Cases in Valvular Heart Disease

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BELIEVE IN *WE* OhioHealth

What is primary etiology of CHF?

- A. Severe LV systolic dysfunction
- B. Advanced diastolic dysfunction
- C. Severe Calcific Aortic Stenosis
- D. Both severe AS and LV dysfunction

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Based on echo, what is next step?

- A. Aortic valve replacement
- B. Medical therapy for CHF
- C. Transesophageal Echo (TEE)
- D. Dobutamine Stress Echo

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“Low gradient” Aortic Stenosis: Differential

- Severe AS with low stroke volume (normal EF)
- Severe AS with 2° LV dysfunction
- Moderate AS with “1°” LV dysfunction

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Dobutamine Stress Echo :
Protocol for low flow/low gradient AS

- Objective:
  - Confirm increase stroke volume
  - Reassess AV gradients and valve area

- Protocol: graded infusion, max 20 µg/kg/m

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Dobutamine Stress Echo :
Protocol for low flow/low gradient AS

	Severe AS	Moderate AS	
Stroke volume	↑	↑	
AV gradients	↑	No ↓	
AV area	"severe"	"moderate"	

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Dobutamine Stress Echo :
Protocol for low flow/low gradient AS

	Severe AS	Moderate AS	
Stroke volume	↑	↑	No ⇨
AV gradients	↑	No ⇨	No ⇨
AV area	“severe”	“moderate”	No ⇨

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Dobutamine Stress Echo :
Protocol for low flow/low gradient AS

	Severe AS	Moderate AS	"Lack of Contractile Reserve"
Stroke volume	↑	↑	No ↑
AV gradients	↑	No ↑	No ↑
AV area	"severe"	"moderate"	No ↓

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“low flow + low gradient” AS

Contractile Reserve	Final Doppler	Operative Mortality	Operative Benefit
YES	“severe” AS	Acceptable (5-7%)	Yes
YES	“moderate” AS	Acceptable (5-7%)	No

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“low flow + low gradient” AS

Contractile Reserve	Final Doppler	Operative Mortality	Operative Benefit
YES	“severe” AS	Acceptable (5-7%)	Yes
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NO	“severe” AS	High	Yes

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AS: severity classification

Table I Categories of aortic stenosis severity

	Aortic sclerosis	Mild AS	Moderate AS	Severe AS
Aortic jet velocity (m/s)	<2.6	2.6–3.0	3–4	>4
Mean gradient (mmHg)	—	<30 (25)	30–50 (25–40)	>50 (40)
AVA (cm^2)	—	>1.5	1.0–1.5	<1.0
Indexed AVA (cm^2/m^2)		>0.9	0.6–0.9	<0.6
Velocity ratio		>0.50	0.25–0.50	<0.25

Based on the ASE/EAE Recommendations for Quantitation of Stenosis Severity,[2] ESC Valve Guidelines,[3] and American College of Cardiology/American Heart Association (ACC/AHA) Valve Guidelines.[4] ACC/AHA guidelines use lower mean gradient cutoffs as indicated in parentheses. The ESC definitions apply only in the presence of normal flow conditions. The velocity ratio is included in the ASE/EAE guidelines only.

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