

Infective Endocarditis

Biomedical Engineering - URJC

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Overview

Presentation

- IE presents with non-specific symptoms.

Consideration

- Consider historical sources of bacteremia.

Diagnosis

- Ecocardiography is a plausible suspicion.

Management and treatment

- Multidisciplinary approach for diagnosis and management.

Definition

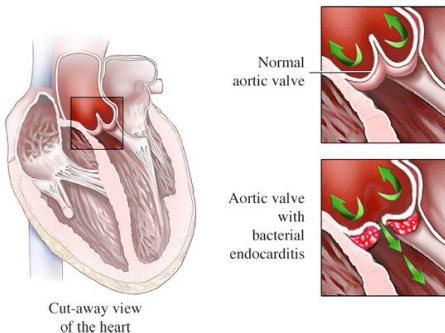
Definition and Epidemiology of Infective Endocarditis

- IE: infection affecting endocardial heart surface.
- Increasing incidence globally.
- *Notable rise in cases reported in the NHS and the US.*
- Causative agents include various pathogens.

Definition

In plain English...

It is a condition characterised by inflammation of the endocardium, specially the area that covers the surface of the heart valves, usually due to bacterial infection:



Vegetations

Endocarditis infection occurs along the **edges** of the heart valves. The lesions, called **vegetations**, are masses composed of fibrin, platelets, and infecting organisms, held together by agglutinating antibodies produced by the bacteria.

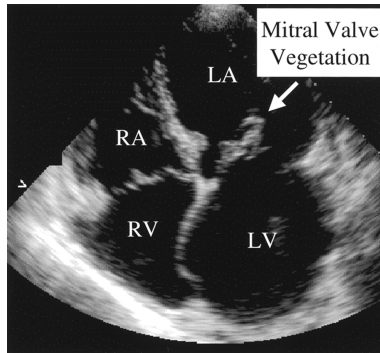
Pathophysiology

- IE develops on valvular surfaces with endothelial damage.
- Prothrombotic environment created.
- Acute IE associated with virulent organisms.

Pathophysiology

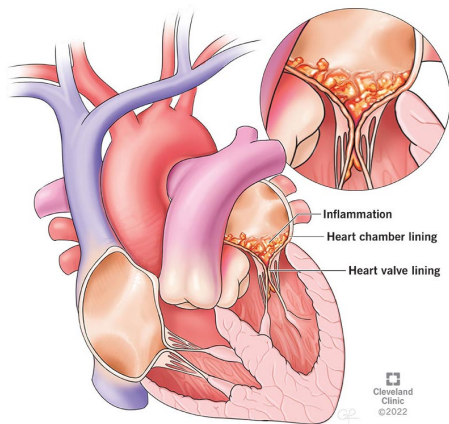
Echocardiography

Echocardiography: the best diagnostic technique to identify vegetations



Pathophysiology

Endocarditis



Classification

- Acute, subacute, and chronic forms **based on symptom development**.
- Based on the **nature of the valves**: **Native valve** endocarditis (NVE) and **prosthetic valve** endocarditis (PVE).
- **Device-related** endocarditis associated with specific risk factors.
- **Right-sided** endocarditis, also associated with (again) specific risk factors.

Case History

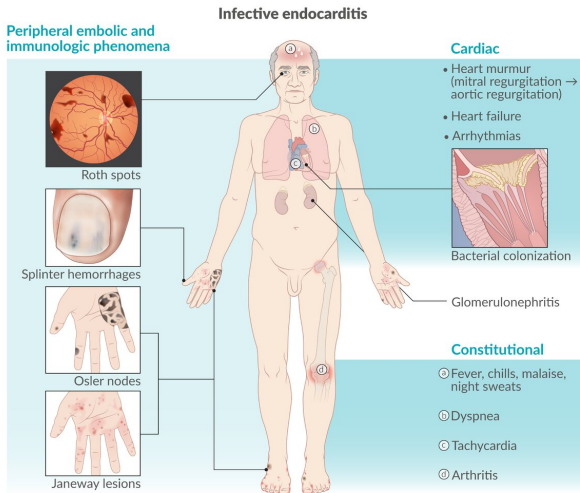
A typical case report

A 31-year-old woman presents with a 1-week history of **fever**, **chills**, and **fatigue**. She admits to infrequent **intravenous heroin use** and has a 10-pack-year history of smoking. Physical examination reveals temperature of 39°C, regular heart rate 110 beats per minute, blood pressure 110/70 mmHg, and respiration rate of 16 breaths per minute. Her cardiovascular examination reveals a grade 2/4 **holosystolic murmur** that is loudest at the right upper sternal border.

Presentations and Diagnosis

- Wide spectrum of presentations: septic embolic phenomenon, stroke, septic joints, splenic infarct.
- **Fever, cardiac murmur.**
- **Constitutional symptoms** (fatigue, low fever, malaise, weakness).
- Diagnostic tools: blood cultures, **echocardiography**, and other tests.

Presentations and Diagnosis



Management Recommendations

- 1 Multidisciplinary evaluation crucial.
- 2 'Red flags' indicate urgent transfer to a reference center **if surgery is needed**.
- 3 **Empirical antibiotic** treatment based on clinical suspicion: **6 weeks!**
- 4 Surgery may be necessary for patients with acute heart failure.

Questionnaire

What is **true** regarding infective endocarditis?:

- 1 Finding a systolic murmur is the main diagnostic test.
- 2 Viral endocarditis is the most common form of endocarditis.
- 3 Mitral and aortic valves are commonly involved.
- 4 Pacemakers and intravenous catheters are not usually related to IE.
- 5 Echocardiography has poor performance in diagnosis IE.