A RARE CASE OF TAKOTSUBO CARDIOMYOPATHY FOLLOWING ELECTIVE TRANSESOPHAGEAL CARDIOVERSION

Case Presentation

- Our patient is an 83-year-old female with a past medical history of persistent Atrial Fibrillation on apixaban and, Hypertension with CKD stage IIIA, CAD status post PCI and metoprolol stent placement in 2018, CHF with preserved EF
- She presented to the hospital for transesophageal echocardiogram and direct current cardioversion. Direct current synchronized cardioversion was performed with 200 Joules and was successful in converting the patient from atrial fibrillation to a normal sinus rhythm.
- The TEE during the procedure revealed left atrial enlargement with moderate mitral regurgitation secondary to her atrial fibrillation along with normal left ventricular function and an ejection fraction of 60%.
- Patient was then subsequently sent to the PACU after her procedure. She was initially stable in the PACU but then developed some chest tightness with associated dyspnea. *(PACU – Post Anesthesia Care Unit)*

Hospitalization

- Initial laboratory studies revealed leukocytosis of 12.2 and a troponin level of 3844 ng/L (<54 ng/L) along with an elevated BNP of 3506 pg/mL (5-450 pg/mL).
- A chest x-ray was obtained which revealed cardiomegaly without any signs of vascular congestion or pleural effusions. The patient was admitted for observation.
- However, the repeat troponin levels were 7714 ng/L. Patient still complained of chest pressure & SOB. She was started on heparin drip.
- Repeat EKG was ordered which revealed ST elevations in leads 1 and aVL.
- A STEMI alert was called and patient was rushed to the cardiac catheterization lab. During her catheterization, she was found to have no occlusive coronary artery disease (CAD)

Image 1
Nonobstructive CAD of the LAD

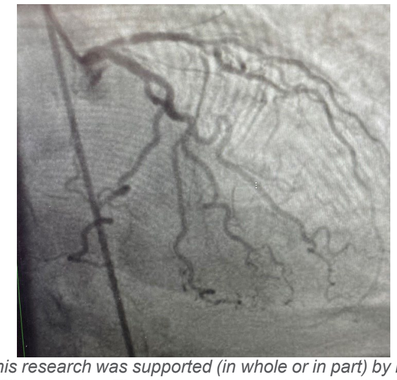
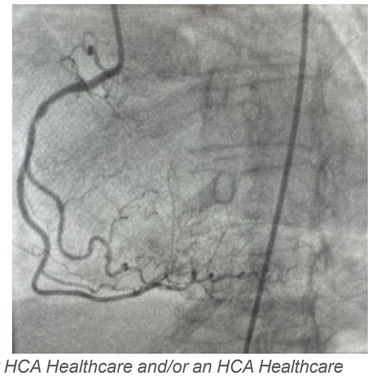


Image 2
Nonobstructive CAD of RCA



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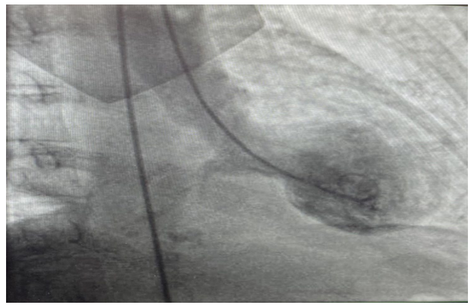
Cardiac Catheterization Results

- However, patient was noted to have anteroapical and distal hypokinesis with apical ballooning of the left ventricle

Image 3
Cardiac catheterization image demonstrating Takotsubo *Cardiomyopathy*



- Takotsubo Cardiomyopathy was first described in 1990 as a rare cause of chest pain in the setting of elevated troponins.[1]
- While the pathophysiology, remains unclear, the condition usually is triggered by *catecholamine excess* from an intense emotional or psychological stress.[2]
- This phenomenon is more pronounced in post-menopausal women as per the data of International Takotsubo Registry which included 1750 patients of which 89.8% were women with a mean age of 66.4 years.[3]

The predominant symptoms on admission of patients with Takotsubo cardiomyopathy include chest pain, dyspnea and syncope. **Mayo Clinic Criteria[4,5] remains the diagnostic tool for assessment and includes**:

1) The presence of **TRANSIENT** Left ventricular wall motion abnormalities
2) With NEW accompanied ECG changes (ST segments, T waves)
3) Modest **ELEVATION** in cardiac troponin values in the
4) ABSENCE of obstructive coronary artery disease, pheochromocytoma & myocarditis.

Japanese tkotsubo trap [9]

Discussion

- Prompt recognition is vital as patients with Takotsubo Cardiomyopathy require urgent hospitalization. This is due to their decompensated heart failure often requiring aggressive IV diuresis.
- In a systematic review of 11 cases of Takotsubo Cardiomyopathy, the average EF of the cohort was 25% with significantly high rates of cardiogenic shock (45%) and pulmonary edema (50%).[6]
- The most common pattern of wall defects in Takotsubo cardiomyopathy are apical hypokinesia, followed by mid-ventricular and basal hypokinesia. In rare circumstances, patients can also develop more global hypokinesia.[7]
- Our patient had an EF of 35-40% with *severe* mid to distal septal and apical hypokinesis requiring IV Lasix 40 mg BID along with BiPAP. Patient was subsequently decongested and discharged on her home apixaban and metoprolol.

Conclusion

- Patients that present with chest pain and shortness of breath routinely undergo workup for acute coronary syndrome. However, if there is no obstructive CAD identified on cardiac catheterization, then we encourage providers to rule out Takotsubo cardiomyopathy the Mayo Clinic Criteria.
- Additionally, for post-menopausal women a lower shock delivery of less than 100 Joules is likely sufficient for cardioversion. In fact, using a starting energy of 50 Joules alone is associated with an 88.5% success rate in converting Atrial fibrillation into sinus rhythm.[8]
- We encourage providers to recognize Takotsubo as a potential complication in patients who are undergoing outpatient elective cardioversion. Although it is a transient complication, optimal medical management can be life-saving. Guideline directed medical therapy with ACE inhibitors, beta-blockers and diuretics with close cardiology follow up is crucial.

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