Case Presentations
Aortic Stenosis

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Goals

• Present various encounters with severe aortic stenosis
• Discuss considerations for surgical aortic valve replacement (SAVR) vs transcatheter aortic valve replacement (TAVR)
  • Pre operative risk – is this still a factor?
  • Anatomic considerations
  • Patient age
  • Co-morbidities, co-existing CAD
Case 1

- 55 year old F referred to cardiology by her PCP due to abnormal murmur that prompted an echocardiogram.
- No other significant medical history aside from moderate obesity w/ BMI 38 kg/m2
  - No prior cardiac history
  - No history of smoking, CKD, CVA, DM
- Patient endorsed no HF symptoms, chest pain, dyspnea, syncope endorsed, however, functional capacity uncertain.
Case 1

Echo Summary

1. Mild LVH with normal LV systolic function, EF 73%. No wall motion abnormalities.
2. The aortic valve appears tricuspid with severe stenosis.
   1. AV peak velocity is 4.4 m/s.
   2. AV mean gradient is 51.6 mmHg
   3. Aortic valve area is 0.8
   4. Dimensionless index of 0.19.
Case 1

- How should we proceed in the seemingly asymptomatic patient with severe aortic stenosis?
Case 1

- Exercise ECG was performed due to uncertainty of functional status.

- Results of Exercise Stress Test
  - Patient **exercised 4:34 min** but stopped due to shortness of breath.
  - No chest pain. No diagnostic ST changes demonstrated.

- Patient subsequently referred to Cardiology Valve Clinic for further evaluation.
Case 1

- Patient seen by Cardiology and Cardiothoracic surgeons in clinic.

- Aortic valve replacement recommended
  - How best to proceed?
Case 1

• Decision was made by the valve team to proceed with mechanical SAVR due to the patient’s age.

• Surgery recently performed -- post operative course has been unremarkable.
Case 2

• 71 year old M referred to cardiology for new diagnosis of severe AS after a 3/6 systolic murmur was detected during Medicare wellness visit.

• Past medical history includes:
  • Hypertension
  • GERD
  • OSA compliant with CPAP
  • No significant cardiac history

• During his appointment, he described several months of steadily worsening dyspnea with exertion, and subsequent decrease in exercise tolerance.
Case 2

Echo Summary

1. Normal LV size and systolic function, EF 60%
2. Calcified aortic valve with **severe aortic stenosis**.
   1. Vmax of 5 m/s
   2. mean gradient of 64mmHg
   3. Calculated AVA 0.74cm²
Case 2

• Patient subsequently referred to the Valve Clinic for consideration of AVR.
• Pre AVR assessment:
  • CTA chest was remarkable for functional bicuspid AV. Aortic root moderately dilated to 4.6 cm.
  • Coronary angiography showed mild diffuse coronary artery disease without flow limiting coronary stenosis.

• After discussing the results of the CTA, the patient was considered NOT to have congenital bicuspid AV.

• What are the options for this patient?
Case 2

Two options the patient/physicians considered:

- Undergo TAVR with routine imaging surveillance of thoracic aortic aneurysm
  OR
- Surgical AVR with aneurysm repair
Case 2

• After extensive discussion with the patient, he ultimately chose TAVR over SAVR/aneurysm repair.

• Patient recently underwent TAVR with unremarkable post-op course. Functional capacity improving.
Case 3

• 65 yo M with prior history of moderate aortic stenosis presenting to cardiology clinic for evaluation of worsening chest pain and shortness of breath over a 3 month period.

• PMH
  • Hypertension
  • Hyperlipidemia
  • Diabetes Mellitus, Type II

• SH
  • Prior tobacco abuse, quit 46 years ago
  • No EtOH or drug abuse
Case 3

- Repeat echocardiogram performed:
  - Normal LV size and function, EF 60-64%. No wall motion abnormalities.
  - Aortic valve shows progression from moderate to severe aortic stenosis
    - Peak velocity 4.3 m/s
    - Mean gradient 43 mmHg
    - AVA 0.8 cm2
Case 3

- Due to these symptoms and echo findings, patient was referred for coronary angiography prior to Valve Clinic referral.
Coronary Angiography Summary

- Left Main
  - Normal
- LAD
  - 60% Proximal stenosis; collaterals providing flow from distal LAD to RCA system
- LCX
  - Mild CAD
- RCA
  - Chronic total occlusion of the proximal RCA
- FFR performed of the LAD -> 0.82

Collaterals from left to right
Case 3

• Complex case due to concomitant CAD.
  • Option 1: SAVR with concomitant bypass surgery
    • Single vessel disease involving the RCA with borderline proximal LAD disease in diabetic patient.
  • Option 2: TAVR with continued medical therapy for coronary artery disease, possible intervention if needed in the future.

• How should we proceed?
Case 3

• After long discussion between the patient/family and valve team, patient opted for SAVR with bypass surgery.
Case 4

- 85 yo M presenting to Valve Clinic from an outside cardiologist for significant dyspnea with exertion after 10 ft of ambulation.

- Initial evaluation at that clinic remarkable for severe aortic stenosis and complex coronary artery disease.

- Echo Interpretation summary:
  - Normal LV size and mildly reduced systolic function, EF 45%.
  - Severely calcified aortic valve, AVA 0.5 cm2, mean gradient 47 mmHg.
Case 4 – Coronary Angiography
Case 4 – Coronary Angiography

LAD

LCX
Coronary Angiogram Summary

- Patient also noted to have very complex coronary artery disease during evaluation:
  - Left main
    - 70% distal stenosis
  - LAD
    - 70% proximal stenosis; continuation from the distal LM disease
  - LCX
    - 80% stenosis in the mid portion.
  - RCA
    - 80% stenosis distal RCA; 99% stenosis in PDA
Case 4

• Case complicated by multiple comorbidities affecting surgical risk:
  • Age
  • Poor mobility for recovery, morbid obesity
  • Long-standing tobacco abuse -> COPD

• STS score 4.3% with frailty score of 2

• What are the options for this patient?
Case 4

- Valve team discussed options with patient regard surgical AVR with concomitant bypass surgery vs TAVR with complex PCI.
  - Due to surgical risk, TAVR + PCI was pursued
Case 4

• Outcome
  • Patient successfully underwent PCI to left main, mid RCA, PDA and LCX with IABP assistance.
  • Subsequent TAVR performed with uneventful post-op course.
  • At 3 year follow up, patient is doing well clinically without shortness of breath, chest pain or HF symptoms.