VIRAL SYNDROME WITH CHEST PAIN AND ACUTE MYOCARDIAL INJURY: WHAT IS THE DIAGNOSIS?

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INTRODUCTION

- While acute pericarditis (AP) and myocarditis often occur together, they will generally give a predominant clinical syndrome favoring either one.
- Myopericarditis is a predominant inflammation of the pericardium with contiguous myocardial muscle involvement and has been described to occur in approximately 10-20% of cases with AP.
- Viral infections top the list of most common etiologies.
- Diagnosis of acute myopericarditis (AMP) requires ≥ 2 of the following criteria: pleuritic chest pain, pericardial rubs, ECG changes, or pericardial effusion and an elevation of cardiac troponins.
- Additional findings, such as inflammatory markers and cardiac imaging studies such as magnetic resonance imaging (MRI) help confirm the diagnosis.

CASE PRESENTATION

- A 65-year-old male without history of systemic illnesses presented to the emergency department (ED) with four-day complaints of fever, malaise, diffuse body-ache, arthralgia, and rash in his upper trunk and extremities.
- He also complained of an evolving pleuritic chest pain that improved with leaning forward. Upon arrival to ED he had a blood pressure of 85/58 mmHg, pulse at 80 beats-per-minute, temperature of 99.6F, a maculopapular rash in the upper trunk and extremities, no overt heart failure, normal heart sounds and no pericardial rub (figure-1A-B).
- ECG showed a 1mm ST-segment elevation on lead-I, aVL, and V4-5, with upward concavity and no reciprocal ST segment depressions, consistent with acute pericarditis changes (figure-2).
- Serial high-sensitive troponins were elevated with a max-value of 3,630 ng/L (abnormal cut-off >22) and marked upward trending consistent with an acute myocardial injury (figure-3). Pro-BNP value was also elevated in 2,115 pg./ml and suggestive of hemodynamic alteration. The patient responded to initial fluid challenge and was admitted to the intensive care unit.
- Echocardiography (figure-4) revealed a mild left ventricular systolic dysfunction with an ejection fraction of 45%, inferoapical hypokinesia and a mild pericardial effusion (red arrow). CXR with mild hilar infiltrates (figure-5).
- Coronary angiography was performed with no evidence of obstructive coronary artery disease (figure-6A-C). Inflammatory markers came significantly elevated with a CRP >300mg/l. With the above clinical presentation, chest pain characteristics, ECG, and echocardiographic changes, together with CRP and troponin elevation, were consistent with a viral AMP.
- He was started on aspirin (1gm/day) and colchicine 0.6mg twice daily with remarkable inpatient improvement and resolution of chest pain and a significant cardiac troponin decrease from 3,630 to 450ng/L in three days.
- Post-discharge follow-up evaluation with a cardiac magnetic resonance (CMR) imaging study (one week after discharge) revealed findings consistent with myocarditis, with evidence of a mild biventricular systolic dysfunction and with late gadolinium enhancement (LGE) of the epicardial apical and mid-lateral wall (orange arrows) as seen in the four chamber view (figure-7A). A f/u CMR was performed 11-months after, with improved systolic function, but with persistence of inferolateral LGE changes in 4C & LV short axis views (7B-C).
- Subsequent viral antibody tests came positive for acute Coxsackievirus-B2.

DIAGNOSTIC IMAGING

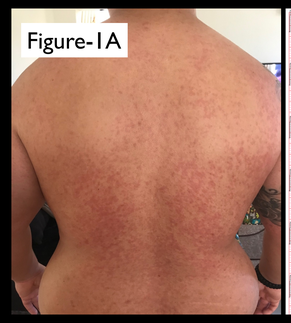
Figure-1A

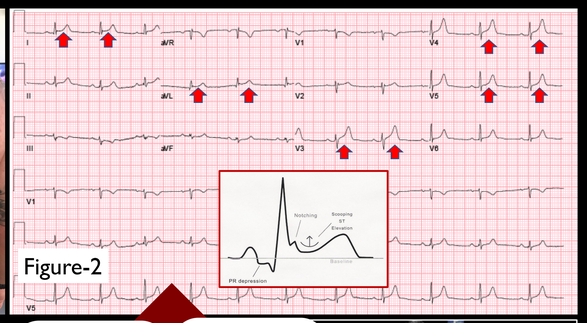

Figure-2

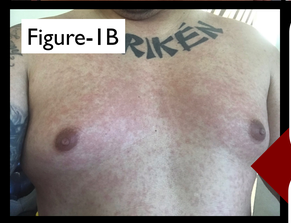
Figure-1B

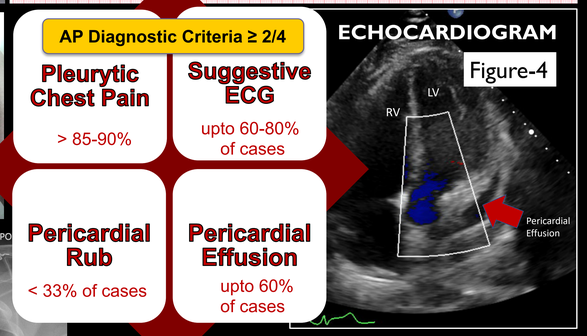

Figure-4

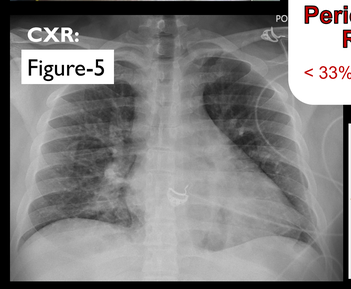

Figure-5

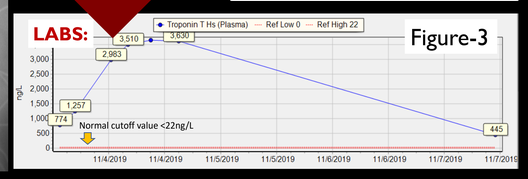

Figure-3

Coronary Angiography: without evidence of obstructive coronary disease.

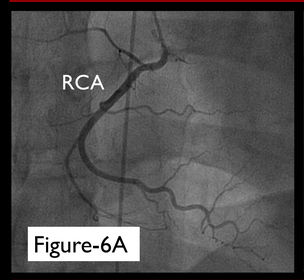

Figure-6A

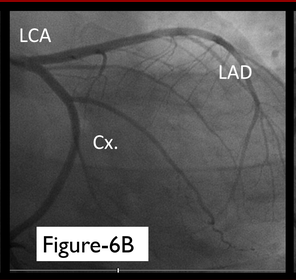

Figure-6B

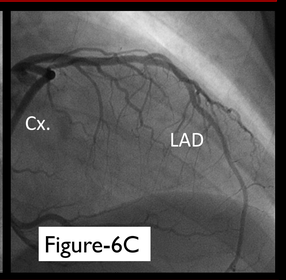

Figure-6C

Cardiac Magnetic Resonance (CMR) Imaging:

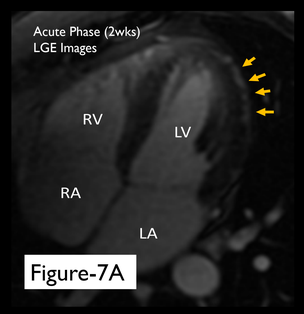

Figure-7A

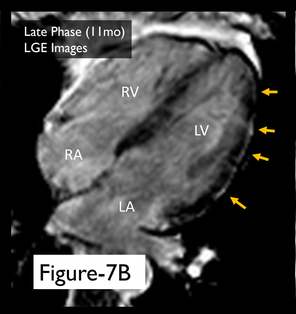

Figure-7B

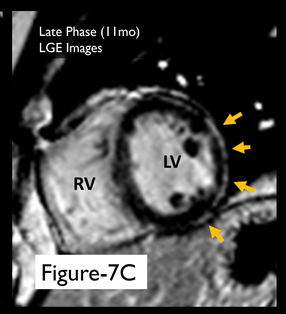

Figure-7C

DISCUSSION

- This case highlights a classic post-viral myopericarditis with predominant pericardial inflammation alongside to concomitant non-ischemic myocardial injury leading to troponin elevation.
- Based on initial findings of wall motion abnormality and mild LV systolic dysfunction, coronary angiography aided with excluding a diagnosis of acute coronary syndrome.
- This measure is reserved for selective patients if there is uncertainty related to symptoms and troponin elevation.
- Additional testing with CMR was useful to confirm concomitant myocardial involvement, extent of the inflammation, and to exclude injury of ischemic nature for further diagnostic, therapeutic, and prognostic benefits.
- AMP management is similar to AP, and its prognosis is generally favorable in the absence of significant ventricular dysfunction.
- The presence of myocardial involvement should lead to lower cautious nonsteroidal anti-inflammatory dosing.
- Activity restriction for a period non-less than 3-months and as long as 6-months for competitive sport activities.
- If there is significant ventricular dysfunction and/or significant ventricular arrhythmias, therapeutic considerations for myocarditis would apply.
- Use of BB and ACE-I/ARB therapy would apply according to LV dysfunction and CHF findings and guideline recommendations.

CONCLUSION

- Our case serves as an important reminder of diagnostic distinction between AP and AMP. Adequate diagnosis will lead to correct management and patient care.
- Careful analysis of presentation, history and comorbidities is essential for the diagnosis. In certain cases, further work up including cardiac MRI and coronary angiography is required to avoid misdiagnosis.
- Cautious anti-inflammatory medications as well as activity restriction is required for adequate management and complication avoidance.

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AUTHOR DISCLOSURES: NONE