Aortic stenosis

Aortic valve structure

Calcification

Bicuspid Aortic Valve

Complications
- Stenosis
- Incompetency
- Vegetation

Location of Cusps
- Ant.-Post.
- Rt. Left
Aortic insufficiency- aortic dissection

- Hypertension
- Connective tissue disorders
  Marfan’s: 1 in 5000.
  70-85% familial - Autosomal dominant
  Fibrillin-1 (15q21) ~ 500 distinct mutations

Mitral stenosis

Acute Rheumatic Fever

Immunologically mediated, following 1-6 weeks after pharyngitis with Group A Streptococcus in 3% of those infected.

Antibodies against streptococcal M proteins cross-react with similar antigenic determinants in joints, heart, skin, CNS.

Acute Rheumatic Fever: Major manifestations (need 2 for diagnosis)
1. Migratory polyarthritis in 75%
2. Carditis in 50%
3. Sydenham’s chorea in 10%(involuntary, rapid, purposeless movements – caudate)
4. Erythema marginatum of skin in 10% (brown/pink with pale center)
5. Subcutaneous nodules (0.5 – 2 cm; extensor surfaces, occur late)
Acute Rheumatic Fever

**Minor Manifestations** (need 2 plus 1 Major):
- Previous rheumatic fever, arthralgia, fever, increased ESR or CRP, prolonged P-R interval.
- **With 2 Major or Major/2Minor**
  - Supportive evidence of streptococcal infection: ASO Ab, anti-DNAase B, positive throat culture
  - Excellent prognosis: 1% mortality - cardiac

Acute Rheumatic Fever

**Pancarditis**
- Pericarditis
- Myocarditis (Aschoff body)
- Endocarditis with sterile vegetations

Aschoff body of acute rheumatic carditis: a cardiac granuloma

Chronic Rheumatic Heart Disease

Follows Acute Rheumatic Heart Disease by decades.
- **MV** 65-70%
- **MV & AV** 25%
  - Mitral stenosis, aortic stenosis.
  - Arrhythmias (A. fib. with left atrial enlargement).
  - Heart failure.
  - Predisposed to infective endocarditis.
Chronic Rheumatic Heart Disease: “Fishmouth” deformity of the mitral valve

Mitral Valve Prolapse

- Most are asymptomatic
- Mid-systolic click
- Rarely: chest pain, dyspnea, fatigue, or psychiatric manifestations
- ~3% have complications:
  - Infective endocarditis
  - Mitral insufficiency
  - Thrombus formation with embolization
  - Arrhythmia/sudden death (unknown mechanism)

Aortic valve structure

Myxomatous, prolapsing mitral valve
“Myxomatous” mitral valve

Endocarditis
Non-bacterial thrombotic endocarditis (NBTE)

- Small (1-5 mm) sterile masses of fibrin on lines of closure.
- Hypercoagulable state: patients are often debilitated (“marantic” endocarditis) or may have malignancy (mucinous adenocarcinoma), renal failure, sepsis.
- May embolize to brain, kidney, heart.
- With bacteremia, may be converted to infectious endocarditis.

Heart Valve Prostheses: Complications

- Mechanical: component failure
- Bioprostheses: degeneration with calcification
- Both: Paravalvular leak, endocarditis.
  Thrombosis and tissue overgrowth are less common in bioprostheses than in mechanical valves.
A prosthetic valve with thrombus (from aortic side).

Tissue overgrowth of MV prosthesis (from atrial side).

Endocarditis of ball valve prosthesis (Starr-Edwards).