

Pericardial Disease

Pericardial Disease - Syndromes

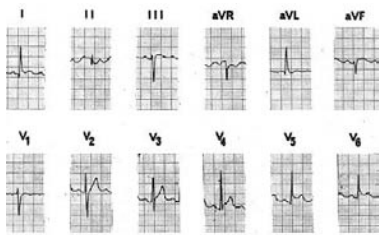
- **Pericarditis - acute, subacute, chronic**
- **Pericardial effusion**
- **Pericardial tamponade**
- **Pericardial constriction**

Etiology

- **Idiopathic - most common cause of acute pericarditis**
- **Infectious - viral, bacterial, myobacterial, fungal, protozoal**
- **Neoplastic**
- **Connective tissue disease/Vasculitis**
- **Post injury (post MI, postcardiotomy, post trauma)**
- **Radiation**
- **Drug (e.g. isoniazide, cyclosporin, daunorubicin)**
- **Metabolic (renal failure, hypothyroidism)**
- **Hemopericardium (trauma, complication of anticoagulation or invasive cardiac procedure)**

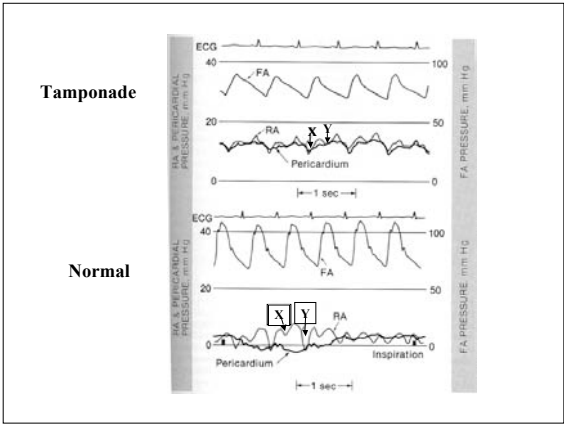
Acute Pericarditis

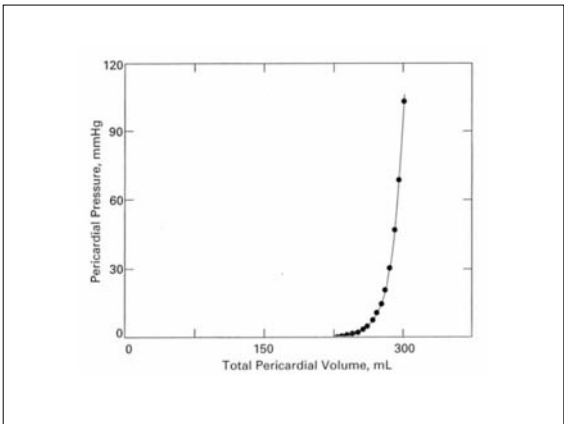
- **Pain** - sharp, increases with inspiration, worse lying down, better sitting up leaning forward
- **Exam** - fever, rub
- **EKG** - ST elevations diffusely
- **CXR** - may show pleural effusions or increased heart size
- **ECHO** - may show pericardial effusion
- **Idiopathic/viral etiology usually self-limited but can be complicated by effusion and tamponade**



Pericardial Tamponade

- **Fluid in pericardium** -> exerts pressure on all chambers throughout cardiac cycle
- **This results in elevation and equalization of diastolic pressures** due to compression
- **Venous return is impeded** -> stroke volume decreases -> cardiac output decreases -> BP falls





Pulses Paradoxus

- Inspiration** → increased venous return → increased RV filling → decreased LV filling due to total cardiac volume (LV+RV) constricted by pericardial pressure → drop in BP > 10 mmHg.

Clinical Diagnosis

- **Setting**
- **Increased JVP, exaggerated BP decline with inspiration, tachycardia, decreased pulse pressure, distant heart sounds**
- **ECHO - fluid, RA, RV diastolic collapse**

Constrictive Pericarditis

- **Thickened, scarred, sometimes calcified pericardium limits diastolic filling of ventricles.**
- **Etiologies - radiation, postcardiac surgery, idiopathic, tuberculosis, any cause of acute pericarditis**
- **Gradual progression to congested state - dyspnea, edema, ascites, weakness, liver failure (cardiac cirrhosis)**

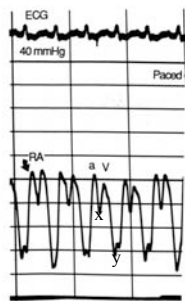
Pathophysiology

- **Cardiac compression by rigid pericardium limits diastolic volume - this occurs in early diastole**
- **During ventricular ejection, normal surge of venous return**
- **At end of diastole, MV and TV open and ventricle not compressed until early rapid filling -> rapid rise in diastolic pressure (plateau)**
- **Pressures high and equalized**
- **Y descent increased in RA (JVP), LA**

Pathophysiology

- No pericardial space -> no transmission of negative intrathoracic pressure to heart with respiration, no increase in venous return - no paradoxical pulse, lack of normal decrease or increase in JVP with inspiration.

RA Pressure Tracing
Constrictive Pericarditis



Diagnosis

- History- radiation, Tb, pericarditis
- Imaging- evidence of abnormal pericardium by CXR (Ca⁺⁺), Echo, or CT (thickened pericardium)
- Hemodynamics/Flow Patterns - MRI, Echo, Cath
- Biopsy - pericardium/myocardium
- Often missed
- Often uncertain of time of surgery

Differential Diagnosis

- CHF with normal EF
- Liver disease - JVP normal
- Myocardial disease
 - Restrictive cardiomyopathy (e.g. amyloid)
