Aortic Valve Lesions

Aortic Stenosis

General

- Most common isolated affected valve, esp elderly
- 4M:1F
- Unrecognised can be important cause of anaesthetic & obstetric mortality

Causes

- Congenital bicuspid valves
- Degenerative calcified tricuspid valves
- Rheumatic fever ± regurg
- Asssoc with coarctation

Pathology

Characterized by dev of concentric LVH. Valve - Norm area (grad) 3-4cm^2 (2mmHg), compromise <2cm^2 (>40mmHg), critical <0.6cm^2 (>70mmHg)

History

- May be asymptomatic even with severe stenosis
- Angina (only 50% have coronary disease, ↑O_2 demand from hypertrophied myocardium)
    - Ave Survival = 5yrs untreated
- Syncope (fixed stroke vol limits CO in exercise) aka Stoke Adams attacks.
    - Average survival = 3yrs if untreated
- Dyspnoea (late onset, high pulm pressures)
    - Average survival = 2yrs if untreated

Exam

- Pulse - Slow-rising, plateau (narrow pulse pressure)
- Palp – sustained apex beat may be displaced
- JVP – prom a wave, sev AS -> RVF
- HS – harsh ESM RSE -> neck (later and longer murmur=more sev) & apex, S4

Inv

- ECG – LVH
- CXR – LVF ± calcification
- ECHO – confirmation + gradient determination

Management

- Treat Cx if possible
- Cautious use of nitrates in ischaemia
- Surgery if symptomatic or sev stenosis. Valvotomy (cong. bicuspid) or replacement

Cx

- Sudden death
- Calcific emboli
- Infective endocarditis
- Heart Failure
- Heyde's syndrome = AS + GI angiodysplasia, vWF syndrome

Aortic Sclerosis

- Thickening of leaflets
- Minimal flow obstruction
- Similar murmur to AS without other features
- Common in >65y
- 15% progress to AS within 7yrs

Aortic Regurgitation

Causes

- Rheumatic fever ± regurg
- Congenital bicuspid valves
- Endocarditis
- Aortic dissection
- HT in elderly
- Seronegative arthropathies, SLE
- Congenital
- Other: Marfan's, VSD, Congenital, Syphilis

History

- Asymptomatic
- Angina
- Syncope
- Dyspnoea, SOBOE

Exam

- Pulses – Collapsing, water hammer pulse (wide pulse pressure)
    - Quinke's sign – nailbed pulsations
    - Corrigan's sign – prom carotid pulsations
    - Traube's sign – pistol shot sounding fem pulses
    - Duroziez's sign – sys & dia murmurs over partly occluded femorals
- Palp – sustained apex beat may be diplaced
- JVP – prom a wave, sev AS -> RVF
- HS – decrescendo early diastolic murmur lower LSE (longer murmur=more sev) ± flow murmur, Austin Flint murmur, S3

Inv

- ECG – LVH & strain
- CXR – LVH ± calcification
- ECHO – confirmation + ejection fraction determination

Management

- Treat Sx & Cx if possible
- Arterial vasodilation will ↓resistance to ventricular ejection e.g. ACEI, CCB, diuretics
- Surgery if symptomatic, decreasing ej. fraction

Mitral Valve Lesions

Mitral Stenosis

Valve

- Normal 6cm^2, severe stenosis <1cm^2

Causes

- Rheumatic fever
- Congenital (rare)
- Austin Flint murmur of AR

Features

- Malar flush
- Loud S1 opening snap
- Mid-diastolic rumble
- Tapping apex

Inv

- ECG – AF (common), P mitrale, RAD/RV strain (severe)
- CXR – MV calcification, LA enlargement (double shadow R heart border, displaced L bronchus), prom pulm arteries, peripheral paucity of markings, signs of HF
- ECHO

Surgery

- If SOB on minimal exercise, valve area<1cm^2

Mitral Regurgitation

Causes

- Physiological (minor)
- MV prolapse, papillary muscle dysfn
- Rheumatic fever
- Cardiomyopathy (HOCM, dilated, ischaemic)
- Endocarditis
- LVF
- Connective tissue disease (Marfan, RA, Ank.Spond)
- Congenital (endocardial cushion defects)
- Trauma

Features

- Soft S1, pansystolic murmur at apex -> axilla
- Apex displaced
- S3 (sev)

Inv

- ECG – AF, P mitrale, RAD, LV strain
- CXR – MV calcified, LA enlarged (dble shadow R Ht border, displaced L bronchus), LVH
- ECHO

Management

- Treat Sx & Cx if possible
- Arterial vasodilation ↓resistance to ventricular ejection e.g. ACEI, CCB, diuretics
- Surgery not usual unless MV prolapse

Mitral Valve Prolapse

Background

- Commonest heart lesion in community: 1-3%
- AD inheritance with less male penetrance
- Cause: Defective collagen synthesis

Definition

- Single or both leaflets >2mm beyond annular plane ± leaflet thickening
- Posterior prolapse more frequent than anterior

Exam

- Systolic click & late systolic murmur (earlier with Valsalva, delayed with squatting)

Assocs

- Marfan's
- HOCM
- Mitral stenosis
- ASD secundum
- Anorexia nervosa
- Low wt & low BP
- Palpitations

Cx

- Sudden death
- Embolism
- Arrhythmias
- Endocarditis

Management

- No restrictions in activity in asymptomatic individuals
- Surgery for high risk

Pulmonary & Tricuspid Valve Lesions

Pulmonary Stenosis

Causes

- Congenital, Noonan's, Carcinoid

Features

- Periph cyanosis
- Ejection systolic click & murmur, S4
- RV heave & pulmonary thrill
- JVP: giant a waves
- Presystolic pulsation of liver

Pulmonary Regurgitation

Causes

- Rare
- Pulm HT, Infective endocarditis, Pulmonary atresia,

Features

- Descrescendo diastolic murmur at LSE, louder on insp. AKA Graham Steele murmur.

Tricuspid Stenosis

Causes

- Very rare
- Rheumatic fever (usually assoc with MV & AV disease)

Features

- Diastolic rumble murmur
- JVP: slow y descent, giant a waves if in SR
- Presystolic pulsation liver

Tricuspid Regurgitation

Causes

- Rheumatic fever
- RVF, Infective endocarditis (esp IVDU), Ebstein's anomaly, Trauma & pap muscle dysfn

Features

- PSM LSE louder on insp
- RV heave
- JVP: large v waves and elevation if RVF
- Pulsatile tender liver, ascites, peripheral oedema, pleural effusions