VALVULAR DISEASE AND ARRHYTHMIAS

SIGFUS GIZURARSON, MD PHD
LANDSPITALI UNIVERSITY HOSPITAL
REYKJAVIK, ICELAND
DISCLOSURES

• No disclosures
WHAT ARE THE COMMON ARRHYTHMIA PROBLEMS IN VALVULAR HEART DISEASE

• AF
• AF
• AF
• AF
• VT in valvular disease
• Bradyarrhythmias
• Post surgical arrhythmias
WHY IS AF IMPORTANT

- AF is very common in valvular heart disease
- Up to 50% of MVD patients develop AF within 10 years
- AF causes loss of atrial kick and often rapid and irregular rhythms
- In healthy, AF leads to about 15% loss of CO
- In patients with diastolic heart failure/restrictive LV AF can decompensate the patient and lead to acute heart failure
- The occurrence of AF is a bad sign in valvular heart disease

![Survival graph showing comparison between AF and non-AF patients over follow-up years with statistical significance of P<0.02](image)
LV HYPERTROPHY

**Relationship of Valvular Heart Disease and Atrial Fibrillation**

- Aortic stenosis
- Aortic regurgitation
- LV systolic pressure → LV end-diastolic volume
- Mitral stenosis/regurgitation
- Compensatory LV hypertrophy
  - Increased left atrial pressure
  - Progressive atrial dilatation
  - Atrial fibrosis and electrophysiological remodeling
  - Atrial fibrillation

**Imagery**

- Echocardiogram showing LV and LA
- Cardiac ultrasound images
LA DILATATION

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- ECG

- Lead II

- Lead V1

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ATRIAL REMODELLING

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Images showing histological sections and electrical maps.
ATRIAL FIBRILLATION

- When AF develops it worsens symptoms and prognosis
- Greatly increases health care costs
- Reverse remodeling, although possible to some degree, is
TREATMENT DECISIONS

• Anticoagulation
  • NOAC vs Warfarin

• Rate vs rhythm control

• Surgery? Percutaneous procedures? Concomitant arrhythmia surgery
ANTICOAGULATION

• In Western Europe and US, NOAC is the preferred treatment choice for AF stroke risk reduction.
• In valvular heart disease, NOACs have not been properly tested.
• Therefore Warfarin is the drug of choice. If contraindicated, Dabigatran 150 bid should be considered.
• Further, CHA2DS2-VASc has not been validated in valvular AF. Therefore, all patients with significant valvular disease should be considered candidates.
RATE CONTROL

- Beta blockers
- Calcium blockers
- Digoxin
- (Amiodarone/Dronedarone)
RHYTHM CONTROL

• AS (or HOCM) cause diastolic dysfunction (restrictive filling) of the LV and these often tolerate AF poorly.

• This group will benefit more than the average patient from rhythm control
MITRAL VALVE PROLAPSE

- Common echocardiographic finding
- Much more common in women
- AF in almost half of patients followed up for 9 years
- More likely if >65 yrs and LAd >50 mm (70% after 10 years of F/U)
VENTRICULAR TACHYCARDIA

- Mitral valve prolapse causes mechanical stretch on the mitral valve apparatus
- This causes scarring and fibrosis in the region of the pap muscles and inferobasal LV
- A recent study of 650 patients <40 with SCD, demonstrated papillary muscle fibrosis as the only pathology in 43.
- T inversions are common as well as VT bursts on monitoring
BRADYARRHYTHMIAS/POST SURGICAL

- AVB post surgery
- AVB post AVR is about 10-15%, but only 1-2% need permanent pacing
- AVB post TAVI is up to 22%, needing PPM in the majority