


# INFECTIVE ENDOCARDITIS

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- Infective endocarditis (IE) carries a high risk of morbidity and mortality.
  - Rapid diagnosis, effective treatment, and prompt recognition of complications are essential

# Types of infective endocarditis



- Native valve endocarditis (NVE), acute and subacute
- Prosthetic valve endocarditis (PVE),<sup>[12]</sup> early and late
- Intravenous drug abuse (IVDA) endocarditis

# Pathophysiology




All cases of IE develop from a commonly shared process, as follows:


- Bacteremia (nosocomial or spontaneous) that delivers the organisms to the surface of the valve
- Adherence of the organisms
- Eventual invasion of the valvular leaflets


# Etiology



- .. Native valve endocarditis
- .. The following are the main underlying causes of NVE:
- .. Rheumatic valvular disease (30% of NVE) –
- .. Primarily involves the mitral valve followed by the aortic valve

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- Congenital heart disease (15% of NVE) –
  - a patent ductus arteriosus,
  - ventricular septal defect,
  - tetralogy of Fallot


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- Mitral valve prolapse with an associated murmur (20% of NVE)
  - Degenerative heart disease - Including calcific aortic stenosis due to a bicuspid valve, Marfan syndrome, or syphilitic disease


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- Approximately 70% of infections in NVE are caused by *Streptococcus* species, including *S viridans*, *Streptococcus bovis*, and enterococci.
  - *Staphylococcus* species cause 25% of cases and generally demonstrate a more aggressive acute course






# Prosthetic valve endocarditis

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- Early PVE, which presents shortly after surgery, has a different bacteriology and prognosis than late PVE, which presents in a subacute fashion similar to NVE

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- .. Early PVE may be caused by a variety of pathogens, including *S aureus* and *S epidermidis*
  - .. These organisms are often methicillin-resistant
  - .. Late disease is most commonly caused by streptococci

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- *S aureus* is the most common (< 50% of cases) etiologic organism in patients with IVDA IE

# Diagnosis



## Duke Criteria for the Diagnosis of IE

# Pathological criteria

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- Definite IE Pathological criteria  
Microorganisms: demonstrated by culture or histology in a vegetation, in a vegetation that has embolized, or in an intracardiac abscess,

# Clinical criteria



- 2 major criteria, or
- 1 major and 3 minor criteria,
- or 5 minor criteria

# Major criteria

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- 1. Positive blood culture for IE
- 2-Evidence of endocardial involvement
  - A. Positive echocardiogram  
(Vegetation , Abscess ,dehesince of Prosthetic valve )
  - B. New valvular regurgitation



# Minor criteria

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- 1. : predisposing heart condition or intravenous drug use
- 2. Fever: temperature  $\geq 38.0^{\circ}\text{C}$
- 3. Vascular phenomena: major arterial emboli, septic pulmonary infarcts, mycotic aneurysm, intracranial hemorrhage, conjunctival hemorrhages, and Janeway lesions


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- .. 4. Immunologic phenomena: glomerulonephritis, Osler's nodes, Roth spots, and rheumatoid factor
  - .. 5. Microbiological evidence: positive blood culture or serological evidence of active infection with organism consistent with IE
  - .. 6. Echocardiographic findings: consistent with IE but do not meet a major criterion


# Management



- Antibiotics remain the mainstay of treatment for IE.
- Three to five sets of blood cultures should be obtained within 60-90 minutes,
- followed by the infusion of the appropriate antibiotic regimen

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- Empiric antibiotic therapy is chosen based on the most likely infecting organisms. Native valve endocarditis (NVE) has often been treated with **penicillin G and gentamicin** for synergistic coverage of streptococci

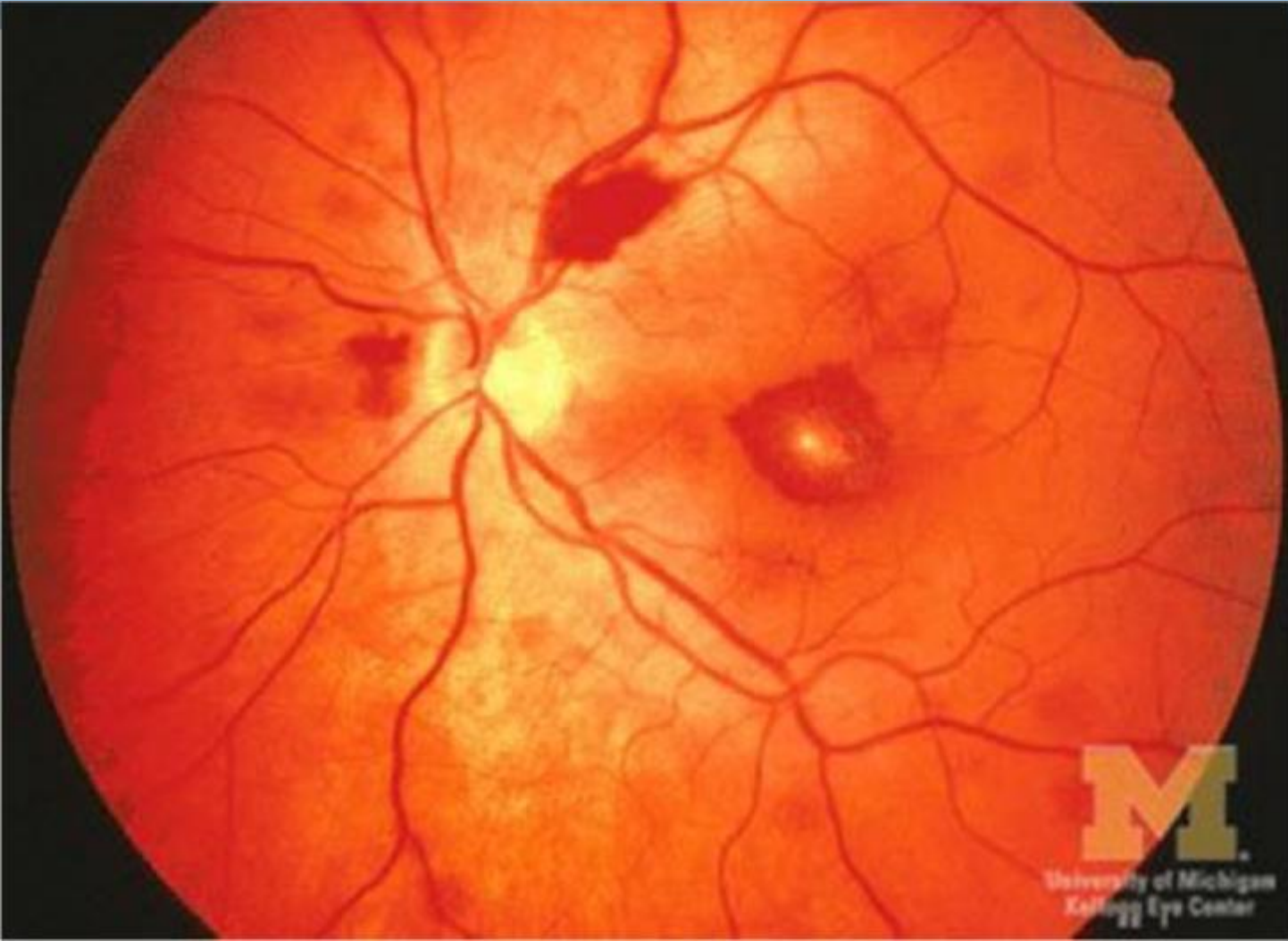
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- Patients with a history of intravenous drug use have been treated with **nafcillin and gentamicin** to cover for methicillin-sensitive staphylococci.

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- The emergence of methicillin-resistant *Staphylococcus aureus* (MRSA) and penicillin-resistant streptococci **vancomycin**.











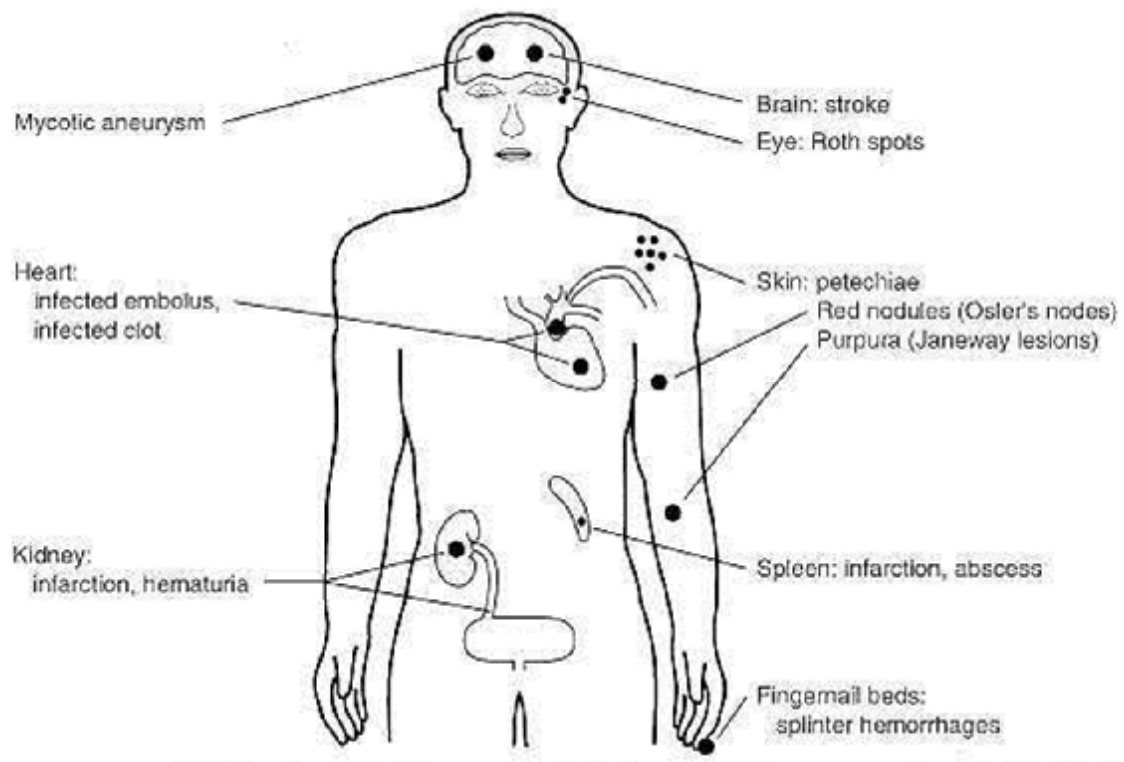
















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