Self Assessment CME
Treatment of Aortic Valve Stenosis

Steven M. Gottesfeld, PA-C
Treatment of Aortic Stenosis History

Ms. A is an 78 year old woman with a 10 year history of cardiac murmur with known history of asymptomatic calcific aortic valves stenosis, with an Aortic Valve Area (AVA) of 1.1cm², and a 20mm Hg mean aortic gradient, at her last visit, approximately 1 year ago. She presents to your local Emergency Department with a 3 week history of exertional dyspnea (NYHA Class III symptoms). She denies a history of angina, palpitations, syncope or pre-syncope, weight loss, fevers, chills, or diaphoresis.
History

• Past Medical History: Is positive for hypertension, increased lipids, Transient ischemic attack approximately 1 year ago (right sided hemipheresis/paralysis/dysarthria lasting 15 minutes). She denies a history of CAD, admissions for CHF, MI, Cancer, Deep Venous Thrombosis, COPD, or PVD/claudication

• Past Surgical History: Is positive for a hysterectomy and cataract resection
• Social: Widowed and lives alone, but independent. She is able to perform all of her ADLs without assistance. She has never had a fall. She still drives, though only locally. Retired, Does not smoke or drink, 2 children who live local.
Physical Exam

• Physical Exam
• V/S: 160/60, P88, R: 12 afebrile, she is 62cm tall and 102lbs
• General: Elderly women in no acute distress, well groomed, of small stature.
• HEENT: 3cm JVD at 90 degrees, -carotid bruits, but with delayed upstroke
• Chest: Rales posterior bases, -rhonchi or wheeze
• Heart: R,R,R, +S1S2, -S3S4, IV/VI harsh crescendo systolic murmur hear greatest at 2nr right ICS with radiation down the sternal border, -rubs/bruits
• Abdomen: Soft, Non-tender, +Bowel Sounds x 4, -rebound/guarding/tympany/distension, Abdominal Aorta measured at 3cm, -iliac bruits
• Extremities: Warm well perfused feet, +4/4 DP/PT/AT/POP/CFA pulses b/l
• Neuro: no acute deficits
Diagnostic Testing

• CXR: Evidence of congestive heart failure, cardiomegaly, calcified aortic knob
• Carotid Ultrasound: <50% Common and Internal Carotid Artery Stenosis and Antegrade Vertebral Flow
• ECG: NSR with left ventricular hypertrophy, non-specific t wave abnormalities
Question 1

The most likely diagnosis is:

A. Progression of disease to symptomatic severe aortic valve stenosis
B. Acute ST-Elevation myocardial infarction
C. Musculoskeletal pain
D. Asymptomatic severe aortic valve stenosis
A. Progression of disease to symptomatic severe aortic valve stenosis
Aortic Valve Stenosis is a progressive disease, which on average, the valve area decreases by approximately 0.1 cm² per year. Signs or symptoms usually present with a valve area of 1 cm² or less. The presence of symptoms (angina pectoris, CHF, syncope, or sudden death) with a diminished valve area is Class 1 indications for surgery (per ACC guidelines) as mean survival is 1 year for patients with CHF symptoms. Left ventricular hypertrophy or severe valvular calcification can increase the rate of progression.
Question 2

Class III New York Heart Association symptoms are associated with which patient reported symptoms?

A. No limitation of physical activity
B. Symptoms at rest
C. Marked limitation of physical activity (mild exertion), but asymptomatic at rest
D. Slight limitation of physical activity
Answer

C. Marked limitation of physical activity (mild exertion), but asymptomatic at rest
Discussion

• Class Patient Symptoms
  • I  No limitation of physical activity. Ordinary physical activity does not cause undue fatigue, palpitation, dyspnea (shortness of breath).
  • II  Slight limitation of physical activity. Comfortable at rest. Ordinary physical activity results in fatigue, palpitation, dyspnea (shortness of breath).
  • III  Marked limitation of physical activity. Comfortable at rest. Less than ordinary activity causes fatigue, palpitation, or dyspnea.
  • IV  Unable to carry on any physical activity without discomfort. Symptoms of heart failure at rest. If any physical activity is undertaken, discomfort increases
Question 3

The recommended first line test to confirm the diagnosis of Severe Aortic Valve Stenosis is

A. Cardiac MRI
B. Cardiac CT
C. Transthoracic Echocardiogram
Answer

C. Transthoracic Echocardiogram
Discussion

A comprehensive transthoracic echocardiogram (TTE) with 2-dimensional imaging and Doppler interrogation must be performed to correlate findings with initial impressions based on the initial clinical evaluation. The TTE will also be able to provide physiological effect of the valve lesion on the cardiac chambers and great vessels, and to assess for other concomitant valve lesions.

2014 AHA/ACC Guideline for the Management of Patients With Valvular Heart Disease: Executive Summary, Page 11
Discussion

• Indications include (Class 1 recommendations):
  • Diagnosis and assessment of severity of aortic stenosis
  • Assessment of LV size, function and/or hemodynamics
  • Revaluation of patients with known aortic stenosis with changing signs and symptoms
  • Reevaluation of asymptomatic patients with severe aortic stenosis

2014 AHA/ACC Guideline for the Management of Patients With Valvular Heart Disease: Executive Summary,
Echocardiogram Results

- Normal LV systolic function
- Severe Concentric Left Ventricular Hypertrophy
- Severe Diastolic Dysfunction
- Aortic valve jet velocity of 7m/s
- Mean gradient of 60mm Hg
- Aortic Valve Area of 0.7cm²
- Severe calcific trileaflet aortic valve
- Moderate Mitral and Mild Tricuspid Valve Regurgitation
- Aortic root diameter: 3cm
- Severe pulmonary hypertension with Mean Pulmonary Artery Pressure of 55mm Hg
- LA Appendage is without thrombus
Question 4

This is most consistent or confirms the diagnosis of

A. Severe Trileaflet Aortic Valve Stenosis
B. Severe Aortic Valve Regurgitation
C. Stanford Type A Aortic Dissection
D. Severe Bicuspid Aortic Valve Stenosis
Answer

A. Severe Trileaflet Aortic Valve Stenosis
Discussion

• The primary hemodynamic parameters recommended for clinical evaluation of AS severity are:
  • Aortic Valve Jet Velocity: Jet velocity. The antegrade systolic velocity across the narrowed aortic valve, or aortic jet velocity, is measured using continuous-wave (CW) Doppler (CWD) ultrasound.
  • Mean transaortic gradient: The difference in pressure between the left ventricular (LV) and aorta in systole,
  • Transvalvular aortic gradient: Another standard measure of stenosis severity.

doi:10.1093/ejechocard
Discussion

- **AS jet velocity**
  - Mild: <3.0 m/s
  - Moderate: 3.0-4.0 m/s
  - Severe: >4.0 m/s

- **Mean transaortic gradient**
  - Mild: <25mm Hg
  - Moderate: 25-50mm Hg
  - Severe: >40mm Hg

- **Valve area by continuity equation**
  - Mild: > 1.5cm²
  - Moderate: 1.0-1.5cm²
  - Severe: <1.0 cm²
  - Critical: <0.5cm²

Question 5
The next recommended diagnostic test would be?

A. Exercise stress testing
B. Cardiac catheterization with coronary angiography
C. Abdominal Ultrasound
D. MRCP
Answer

B. Cardiac catheterization with coronary angiography
Discussion

Cardiac catheterization provides an accurate measure of aortic stenosis and is an important tool, particularly in patients who have discrepant clinical and echocardiographic findings. In general, if clinical findings are not consistent with Doppler echocardiogram results, cardiac catheterization is recommended for further hemodynamic assessment.

Aortic Stenosis Workup: Medscape Author: Xiushui (Mike) Ren, MD; Chief Editor: Richard A Lange, MD, MBA
Discussion

Indications for cardiac catheterization with/without coronary angiography are as follows:

1. Coronary angiography before aortic valve replacement in patients at risk for Coronary Artery Disease

2. Assessment of severity of aortic stenosis in symptomatic patients when AVR is planned or when noninvasive tests are inconclusive or a discrepancy exists in the clinical findings regarding the severity of aortic stenosis or the need for surgery

3. Coronary angiography before aortic valve replacement in patients who are being considered for a Ross Procedure and the origin of the native coronaries has not been accurately revealed

4. With infusion of Dobutamine, can be useful for patients with poor LV dysfunction (low flow/low gradient stenosis) and LV dysfunction
Cardiac Catheterization and Angiography Results

- Normal coronary arteries without obstructive flow
- Normal anatomical take off of coronary arteries
- A severely calcified trileaflet aortic valve
- Moderate Mitral Valve Insufficiency
- PCWP: 25mmHg
- PAP: 50/25
- SBP: 140/90
- AVA of 0.6cm²
- Peak gradient of 90mm Hg
- Mean Gradient of 70mm Hg
- Transvalvular gradient 60mm Hg
- Thermodilution Cardiac Output of 5 liters per minute
- Mild calcification of the aortic root
Question 6

Your treatment recommendations for this patient will be?

A. Medical Management
B. Aortic Valvuloplasty
C. Aortic Valve Replacement with Possible Mitral Valve Repair or Replacement
D. Hospice
C. Aortic Valve Replacement with Possible Mitral Valve Repair or Replacement
Discussion

• Indications for Aortic Valve Replacement
  1. Symptomatic patients with severe AS.
  2. Patients with severe AS undergoing coronary artery bypass surgery.
  3. Patients with severe AS undergoing surgery on the aorta or other heart valves.
  4. Patients with moderate AS undergoing coronary artery bypass surgery or surgery on the aorta or other heart valves
Discussion

5. Asymptomatic patients with severe AS and
   • LV systolic dysfunction
   • Abnormal response to exercise (eg, hypotension)
   • Ventricular tachycardia
   • Marked or excessive LV hypertrophy (≥15 mm)
   • Valve area <0.6 cm²

6. Prevention of sudden death in asymptomatic patients with none of the findings listed under indication

ACC/AHA Practice Guidelines for the management of patients with valvular heart disease, A report of the American College of Cardiology/American Heart Association Task Force on practice guidelines (Committee on management of patients with valvular heart disease)
Discussion

Surgical Indications for Ms. A

- NYHA Class III symptoms
- CXR with signs of CHF
- Echocardiogram evidence of severe calcific aortic valve stenosis confirmed by
  - AVA: 0.7cm (echo), 0.6cm (cath)
  - Jet Velocity: 0.7 m/s (echo)
  - Transvalvular Gradient: 80mm Hg (cath)
- ECG evidence of Left Ventricular Hypertrophy
- Confirmed by cardiac catheterization
Question 7

Aortic Calcifications were noticed on the CXR and Cardiac Catheterization. Your surgeon wishes to explore this further. A reasonable diagnostic test to order is?

A. CTA of Chest  
B. Abdominal Ultrasound  
C. KUB  
D. 3 View CXR
Answer

A. CTA of Chest
Discussion

• CT angiography of the chest (or Cardiac CT) is a relatively non-invasive diagnostic test to evaluate the large vessels.
• CTA of the chest, with the addition of the Abdomen and Pelvis will also image access vessels if TAVR is being considered 
• If indicated, Transesophageal Echocardiogram is another excellent image modality, but it is invasive
CT Scan Results

- CTA reveals evidence of descending thoracic aortic calcification with calcific aortic valve and mitral annulus with only mild evidence of calcification of the ascending aorta
You are consulted to evaluate this patient for aortic valve replacement. Your surgeon asks you to evaluate this patient for open versus transcutaneous repair. What further evaluation is necessary?

A. STS Riske Score
B. Fraility Evaluation
C. A and B
Answer

C. A and B
Discussion

The STS Risk Calculator allows a user to calculate a patient’s risk of mortality and other morbidities, such as long length of stay and renal failure. The Risk Calculator incorporates the STS risk models that are designed to serve as statistical tools to account for the impact of patient risk factors on operative mortality and morbidity.
Discussion
STS Risk Score Variables

- Age
- Sex
- Weight
- Height
- Race
- Renal Function
- Cardiac Hx
- Pulmonary Hx
- Hepatic Function
- Cerebral Vascular Hx
- PVD
- DM
- HTN
- Immune Status
- Endocarditis
- Urgency of Procedure
- Number of previous procedures
Discussion

Frailty: The Sniff test

- Exercise capacity
- Time to walk 4–10 m
- Muscle strength
- Grip strength by dynamometer
- Nutritional status
- Reported weight loss
Results
STS Surgical Risk: 3.478%
Fraility: Independent, well nourished, strong grip strength
Question 9
Which procedure would you recommend?
A. Open Aortic Valve Replacement (SAVR)
B. Transcutaneous Aortic Valve Replacement (TAVR)
Answer
A. Open Aortic Valve Replacement (SAVR)
Discussion Why not TAVR?

Guidelines for TAVR

• Recommended for patients with tricuspid aortic valve stenosis, with an indication for surgery who have a prohibitive surgical risk and a predicted post-TAVR survival > 12 months

• With continuing experience, TAVR now recommended in intermediate and high risk patients (STS predictive score 5-10%)

ACC/AHA Practice Guidelines for the management of patients with valvular heart disease, A report of the American College of Cardiology/American Heart Association Task Force on practice guidelines (Committee on management of patients with valvular heart disease)
Discussion

Patient Selection: Inclusion and Exclusion Criteria in Clinical Trials

Inclusion Criteria:

1. Patient has calcific aortic valve stenosis with echocardiographically derived criteria: mean gradient >40 mm Hg or jet velocity >4.0 m/s and an initial AVA of <0.8 cm2 or indexed EOA <0.5 cm2/m2.

2. A cardiac interventionalist and 2 experienced cardiothoracic surgeons agree that medical factors either preclude operation or are high risk for surgical AVR, based on a conclusion that the probability of death or serious, irreversible morbidity exceeds the probability of meaningful improvement. The surgeons' consult notes shall specify the medical or anatomic factors leading to that conclusion and include a printout of the calculation of the STS score to additionally identify the risks in the patient. At least 1 of the cardiac surgeon assessors must have physically evaluated the patient.
Discussion

3. Patient is deemed to be symptomatic from his/her aortic valve stenosis, as differentiated from symptoms related to comorbid conditions, and as demonstrated by NYHA functional class II or greater

2012 ACCF/AATS/SCAI/STS Expert Consensus Document on Transcatheter Aortic Valve Replacement, table 1, pg38
Exclusion Criteria (candidates will be excluded if any of the following conditions are present)

- Evidence of an acute myocardial infarction ≤1 month (30 days) before the intended treatment elevation and/or troponin level elevation [WHO definition]
- Aortic valve is a congenital unicuspid or congenital bicuspid valve, or is no calcified
- Mixed aortic valve disease (aortic stenosis and aortic regurgitation with predominant aortic regurgitation >3+)
- Hemodynamic or respiratory instability requiring inotropic support, mechanical ventilation, or mechanical heart assistance within 30 days of screening evaluation
Discussion

• Need for emergency surgery for any reason
• Hypertrophic cardiomyopathy with or without obstruction
• Severe left ventricular dysfunction with LVEF <20%
• Severe pulmonary hypertension and RV dysfunction
• Echocardiographic evidence of intracardiac mass, thrombus or vegetation
• A known contraindication or hypersensitivity to all anticoagulation regimens, or inability to be anticoagulated
Discussion

• Native aortic annulus size <18 mm or >25 mm as measured by echocardiogram
• MRI confirmed CVA or TIA within 6 months (180 days) of the procedure
• Renal insufficiency (creatinine >3.0 mg/dL) and/or end-stage renal disease requiring chronic dialysis at the time of screening
• Estimated life expectancy <12 months (365 days) due to noncardiac comorbid conditions
• Severe incapacitating dementia
Discussion

- Significant aortic disease, including abdominal aortic or thoracic aneurysm defined as maximal luminal diameter 5 cm or greater; marked tortuosity (hyperacute bend), aortic arch atheroma [especially if thick (>5 mm), protruding or ulcerated] or narrowing (especially with calcification and surface irregularities) of the abdominal or thoracic aorta, severe “unfolding” and tortuosity of the thoracic aorta

- Severe mitral regurgitation
Discussion Why SAVR?

- Predicted STS 3.478%
- Fraility: Independent, well nourished, strong grip strength
- No procedural surgical contraindications (ascending aorta is not porcelain and entry is traditional)
- Needs Mitral Valve repaired/evaluated at the time of Aortic Valve Replacement
Ms. A is an 78 year old woman with a 10 year history of cardiac murmur with known history of asymptomatic calcific tri-leaflet aortic valves stenosis, with an Aortic Valve Area (AVA) of 1.1cm², and a 20mm Hg mean aortic gradient, at her last visit, approximately 1 year ago. She presents to your local Emergency Department with a 3 week history of exertional dyspnea (NYHA Class III symptoms). She denies a history of angina, palpitations, syncope or pre-syncope, weight loss, fevers, chills, or diaphoresis.
History

• Past Medical History: Is positive for Non-Hodgkin’s Lymphoma in 1978 and received Sternal/Chest Wall radiation therapy, hypertension, increased lipids, Transient ischemic attack approximately 1 year ago (right sided hemipheresis/paralysis/dysarthria lasting 15 minutes). She denies a history of CAD, admissions for CHF, MI, Cancer, Deep Venous Thrombosis, COPD, or PVD/claudication

• Past Surgical History: Is positive for a hysterectomy and cataract resection, Sternal/Chest Wall radiotherapy
History

• Social: Widowed and lives alone, but independent. She is able to perform all of her ADLs without assistance. She has never had a fall. She still drives, though only locally. Retired, Does not smoke or drink, 2 children who live local.
Alternative Universe
Physical

- **Physical Exam**
- V/S: 160/60, P88, R: 12 afebrile, she is 62cm tall and 102lbs
- General: Elderly women in no acute distress, well groomed, of small stature.
- HEENT: 3cm JVD at 90 degrees, -carotid bruits, but with delayed upstroke
- Chest: Rales posterior bases, -rhonchi or wheeze, Radiotherapy burns throughout the precordium
- Heart: R,R,R, +S1S2, -S3S4, IV/VI harsh crescendo systolic murmur hear greatest at 2nr right ICS with radiation down the sternal border, -rubs/bruits
- Abdomen: Soft, Non-tender, +Bowel Sounds x 4, -rebound/guarding/tympany/distension, Abdominal Aorta measured at 3cm, -iliac bruits
- Extremities: Warm well perfused feet, +4/4 DP/PT/AT/POP/CFA pulses b/l
- Neuro: Frail, no acute deficits
Diagnostic Testing

• CXR: Evidence of congestive heart failure, cardiomegaly, calcified aortic knob. Lateral film reveals evidence of calcification throughout the arch

• Carotid Ultrasound: <50% Common and Internal Carotid Artery Stenosis and Antegrade Vertebral Flow

• ECG: NSR with left ventricular hypertrophy, non-specific t wave abnormalities

• Labs: CBC: Wbc: 8, HCT: 40%, Platelet Count: 300,000 BMP: Na: 141, Potassium: 5, CL: 114, CO2: 24, BUN: 28, Creatinine: 3 BNP: 4,000
Echocardiogram Results

- Normal LV systolic function
- Severe Concentric Left Ventricular Hypertrophy
- Severe Diastolic Dysfunction
- Aortic valve jet velocity of 7m/s
- Mean gradient of 60mm Hg
- Aortic Valve Area of 0.7cm²
- Severe calcification of the aortic annulus and root

- Severe calcific trileaflet aortic valve
- No Mitral or Tricuspid Valve Regurgitation
- Aortic root diameter: 3cm
- Severe pulmonary hypertension with Mean Pulmonary Artery Pressure of 55mm Hg
- LA Appendage is without thrombus
Cardiac Catheterization and Angiography Results

- Normal coronary arteries without obstructive flow
- Normal anatomical take off of coronary arteries
- A severely calcified trileaflet aortic valve
- No Mitral Valve Insufficiency
- PCWP: 25mmHg
- PAP: 50/25
- SBP: 140/90
- AVA of 0.6cm²
- Peak gradient of 90mm Hg
- Mean Gradient of 70mm Hg
- Transvalvular gradient 60mm Hg
- Thermodilution Cardiac Output of 5 liters per minute
- Severe calcification of the aortic root
Radiologic Studies

- CT Angiography reveals evidence of severe calcific aortitis involving the entire aortic root, ascending aorta, and arch.

- CT also reveals evidence of radiotherapy induced chronic mediastinitis
Alternative Universe Risk Scores

- STS risk score: 7.358%
- Fraility: Independent, well nourished, strong grip strength
Question 10

Which procedure would you recommend?

A. Open Aortic Valve Replacement (SAVR)
B. Transcutaneous Aortic Valve Replacement (TAVR)
Answer

B. Transcutaneous Aortic Valve Replacement (TAVR)
Discussion

• TAVR recommended due to
• Meets criteria for AVR
• Surgical High Risk: Hx of precordial radiation exposure and Porcelain Aorta precludes high surgical mortality due to complexity
• No other surgical pathology
• STS score reveals intermediate surgical risk
Question 11

Now that the patient has been referred for a TAVR. What other tests can be beneficial?

A. CTA of the chest, abdomen, and pelvis
B. CT cystogram
C. Transesophageal Echocardiogram
D. A and C
Answer

D. A and C
Discussion

- Echocardiography is used to confirm the severity of aortic stenosis, aortic valve anatomy, and extent of calcification and to evaluate the diameter of the aortic annulus, ascending aorta, sinus of Valsalva, the distance of the aortic valve leaflets to sinotubular junction, the presence of concomitant severe other valvular disease, and the LVEF.

- CT angiography of the aortic root is used to determine the optimal image orientation for valve positioning.

- CT angiography of the thoracoabdominal and iliofemoral arteries is used to evaluate the diameter, tortuosity of the vessels, and calcifications and to plan for the access site.

Medscape: Transcatheter Aortic Valve Replacement Periprocedural Care Author: Ramin Assadi, MD; Chief Editor: Eric H Yang, MD
Case #3 History

A 66-year-old man is referred to you for evaluation for surgery. The patient claims to be entirely asymptomatic, although his wife notes that he has decreased his physical activity over the past two years because he is “getting old.” She states that he used to be able to ambulate 2 miles per day, but is now he tires easy but is still able to complete his walk, but at a slower pace. He denies a recent history of fevers, chills, weight loss, syncope or presyncope, angina, orthopnea, or PND.
History

• PMH: is positive for hypertension, increased lipids, hypothyroidism, and BPH. He denies a history of MI, angina, endocarditis, rheumatic fever, PE/DVT, Cancer, prothrombotic states, or autoimmune disease

• PSH: Inguinal hernia repair, Laparoscopic cholecystectomy

• Allergies: NKA

• Social: Married, Retired, Never smoked, drinks socially, 3 children
Physical Exam

• Vital Sighs: 120/70 mm Hg; pulse, 80 bpm; respiration, 13 breaths per minute; and temperature, 99.0°F.

• HEENT: No JVD or carotid bruits, His carotid upstrokes were reduced in volume and delayed in upstroke.

• Chest: Normal A-P Diameter

• Lungs: Clear, -rales, rhonchi, or wheeze

• Cardiovascular: R,R,R, +S1S2, -S4, There was a 3/6 peaking systolic ejection murmur heard at the right upper sternal border radiating to the neck. No diastolic murmur, rub, bruit
Physical Exam

- Abdomen: SNT, Normal Bowel Sounds, No rebound, guarding, tympany, distension, bruits

- Extremities: Good distal pulses, -c/c/e

- Neuro: Non-focal
Physical Exam

• Abdomen: SNT, Normal Bowel Sounds, No rebound, guarding, tympany, distension, bruits

• Extremities: Good distal pulses, -c/c/e

• Neuro: Non-focal
Echocardiogram

- Ejection fraction: 60%
- Concentric LV hypertrophy
- Moderate Diastolic Dysfunction
- Peak Jet velocity: 4.5 m/s.
- AVA: 0.9 cm²
- Mean Gradient: 40 mm Hg
- Peak Gradient: 60 mm Hg

- Trileaflet calcific Aortic Valve
- No Mitral or Tricuspid Valve Regurgitation
- Aortic root diameter: 3 cm
- Severe pulmonary hypertension with Mean Pulmonary Artery Pressure of 55 mm Hg
- LA Appendage is without thrombus
Question 12

You suspect this patient is not truly asymptomatic, what diagnostic test would you order?

A. CT Scan of Abdomen and Pelvis
B. Exercise stress test
C. CT Scan of Head
D. MRA of Kidneys
E. Cardiac Catheterization
Answer

B. Exercise stress test
Discussion

- Exercise stress testing is contraindicated in symptomatic patients with severe aortic stenosis, but it may be considered in asymptomatic patients with severe aortic stenosis.
- Abnormal results may prove greater disability than the patient would admit.
- Symptoms on the treadmill,
- Hemodynamic abnormalities, such as blood pressure decreases or failure to increase blood pressure normally, which can occur in the absence of symptoms.

Medscape: Aortic Stenosis Workup, Author: Xiushui (Mike) Ren, MD; Chief Editor: Richard A Lange, MD, MB
Question 13

This patient develops acute SOB with a drop in systolic blood pressure to 90/60 with pre-syncope during the first stage of the Bruce Protocol. The patient’s new diagnosis is now:

A. Asymptomatic severe aortic valve stenosis
B. Symptomatic severe aortic valve stenosis
C. Angina Pectoris
D. Acute Stanford Type A Aortic Dissection
Answer

B. Symptomatic severe aortic valve stenosis
Question 14

Your recommendation is:
A. Aortic Valve Replacement
B. Continued Medical Management
Answer

A. Referral for Aortic Valve Replacement
Discussion

• The asymptomatic patient with aortic stenosis has an excellent prognosis despite severe left ventricular outflow obstruction.
• Rate of sudden death is estimated at <1% per year
• 40% of patients with severe AS by diagnostic testing, will develop symptoms within 2 years
• 67% by 5 years
• Rate of progression is faster for those with high jet velocities, LV hypertrophy, or severe calcification
Discussion

• Approximately 40% of patients claiming to be asymptomatic developed symptoms for the first time during exercise.

• If patients develop symptoms on the treadmill, they then should be labeled symptomatic and undergo aortic valve replacement.

• This strategy should extend to patients with unexpectedly low exercise tolerance.
Discussion

- In addition, it is probable, but unproved, that the development of hypotension or ventricular arrhythmias during the study should also be an indication for aortic valve replacement.

- It is unclear what impact ST-segment depression, a manifestation of left ventricular hypertrophy from any cause, should have for such patients.

- Failure to perform surgery once patients are symptomatic is the most important risk factor for late mortality.

Medscape Reference: Aortic Stenosis Workup, Approach Considerations
Thank You

• Self Assessment CME is a new requirement for certification
• Providing specialty specific SA-CME for APACVS members is a priority
• Assistance needed from the membership to assist the CME Committee in developing topics for live and on-line SA-CME
• Questions?
• Feedback?