) Syndrome: A Case Report

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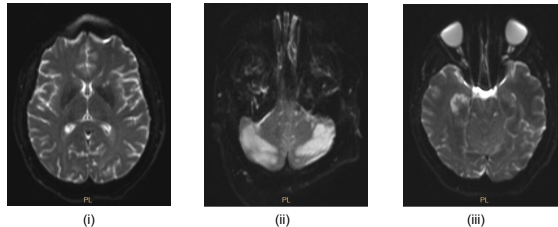
Introduction

- Cerebellar Hippocampal and Basal Nuclei Transient Edema with Restricted Diffusion (CHANTER) Syndrome is a rare clinicoradiological diagnosis
- Clinical presentation includes decreased level of consciousness with exposure to opiates and other recreational drugs
- MRI imaging includes acute cytotoxic edema involving the bilateral cerebellar cortices, hippocampi, and basal nuclei

Case Description

- A 30-year-old female with a history of polysubstance abuse presented with encephalopathy after being found unresponsive
- She was reportedly drinking the night prior with unknown time of last known well
- Narcan was administered without improvement and her urine drug screen was positive for fentanyl and cocaine
- CT Head showed bilateral cerebellar hypodensities with downward herniation of the cerebellar tonsils
- MRI brain showed symmetric signal abnormality consistent with diffusion restriction within the bilateral cerebellar hemispheres and subcortical occipital lobes, as well as asymmetric signal abnormality involving the bilateral basal ganglia, hippocampi, and fornices, deemed to be cytotoxic edema with evidence of mass effect
- She was intubated for airway protection and admitted to the neurocritical care unit for management of cerebral edema, which was treated with hypertonic saline
- Neurosurgery was consulted, but the patient did not require surgical decompression
- Her hospital course was complicated by leukocytosis, rhabdomyolysis, and newly diagnosed hepatitis C and type 2 diabetes mellitus
- She was admitted to inpatient rehabilitation with balance difficulty, weakness, and mild cognitive impairment

Imaging



- MRI Brain Without Contrast DWI Axial Views
- (i) Asymmetric signal abnormality of basal ganglia
 - (ii) Symmetric signal abnormality of bilateral cerebellum
 - (iii) Right hippocampus with small focus on left hippocampus

Physical Therapy Evaluation

	Initial Evaluation	Discharge Evaluation
Transfers	Contact Assist	Independent
Ambulation	150' with Contact Assist	>500' Independent
Stairs	10 stairs with Moderate Assistance	20 stairs Independent
Berg	39	56
FGA	11	18
10 meter walk test	0.68 m/sec	1.01 m/sec

Berg Balance Scale (out of 56)
FGA - functional gait assessment (out of 30)

Discussion

- This patient presented with cytotoxic brain injury and a pattern of life-threatening cerebral edema after fentanyl use that is consistent with CHANTER syndrome
- She required a short stay at inpatient rehabilitation as her physical and cognitive impairments rapidly improved
- She was offered suboxone and drug rehab programs
- She was discharged to home with plans for follow-up MRI
- It would be expected to see resolution of diffusion restriction on follow-up imaging

Conclusion

- It is important to recognize and differentiate CHANTER syndrome from other diagnoses such as: acute ischemic stroke, anoxic brain injury, posterior reversible encephalopathy syndrome (PRES), or heroin-associated spongiform leukoencephalopathy (HASL)
- This unique case demonstrates how other areas of the brain can be impacted, suggesting that injury may be on a spectrum of severity
- Despite the severity in initial clinical presentation and imaging findings, patients with CHANTER syndrome may achieve significant neurologic and functional recovery in a relatively short amount of time.

References

Jasne, A.S., Alsherbini, K.H., Smith, M.S. *et al.* Cerebellar Hippocampal and Basal Nuclei Transient Edema with Restricted Diffusion (CHANTER) Syndrome. *Neurocrit Care* 31, 288–296 (2019). <https://doi.org/10.1007/s12028-018-00666-4>

