Aortic stenosis

Calcification

Aortic valve structure

Bicuspid Aortic Valve

No Complication
Functionally Normal

Complications
Stenosis
Incompetency
Vegetation
Infection
Perforation
Rt.-Left
Ant.-Post.

Location of Cusps

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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**

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Acute Rheumatic Fever

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

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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)
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 V prosthesis with thrombus (from aortic side)

Tissue overgrowth of MV prosthesis (from atrial side)

Endocarditis of ball valve prosthesis (Starr-Edwards)