

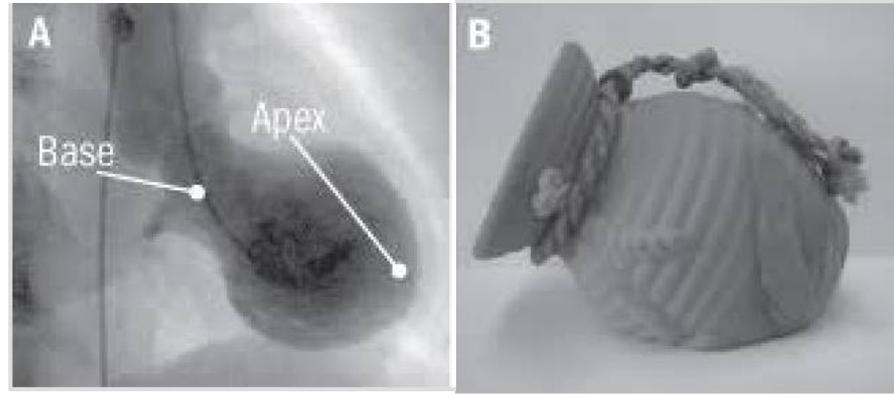
A Case of Takotsubo Cardiomyopathy from a Methamphetamine Related Seizure



Hania Adib, MS, Hanyuan Shi, MD, Sarah Cossich, MD
Tulane University School of Medicine,
Department of Internal Medicine

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
- ECG: NSR, mild ST elevation in V1-V3. T-wave inversion V4-V6. Left axis deviation.
- TTE: EF <20%, apical akinesis and ballooning, movement of LV base only

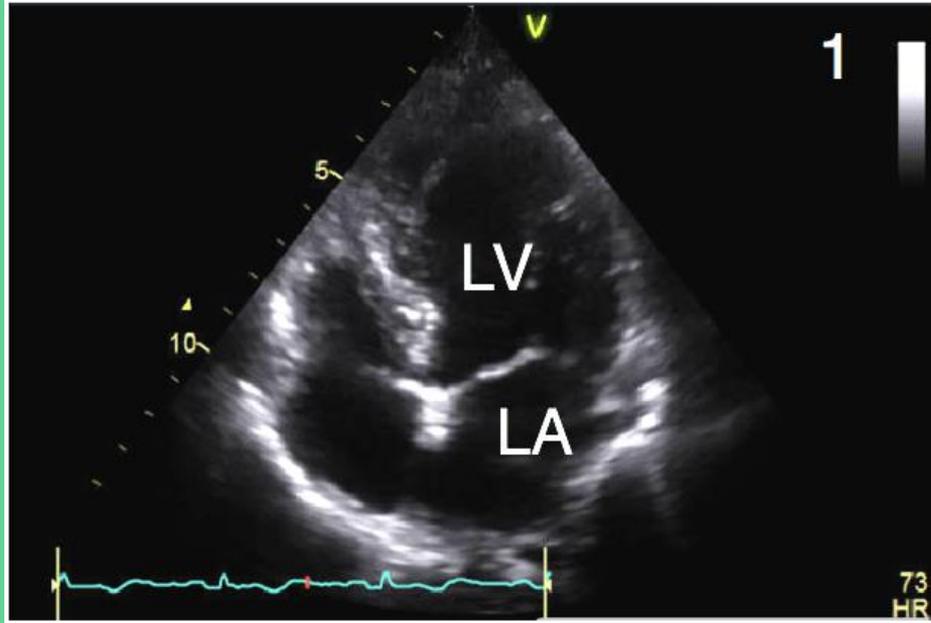


Figure 1: Four-chamber TTE showing LV dysfunction involving apical, anteroseptal, anterior territories

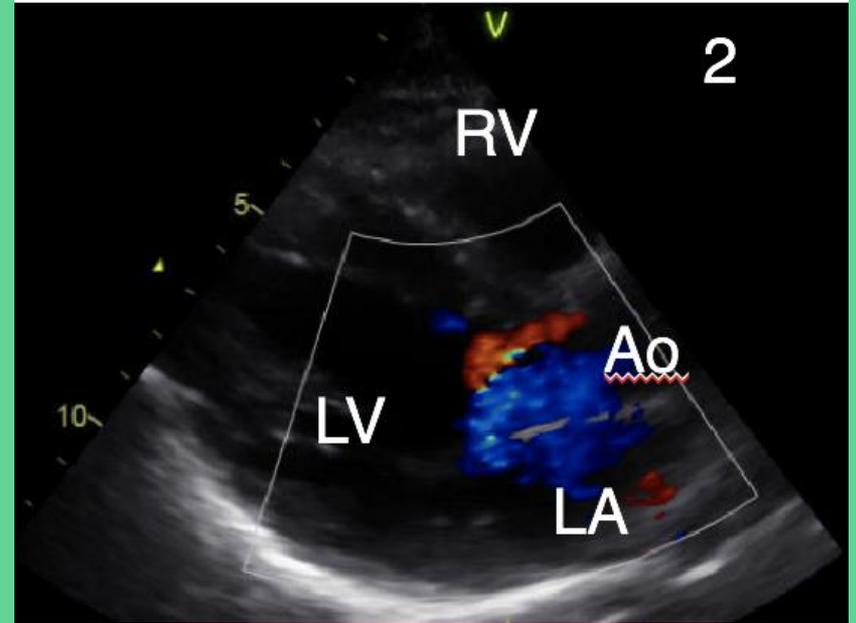


Figure 2: Parasternal long-axis TTE showing severely decreased EF <math>< 20\%</math>

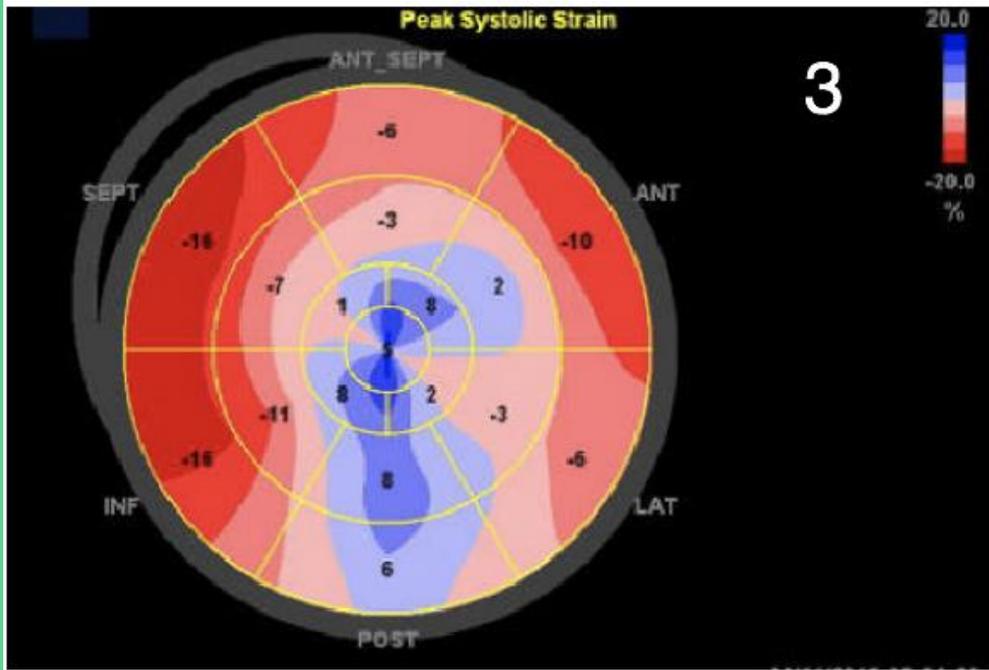


Figure 3: Significant reduction in peak systolic strain in anterior, septal, and inferior LV segments

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

Hurst, R. Todd, et al. "Takotsubo cardiomyopathy: a unique cardiomyopathy with variable ventricular morphology." *JACC: Cardiovascular Imaging* 3.6 (2010): 641-649.

Burgdorf, Christof, et al. "Long-term prognosis of the transient left ventricular dysfunction syndrome (Tako-Tsubo cardiomyopathy): focus on malignancies." *European Journal of Heart Failure* 10.10 (2008): 1015-1019.

Yoshida, Tetsuro, et al. "A rare case of tako-tsubo cardiomyopathy with variable forms of left ventricular dysfunction: a new entity." *International journal of cardiology* 134.2 (2009): e73-e75.

Moazez, Carmel, Vicken Zeitjian, and Azar Mehdizadeh. "A Unique Case of Midvariant Reverse Takotsubo Cardiomyopathy." *Case reports in cardiology* 2018 (2018).

Stöllberger, Claudia, and Josef Finsterer. "Delayed onset of Takotsubo syndrome after epileptic seizure." *Neurologia i neurochirurgia polska* (2019).
Ali, Asad, et al. "Neurogenic Stunned Myocardium: A Literature Review." *Cureus* 10.8 (2018).

Wira III, Charles R., et al. "Cardiac complications in acute ischemic stroke." *Western Journal of Emergency Medicine* 12.4 (2011): 414.

Finsterer, Josef, and Anna Bersano. "Seizure-triggered Takotsubo syndrome rarely causes SUDEP." *Seizure* 31 (2015): 84-87.

Sharkey, Scott W., et al. "Reversible myocardial contraction abnormalities in patients with an acute noncardiac illness." *Chest* 114.1 (1998): 98-105.

Kyi, Htay Htay, et al. "Seizure associated takotsubo syndrome: a rare combination." *Case reports in cardiology* 2017 (2017).

Belcour, Dominique, et al. "Prevalence and risk factors of stress cardiomyopathy after convulsive status epilepticus in ICU patients." *Critical care medicine* 43.10 (2015): 2164-2170.

Thank you!

Questions?

