

Case Conference

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Discussions

Pericarditis

- Constrictive pericarditis may develop as a late complication of pericardial inflammation
- Most cases are idiopathic, but pericarditis after cardiac surgery and mediastinal irradiation are important identifiable causes
- Tuberculous pericarditis is a leading cause of constrictive pericarditis in some underdeveloped countries

Diagnosis Criteria

Chest pain

Pericardial friction rub

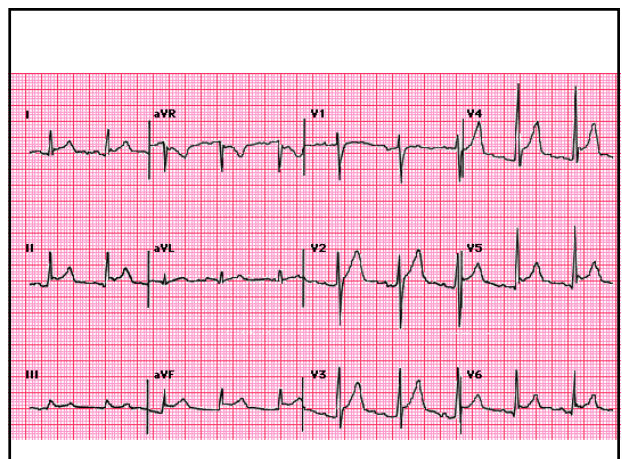
ECG changes — new widespread ST elevation or PR depression

Pericardial effusion

Present 2 of 4

Evolution of ECG

- Stage 1
Diffuse ST elevation (typically concave up)
PR Segment depression
- Stage 2 Normalization of the ST and PR segments.
- Stage 3 Diffuse T wave inversions



Myocarditis

- Defined as "inflammation of the heart muscle"
- Inflammation can be found after any form of injury to the heart including ischemic damage, mechanical trauma, and genetic cardiomyopathies
- Classic myocarditis refers to inflammation of the heart muscle as a result of exposure to either discrete external antigens (viruses, bacteria, parasites, and drugs or internal triggers such as autoimmune activation)

Clinical Presentation

- Range from asymptomatic EKG or cardiac echo abnormalities to symptoms of cardiac dysfunction, arrhythmias or heart failure to hemodynamic collapse
 - **Bimodal distribution** in terms of age
More commonly seen in young children and teenagers with the **acute presentation**
- In the older adult population the presenting symptoms are more subtle and insidious, often with dilated cardiomyopathy and heart failure

Differential Diagnosis

- Masquerade as acute MI with severe chest pain, EKG changes, elevated cardiac markers, and heart failure
- EKG abnormalities extend beyond the distribution of a single coronary artery, or there may be global, rather than segmental, wall motion abnormalities
- In myocarditis, chest pain continues, but no further ischemic ECG changes
- Coronary angiography is usually normal in myocarditis
- Young patients and have few risk factors for CAD
- Healthy patient who presents with symptoms and signs of new CHF or dysrhythmias
- **Congenital, valvular, ischemic, and pulmonary heart disease must be excluded**

Clinicopathologic Classification

- **Fulminant myocarditis** — presents with acute heart failure up to 2 weeks after a distinct viral prodrome. Patients have severe cardiovascular compromise and may require mechanical circulatory support. Multiple foci of active myocarditis are typical, and ventricular dysfunction often normalizes if patients survive the acute illness
- **Acute myocarditis** — presents with a less distinct onset of illness. Patients present with established ventricular dysfunction and may progress to dilated cardiomyopathy

- **Chronic active myocarditis** — also presents with a less distinct onset of illness. Affected patients often have clinical and histologic relapses and develop ventricular dysfunction associated with chronic inflammatory changes, and mild to moderate fibrosis on histologic study
- **Chronic persistent myocarditis** — also presents with a less distinct onset of illness, is characterized by a persistent histologic infiltrate, often with foci of myocyte necrosis but without ventricular dysfunction, despite other cardiovascular symptoms such as chest pain or palpitation.

Clinical Presentation

- Related to the **maturity of the immune system**—the young tend to have an exuberant response to the initial exposure of a provocative antigen
- On the other hand, the older individual would have developed a greater degree of tolerance and shown chronic inflammatory response only to the chronic presence of a foreign antigen or a dysregulated immune system, which predisposes to autoimmunity

Expanded Criteria for Diagnosis of Myocarditis

- Category I: Clinical Symptoms
 - Category II: Evidence of Cardiac Structural/Functional Perturbation *in the Absence* of Regional Coronary Ischemia
 - Category III: Cardiac Magnetic Resonance Imaging
 - Category IV: Myocardial Biopsy—Pathological or Molecular Analysis
- *Suspicious* = 2 positive categories
• *Compatible* = 3 positive categories
• *High probability* = all 4 categories positive

Management

- Necessary supportive care is determined by clinical presentation and the stage and severity of disease
- **Stage specific therapy**
First phase-early antiviral agents, such as pleconaril or ribavirin
Subacute phases- immunosuppressive therapy such as high-dose gamma globulin and high-dose IVIG
Chronic stage-CHF symptoms predominate

Prognosis

- Hemodynamic instability require intensive care
- Patients with fulminant myocarditis have the best prognosis
- Complications of myocarditis include ventricular dysrhythmias, left ventricular aneurysm, and cardiac failure
- The mortality rate is 20% at 1 year and 50% at 5 years
- Ejection fraction and right ventricular function 1 year after initial presentation may be the best predictors of subsequent survival

When to Suspect Myocarditis?

- Systemic manifestations of a viral, bacterial, rickettsial, fungal or parasitic infection are associated with new abnormalities in cardiovascular function
- Since many cardiotropic viruses, including coxsackie A, are also myotropic, the concurrent presence of muscle aching and particularly muscle tenderness in this setting should enhance the suspicion of myocarditis
- Acute viral infections, especially the exanthematous diseases of childhood due to parvovirus B19, are accompanied by tachycardia out of proportion to fever

When to Suspect Myocarditis?

- An infectious disease presents with pericarditis
- A patient, particularly young, presents with clinical signs and symptoms of an acute myocardial infarction, particularly if the coronary angiogram is normal
- A patient develops symptoms of heart failure associated with rash and eosinophilia following a new drug or vaccine

Diagnosis Criteria for Myopericarditis

- Acute pericarditis is Diagnosed
- Detection of one or both of the following in the absence of evidence of another cause
 1. Elevation in serum cardiac biomarkers
 2. New or presumed new focal or global LV systolic dysfunction

Thanks for Your Attention