

# Lecture 1



## Myocarditis and Pericarditis

- Additional Notes
- Important
- Explanation
- Examples

# Myocarditis

- It is an inflammatory disease of the **heart muscle**.
- **Viral infection is the most common cause**
- Mild & self-limited with few symptoms or severe with progression to CHF “congestive heart failure” & dilated CM “Dilated cardiomyopathy is a condition in which the heart becomes weakened and enlarged.”
- Very localized or diffuse
- Myocarditis can be due variety of infectious and non infectious causes. Others like toxin drugs and hypersensitivity immune.
- Etiology:
  - ✓ **Coxsackie B is the most common viral cause.**
  - ✓ Other infection: **HIV**, TB, **Toxoplasmosis** “**Parasitic**”, Diphtheria, Lyme’s debases.
    - **Toxoplasmosis**: is a parasite associated with cats. It is common and treatable.
  - ✓ Non-infectious causes: Autoimmune diseases, drug toxins and censors.

- Symptoms and signs:
  - ✓ **Similar to viral infection**: Fever, Headache, muscle aches, diarrhea.
  - ✓ Chest pain, arrhythmias and congestive heart failure. **“NO SHARP PAIN”**
- Diagnosis:
  - ✓ ECG: ST-T changes and conduction delays.
  - ✓ Chest X-ray: shows cardiomegaly “Enlarged heart”.
  - ✓ Blood culture.
  - ✓ Viral serology.
  - ✓ MRI and Echocardiogram.
  - ✓ Heart muscles biopsy. “in advanced cases”.
- Treatment:
  - ✓ Treatment of heart failure and arrhythmia
  - ✓ NSAIDs e.g. ibuprofen
  - ✓ Heart Transplant
- Prognosis:
  - ✓ Sudden death in 10%.
  - ✓ Lifelong complication in 30%.

# Pericarditis

- It is an inflammatory disease of the **pericardium**.
- Etiology:
  - ✓ Coxsackie A and B virus.
  - ✓ Mycobacterium Tuberculosis.
  - ✓ Bacteria causing pneumonia.
  - ✓ Disseminated fungal infection.
  - ✓ Parasitic infections “rare”.
- Symptoms:
  - ✓ Sudden stabbing chest pain. **“SHARP PAIN”**
  - ✓ Friction rub “audible medical sign. this sign is an extra heart sound, one systolic and two diastolic.”
  - ✓ Fever and dyspnea.
  - ✓ Insidious onset in case of TB.

- Signs:
  - ✓ Exaggerated pulsus paradoxus JVP.
  - ✓ Tachycardia.
  - ✓ As the pericardial pressure increases, palpitations presyncope or syncope may occur.
- Diagnosis:
  - ✓ ECG: ST elevation, PR depression, T-wave inversion may occur later.
  - ✓ Blood Culture.
  - ✓ Leukocytosis elevated ESR ( in Tuberculous Pericarditis)
  - ✓ Chest X-ray: may show enlarged cardiac shadow or calcified pericardial.
  - ✓ CT scan: may show pericardial thickening more than 5mm.
  - ✓ Pericardial biopsy<sup>(1)</sup>
  - ✓ PPD skin test: usually positive.

<sup>(1)</sup>Biopsy is definitive test in diagnosing tuberculous pericarditis. But fluid test is not that good. Because M.tuberculosis has waxy walls which helps them to stick together with the pericardium without allowing any of them to shed into the fluid.  
That's why we may find a negative fluid test but a positive biopsy test.

- Treatment:
  - ✓ Bed rest and NSAIDs.
  - ✓ Corticosteroid is controversial.
- Prognosis:
  - ✓ Pericardial effusion and tamponed, constrictive pericarditis and pleural effusion.
  - ✓ Restrictive pericarditis and heart failure.



ECG for a pericarditis patient shows PR depression and ST elevation

	Myocarditis “inflammation of the heart muscle”	Pericarditis “inflammation of the pericardium”
Etiology	<ul style="list-style-type: none"> <li>• <b>Coxsackie B is the most common cause,</b></li> <li>• Other infections HIV, TB, <b>toxoplasmosis,</b> Diphtheria, Lyme’s disease.</li> <li>• Non-infectious cause: Autoimmune diseases, drugs toxins and cancer</li> </ul>	<ul style="list-style-type: none"> <li>• Coxsackievirus A and B</li> <li>• <b>Mycobacterium tuberculosis</b></li> <li>• Bacteria causing pneumonia</li> <li>• Disseminated fungal infection</li> <li>• Parasitic infections are rare</li> </ul>
Symptoms	Fever, headache, muscle aches, diarrhea <b>similar to any viral infection</b>	Sudden pleuritic chest pain, fever, dyspnea and a friction rub. Insidious onset in case of TB
Signs	Chest pain, arrhythmias and congestive heart failure	Exaggerated pulsus paradoxus JVP and tachycardia Syncope
Diagnosis	<ul style="list-style-type: none"> <li>• ECG nonspecific ST-T changes and conduction delays</li> <li>• Chest X-rays show cardiomegaly</li> <li>• Blood cultures</li> <li>• Viral serology</li> <li>• MRI and Echocardiogram</li> <li>• Heart muscle biopsy</li> </ul>	<ul style="list-style-type: none"> <li>• <b>ECG=ST elevation, PR depression and T-wave inversion may occur later</b></li> <li>• Blood culture</li> <li>• Leukocytosis elevated ESR (in tuberculous Pericarditis).</li> <li>• Chest x-ray may show enlarged cardiac shadow or calcified pericardium</li> <li>• CT scan show pericardial thickening &gt;5mm.</li> <li>• <b>Pericardial biopsy specimens</b></li> <li>• Pericardial fluid</li> <li>• Serology</li> <li>• PPD skin test is usually positive “not so definitive”</li> </ul>

# Quiz

1. Patient came to ER with mild fever. From the history the patient has pet “kitty” and he was diagnosed with myocarditis. Which is the more likely organism?

- a) Coxsackie B    b) Toxoplasmosis    c) Diphtheria    d) Coxsackie A

2. 47-year-old woman was diagnosed with TB Pericarditis. What is the best test that will support the diagnosis and has high accuracy?

- a) Swab    b) Pericardial biopsy    c) Aspiration of pericardial fluid    d) tuberculin skin test

3. Patient suffer from pleuritic chest pain “very sharp pain”. The ECG shows abnormality in ST waves. And X-ray shows enlargement around the heart. What is the most likely organism?

- a) Diphtheria “bacterial infection”    b) Histoplasmosis “Fungal infection”  
c) Coxsackievirus “Viral infection”    d) Toxoplasmosis “Parasitic infection”



# Quiz

4.The Pericarditis and myocarditis share some common characteristics. Which of the following is not true about them?

- a) Both of them will lead to JVP
- b) Coxsackie B is common etiology in both of them
- c) Pericarditis and myocarditis have flu-like symptoms
- d) The TB is common cause in both of them in KSA