

# **45. Endocarditis**

## **Symptoms:**

1. Most common symptom is fever
2. Cardiac murmur occurs in >70% of patients
3. Peripheral symptoms are uncommon at presentation
  - a. Osler Nodes (small, tender, red, lymph nodes usually on pads or fingers)
  - b. Janeway Lesions (red lesion on palm or sole, nontender)
  - c. Splinter Hemorrhages (nail beds)
  - d. Roth Spots (retinal seeding)
  - e. Palpable purpura (immune complexes)

## **Duke Criteria for Endocarditis** (Zimmerli W. 1998. JAMA.)

Two Major criteria, or One Major and Three Minor criteria, or Five Minor criteria

### Major Criteria

- a. Positive blood culture for infective endocarditis
- b. Evidence for endocardial involvement as seen on echocardiogram or at surgery'autopsy
- c. New valvular regurgitation (assess by echocardiography, NOT only by clinical exam)

### Minor Criteria

- a. Predisposing heart condition OR intravenous drug abuse
- b. Fever: temperature >100.3°F (>37.9°C)
- c. Vascular phenomena: septic emboli, arterial embolic disease, infarctions, others
- d. Immunologic phenomena: glomerulonephritis, rheumatoid factor, others
- e. Microbiologic evidence (not meeting major criteria) or serological evidence for infection
- f. Echocardiogram consistent with endocarditis but not meeting major criteria

## **Etiology:**

1. Non Drug Abuse Host (usually due to abnormal valve anatomy)
  - a. Streptococcus viridans 35%, bovis 15%, faecalis 10% (enterococcus)
  - b. Staphylococcus aureus 25%
  - c. Staphylococcus epidermidis 5% (same rate as in IVDA)
  - d. Fungi 5%
  - e. HACEK Mnemonic ( Haemophilus parainfluenza, H. paraphrophilus, H. aphrophilus, Actinobacillus actinomycetemcomitans Cardiobacterium hominis .Eikenella corrodens)
  - f. Culture negative ~8%
2. Intravenous Drug Abusers (Tricuspid valve >95%)
  - a. S. aureus 82% (methicillin sensitive predominant, though this depends on area)
  - b. Streptococci: viridans, enterococci, β-hemolytic
  - c. Gram negative rods, including Pseudomonas
  - d. Candida
  - e. Noninfectious causes are found in autoimmune diseases (lupus-Libman Sacks) and serotonin syndromes

## **Treatment:**

1. **Awaiting cultures** Gentamicin 1.7 mg/Kg q8h & Nafcillin or Vancomycin
2. **Surgical Indications:** a. Fungal, b. Valve decompensation or Prosthetic valves, c. Heart failure  
d. Conduction system e. Persistent bacteremia /Embolization

## **Antibiotics Prophylaxis:**

1. Situations above the Diaphragm (Dental, Oral, Esophageal, Respiratory)
  - a. Amoxicillin 2gm po 1 hour before procedure
  - b. Pencillin Allergy: clindamycin 600 mg po, cephalexin, cephadroxil, clindamycin or azithromycin
  - c. An aminoglycoside can be added in high risk patients
2. Situations below the Diaphragm (Genitourinary, Gastrointestinal except Esophagus)
  - a. High Risk: ampicillin (2gm iv) + gentamicin (1.5mg/kg) <30 minutes pre-procedure
  - b. High Risk with Pencillin Allergy: vancomycin 1.0gm + gentamicin
  - c. Moderate Risk: ampicillin or vancomycin as above (usually without aminoglycoside)
3. Negligible risk:
  1. Ostium secundum ASD
  2. Surgically repaired ASD, VSD and PDA (beyond 6 months)
  3. Mitral valve prolapse without regurgitation or thickened leaflets
  4. Cardiac pacemakers and defibrillators.
  5. Bypass surgery, history of Kawasaki disease without valvular dysfunction