Idiopathic dilated cardiomyopathy in an otherwise healthy 35 year old male

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Case

We present the case of a 35 year old male with no past medical history who presents to emergency department after experiencing cardiac arrest at home. The majority of the history was obtained through his significant other who was present the entire time. She notes that the night prior they were watching television and smoked some marijuana, which is a regular routine for them. They then went to bed at a regular time. The patient suddenly awoke around 4am with agonal respirations, diaphoresis, and pallor. He then fell out of bed and was unresponsive. His significant other called 911 and started CPR. EMTs found him in ventricular fibrillation and administered 2 shocks and 1 dose of epinephrine. He was intubated in the field however self-extubated prior to arrival.

His family history is significant for his mother having abnormal rhythms which required cardioversion as well. However, he was unable to provide further information about this. Upon arrival to the emergency department, he is awake although confused. He could not recall any events of last night and cannot seem to remember the last thing that happened. A 12-lead EKG in the ER showed atrial fibrillation with rapid ventricular response. He was cardioverted into sinus rhythm however he remained tachycardic, diaphoretic, and confused. He was then admitted to the hospital.

During his hospital stay, the patient underwent a complete cardiac workup for his cardiac arrest including echocardiogram, left heart catheterization, and cardiac MRI. No clear culprit was identified for his cardiac arrest. Both the echocardiogram and cardiac catheterization showed a severely diminished left ventricle (LV) systolic function with an ejection fraction (EF) of 35-40% globally without any valvular disease. Baseline EKG showed sinus rhythm with intact conduction, no preexcitation, and no other stigmata of heritable sudden death syndromes. Cardiac MRI also showed an enlarged LV with EF of 45% and global hypokinesis however no suspicion of infiltrative disease. Ultimately, a dual chamber ICD was placed for secondary prevention along with initiation of medical management. A repeat Echocardiogram several months later showed recovered LV EF to 55-60% and otherwise a functionally and structurally normal heart.

He continues follow up with cardiac rehabilitation and electrophysiology.

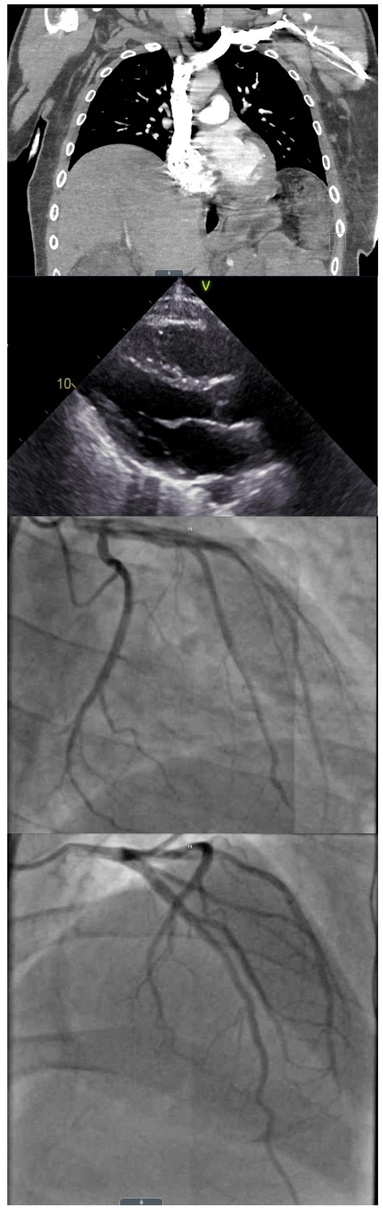
Imaging

CT ANGIO CHEST PE
IMPRESSION:
1. No pulmonary embolus.
2. Bilateral lung opacities which concerning for atelectasis versus less likely pneumonia or pulmonary edema.
3. Cholelithiasis.

ECHOCARDIOGRAM COMPLETE
Interpretation Summary
Normal left ventricle size with ejection fraction 35-40%.
Moderate global hypokinesis of the left ventricle.
No valvular abnormality.

SI LEFT HEART CATH
1. Normal coronary arteries.
2. Dilated left ventricle with estimated left ventricular ejection fraction 32 %.
3. Left ventricular end-diastolic pressure is 16 mmHg.

MR CARDIAC VIABILITY
IMPRESSION:
1. No evidence of prior myocardial infarction or myocardial injury.
2. Enlarged left ventricle (EDV 212cc) with mildly to moderately reduced systolic function (quantified EF 46.5%, visual EF 40-45%). Global hypokinesis present.
3. Mildly enlarged right ventricle with low normal function. No segmental wall motion abnormalities present.
4. No significant valvular abnormalities based on gross assessment.
5. No prior cardiac MRI available for comparison. secondary prevention



Discussion

Cardiomyopathies are diseases of the heart muscle. They are a myocardial disorder in which the heart muscle is structurally and functionally abnormal in the absence of coronary artery disease, hypertension, valvular disease, and congential heart disease that can explain the observed abnormality. In the absence of ischemic causes, nonischemic cardiomyopathy tends to be the diagnosis of exclusion. Most commonly, cardiomyopathies are idiopathic.

The use of the term "cardiomyopathy" to describe valvular, ischemic, or hypertensive heart disease unnecessarily broadens a term best suited to predominantly reflect genetically determined diseases with recognizable phenotypes. However, the term "ischemic cardiomyopathy" continues to be used by some, including the 2013 American College of Cardiology Foundation/American Heart Association heart failure guidelines. The definition of cardiomyopathies and categorization has changed frequently over the years. However, non-ischemic cardiomyopathy continues to remain a diagnosis of exclusion.

A broad workup must be done to evaluate the cause of cardiomyopathy or cardiac arrest. This includes, but is not limited to, echocardiogram to evaluate for heart failure, cardiac stress test to evaluate for acute coronary syndrome, cardiac catheterization to visualize coronary artery disease, and cardiac MRI to evaluate for infiltrative processes. Often times, if a cause is unable to be found, a myocardial biopsy may be needed.

In the case of out-of-hospital cardiac arrests, secondary prevention must be implemented regardless of cause. This includes implantable cardiac defibrillator or pacemaker, beta blockers, and angiogensin converting enzyme inhibitors or angiotensin receptor blockers.

References

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