Aortic Valve Prostheses
Questions

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Questions (1)

• Regarding Aortic Prosthetic Valves
  – A. A routine echocardiogram is required very two years after AVR
  – B. An elevated gradient with a decreased EOA is always suggestive of valvular stenosis
  – C. Transthoracic echocardiogram alone is always sufficient to diagnose valvular stenosis
  – D. It is more challenging to quantify para-valvular versus valvular aortic regurgitation.
Answer (1)

- D. It is more challenging to quantify para-valvular versus valvular aortic regurgitation.

ECHO EVALUATION Guidelines

- **CLASS I**
  - Initial TTE after AVR (2-4 weeks or sooner if concern for follow up and transfer)
  - Repeat TTE for AVR if there is a change in clinical symptoms or signs suggesting dysfunction
  - TEE for AVR if there is a change in clinical symptoms or signs suggesting dysfunction

- **CLASS II**
  - Annual TTE in bioprosthetic valves after the first 10 years (5 years in prosthetic statement 2008) but not mechanical valves

Nishimura et al 2014
Questions (2)

- Patients with Prosthesis-Patient Mismatch
  - A. Have abnormal prosthetic valve function
  - B. Progressively worsen with time
  - C. Have a small valve compared to the demands of their body and cardiac output
  - D. Have a benign condition

Answer (2)

C. Have a small valve compared to the demands of their body and cardiac output
Questions (3)

- CASE PRESENTATION
- 69 Y/O F Hx AVR (BIOPROSTHETIC BIOCOR 23 MM 2006)
- SOB, FATIGUE, NEVER FELT MUCH BETTER AFTER SAVR
- BSA 2.2, 6 2’

Questions (3)

- AV velocity 4.1
- MG 36
- DVI 0.25
- Contour TRI
- AVA 1
- BSA 2.2
- AT 74
Questions (3)

• A. The patient has severe prosthetic valve stenosis
• B. The patient has a benign condition
• C. The patient has a high flow state
• D. The patient has severe prosthesis patient mismatch

Answer (3)

D. The patient has severe prosthesis patient mismatch
Doppler Parameters of Prosthetic Aortic Valve Function

<table>
<thead>
<tr>
<th></th>
<th>Normal</th>
<th>Suggests Stenosis</th>
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</thead>
<tbody>
<tr>
<td>Peak Velocity</td>
<td>&lt; 3 m/s</td>
<td>&gt; 4 m/s</td>
</tr>
<tr>
<td>Mean Gradient</td>
<td>&lt; 20 mmHg</td>
<td>&gt; 35 mmHg</td>
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<tr>
<td>Doppler Velocity Index</td>
<td>&gt;= 0.3</td>
<td>&lt; 0.25</td>
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<tr>
<td>Effective Orifice area</td>
<td>&gt; 1.2 cm²</td>
<td>&lt; 0.8 cm²</td>
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<tr>
<td>Contour of Jet</td>
<td>Triangular Early Peaking</td>
<td>Rounded Symmetrical contour</td>
</tr>
<tr>
<td>Acceleration Time</td>
<td>&lt; 80 ms</td>
<td>&gt; 100 ms</td>
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</tbody>
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An approach to prosthetic AV stenosis

Indexed EOA = 0.5

PPM occurs when:
- iEOA < 0.85
- Severe if iEOA < 0.65
TEE

CTA SYSTOLE
MRI

Distance: 15.9 mm x 13.8 mm
Area: 1.74 cm²
Avg. Diameter: 14.9 mm
Perimeter: 48.0 mm
Surgery Pre:

23 mm

Surgery Post:

25 mm
ECHO POST

AV VTI
Vmax 190 cm/s
Vmean 124 cm/s
Max PG 14 mmHg
Mean PG 7 mmHg
VTI 34.0 cm

5/8/2018
Robert D. Safian, MD