CAS-206
Level 2

Viral Myovarditis

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ILOs

- **Learn about the most common viruses causing myocarditis (Coxackie B virus, Echovirus, & Adenovirus)**
- **Describe the clinical significance of viral myocarditis**
- **State the laboratory diagnosis of the causative viruses**

Myocarditis

- An inflammatory process of the myocardium (the heart muscle)
- **Viral infections** are the most common cause of myocarditis, while other causes include autoimmune disorders and complications related to advanced HIV/AIDS.

Clinical Presentation of Viral Myocarditis

- Acute viral myocarditis: Can present with chest pain, fatigue, shortness of breath, palpitations, and signs of heart failure
- Young male adolescents and adults are most susceptible

Pathogenesis

- Viral Entry: into the myocardium through various routes, such as respiratory droplets, bloodstream, or direct invasion.
- Viral Replication: Viruses infect cardiac myocytes and replicate inside them, leading to cellular dysfunction and death.
- Immune Response Activation: leading to inflammation and infiltration of inflammatory cells, causing further tissue damage.

Causative Viruses

- **Most common viruses:**

➢Coxsackie B virus,

➢Echovirus, and

➢Adenovirus

- **Less common viruses:** Epstein-Barr virus, varicella-zoster virus, rubella, mumps, measles, COVID-19, and hepatitis C.

Coxsackie B virus

- **Family:** Picornavirus family
- **Structure**: Non-enveloped virus with linear single-stranded RNA
- **Route of infection:** fecal-oral route, respiratory droplets, or direct contact with infected individuals

Echovirus

- **Family:**Picornavirus family, with
- **Structure**: linear single-stranded RNA
- **Route of infection:** fecal-oral route

Adenovirus

- **Family:** Adenoviridae
- **Structure:** non-enveloped viruses with double-stranded DNA
- **Portals of entry:** respiratory droplets, direct contact with infected individuals, or exposure to contaminated water

Lab Diagnosis

1. **Serology:** the measurement of IgM and IgG antibodies against specific viral antigens.

2. **Viral culture:** isolation and propagation of the virus from clinical samples, such as myocardial biopsy specimens or blood.

3. **PCR:** is highly sensitive and specific for detecting viral nucleic acids

Treatment

- **Supportive care:** Rest, fluid management, and medications to relieve symptoms such as chest pain and heart failure
- **Anti-inflammatory medications:** to reduce inflammation in the myocardium
- **Immunomodulators:** particularly when there is evidence of an autoimmune or inflammatory component


QUIZ
TIME!

Which of the following is the most common causative virus of viral myocarditis?

A. Paramyxovirus
B. Coxsackie B virus
C. Herpes simplex
D. COVID 19 virus

Which of the following describes the genome of adenovirus?

A. Negative sense ssRNA virus
B. ssDNA virus
C. Positive sense ssRNA virus
D. ds DNA virus

A 28-year-old patient presented with acute onset of fever, chest pain and signs of congestive heart failure. ECG was urgently done, cardiac arrhythmia was detected. The clinical diagnosis was established as myocarditis.

1. What is the commonest form of myocarditis?

A. Viral
B. Bacterial
C. Mycobacterial
D. Autoimmune

2. Mention two laboratory diagnostic tests of this case.

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