A Case of Takotsubo Cardiomyopathy from a Methamphetamine Related Seizure

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Introduction

- Takotsubo’s cardiomyopathy (TCM) diagnostic criteria by Mayo Clinic:
  1. Cardiac wall abnormalities extending beyond territory of single vascular bed
  2. Non-occluded coronary arteries angiographically
  3. New ECG changes
  4. No evidence of pheochromocytoma or myocarditis

- Pathophysiology related to excess catecholamine

- Similar to Neurogenic Stunned Myocardium
Case Description

- 62 y.o. postmenopausal woman w/ hx of HTN and COPD presented to outside hospital after being found down and seizing, transferred to UMC s/p 2.5 mg Midazolam and 1 gm Levetiracetam, sedated and intubated.

- Vitals: T 95.6 F, 35.3 C, BP 108/74, HR 74, RR 16

- Exam: Disheveled condition, facial ecchymosis, hematomas on left upper extremity and bilateral lower extremities

- Labs: WBC 15.7, Lactic acid 2.1, Troponin 0.72, peaked to 1.15, Tox screen positive for Benzos and Mass Spec positive for Methamphetamine
Imaging

- CT: no acute findings
- MRI: white matter hyperintensity c/w small vessel (Binswanger’s) disease
- EEG: focus of hyper-excitability in right temporal cortex, right > left temporal structural abnormalities, diffuse cerebral dysfunction
- TTE: EF <20%, apical akinesia and ballooning, movement of LV base only
Figure 1: Four-chamber TTE showing LV dysfunction involving apical, anteroseptal, anterior territories

Figure 2: Parasternal long-axis TTE showing severely decreased EF <20%
Figure 3: Significant reduction in peak systolic strain in anterior, septal, and inferior LV segments

Figure 4: Coronary catheterization showing clear coronary arteries
Treatment

• Initially could not rule out ACS; given ASA 600 mg PR, Clopidogrel 300 mg, heparin gtt, Atorvastatin 80 mg, BB held b/c borderline BP; d/c after formal TTE confirmed TCM, continued on ASA 81 mg, Atorvastatin 80 mg

• Broad-spectrum antibiotics

• Preemptively treated with Acyclovir for herpes encephalitis, d/c when LP negative for HSV

• Thiamine and Folate supplementation for WKS

• Recovered uneventfully, discharged on HD12 with Levetiracetam for seizure pp
Discussion

- Precipitating trigger most likely generalized tonic-clonic seizure.

- Role of neurogenic etiologies in TCM recently recognized.

- Seizure-induced TCM can have a favorable prognosis with correct treatment.

- Important to be aware of seizures as a potential etiology of TCM for correct treatment and prevention of continued myocardial injury.

- Sudden Unexpected Death in Epilepsy (SUDEP) accounts for 30% of deaths in epilepsy. High prevalence of stress cardiomyopathy in status epilepticus patients admitted to ICU.
Take Home Points

• ECG and echocardiogram to rule out TCM in patients presenting with epilepsy may help prevent SUDEP.

• Our patient is a classic example of a seizure-related TCM—a post-menopausal female presenting with neurologic disorder and found to have ECG changes, cardiac wall abnormalities with no coronary occlusive disease.

• For women in this demographic who present with a neuro-critical condition, it is important to conduct a baseline ECG and additional ECGs with changes in condition, to not miss a treatable case of TCM.
References


Thank you!

Questions?