Combining treatment for aortic stenosis and mitral regurgitation

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I received speaker honoraria and research support from:

- Abbott Vascular
- Edwards Lifesciences
Case Presentation

86 y old female patient

- Dyspnea (NYHA III)
- LV-EF normal
- R/o obstructive CAD
- Stroke 10/2010
- Atrial fibrillation
Prevalence and Prognosis of MR in TAVR Patients

Prevalence of MR in TAVR patients
(11,104 TAVR patients)

- Severe MR: 5.4%
- Moderate MR: 31.3%

Prognostic Impact of MR in TAVR patients

Graph showing cumulative incidence of death or HF rehospitalization over time:
- Severe MR: 40.2%
- Moderate MR: 37.6%
- Mild MR: 31.5%
- No MR: 29.7%
- P < 0.0001

Additional text:
Transcatheter Aortic Valve Replacement in Patients With Aortic Stenosis and Mitral Regurgitation

Karmen Mostaved, MD, Vysal H. Thavos, MD, Amanda McIntire, MS, Steven R. Vemulapalli, MD, Charles Doucette, MD, Robert A. Gutka, MD, B. Michael DiLego, MD, Robert M. Leidhold, MD, Xiangli D. Liu, MD, Annick L. Vermeulen, MD, and Francine A. Chuter, MD.
Only 2% of all TAVR patients will suffer from severe MR!
➢ No dedicated guideline recommendations for double or triple valve diseases
➢ If one valve is the leading problem → the diagnostic and therapeutic regimen is accordingly
➢ If both valves are of similar relevance → the diagnostic evaluation starts with an isolated view on each valve, but for therapeutic decision making both results have to be taken into account

### Impacts on the diagnosis of:

<table>
<thead>
<tr>
<th></th>
<th>AS</th>
<th>AR</th>
<th>MR</th>
<th>MS</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>AS</strong></td>
<td>NA</td>
<td>Prolonged PHT if left ventricular hypertrophy with impaired relaxation</td>
<td>High intraventricular pressure may result in higher RV whereas ERO is less affected</td>
<td>Prolonged PHT if impaired left ventricular relaxation</td>
</tr>
<tr>
<td><strong>AR</strong></td>
<td>Gorlin formula using thermodilution technique invalid. Owing to high transaortic volume flow rate, maximum velocity, and pressure gradients may be higher than expected for a given valve area</td>
<td>NA</td>
<td>Not significantly affected</td>
<td>Owing to increased antegrade aortic flow, there is an overestimation of MVA by the continuity equation. Overestimation of MVA with PHT method. This approach is not valid</td>
</tr>
<tr>
<td><strong>MR</strong></td>
<td>MR could favour a low-flow, low-gradient state. Aortic valve area calculation remains accurate. High-velocity MR jet may be mistaken for the AS jet (MR is longer in duration)</td>
<td>Not significantly affected</td>
<td>NA</td>
<td>Owing to increased antegrade mitral flow, there is an underestimation of MVA by the continuity equation. MVA may be underestimated with PHT method</td>
</tr>
<tr>
<td><strong>MS</strong></td>
<td>Low-flow, low-gradient state. Aortic valve area calculation remains accurate</td>
<td>Blunted hyperdynamic circulation</td>
<td>Not significantly affected</td>
<td>NA</td>
</tr>
<tr>
<td><strong>TR</strong></td>
<td>Gorlin formula invalid</td>
<td>Not affected</td>
<td>Not affected</td>
<td>Gorlin formula invalid</td>
</tr>
</tbody>
</table>
Pitfalls in Assessing AS Severity

Impacts on the diagnosis of:
AS

The presence of:

MR could favour a low-flow, low-gradient state. Aortic valve area calculation remains accurate. High-velocity MR jet may be mistaken for the AS jet (MR is longer in duration)
Severe aortic stenosis!

MR could favour a low-flow, low-gradient state. Aortic valve area calculation remains accurate. High-velocity MR jet may be mistaken for the AS jet (MR is longer in duration)
• TTE
• CT for assessing suitability for TAVI
• TEE for assessing suitability for edge-to-edge repair
• Heart Team Consensus
Pacemaker Implantation @ day 8 post TAVI for III° AV-Block and new LBBB

- AV Vmax 210 cm/s
- Vmax 197 cm/s
- Vm 150 cm/s
- Max PG 15 mmHg
- MPG 10 mmHg
- VTI 31.3 cm
Persisting Dysnea (NYHA III) @ 2.5 Months post TAVI
Persisting Dysnea (NYHA III) @ 2.5 Months post TAVI
PASCAL Procedure @ 3 Months post TAVI
PASCAL Procedure @ 3 Months post TAVI
Slightly improved dyspnea
NYHA II (-III)
• The combination of severe aortic stenosis and severe mitral valve regurgitation is rare.

• Diagnosing concomitant aortic and mitral valve disease can be challenging.

• An interventional approach is feasible, but needs to be individualized to the patient‘s anatomy and conditions.