



Canadian Society of Echocardiography

18TH ANNUAL CANADIAN ECHO WEEKEND APRIL 7-9, 2016 TORONTO, ON

Session Title: Role of Stress Echo in Valvular Heart Disease:
Is the Exercise Worth the Effort?

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OBJECTIVES

1. To understand the potential utility of stress echo during the evaluation of the patient with valvular heart disease.
2. To review stress echo modalities and protocols that can be used in the valvular heart disease patient.
3. To discuss findings on stress echo that can be used to guide management decisions in the patient with valvular heart disease.

DISCUSSION: Please provide 3 to 6 key presentation slides.

Potential Utility of Stress Echo in Valvular Heart Disease
1) Detect symptoms in "asymptomatic" pts or confirm absence of symptoms (<i>sedentary, denial, etc</i>)
2) Evaluate the hemodynamics during stress and thus better determine the impact of a valve lesion
3) Evaluate patients with a discordance between symptoms and disease severity (<i>i.e. symptoms, but non-severe disease</i>)
4) Risk stratify asymptomatic patients with severe valve disease

Stress Echo in Valvular Heart Disease
Exercise Echocardiography
Treadmill Modified Bruce Protocol
Bicycle 25-50 W, 10-25 W increments q2min
Monitor Symptoms and BP
Stop test: typical symptoms (angina, lightheadedness) BP drops ≥ 20 mmHg significant ventricular arrhythmia
Dobutamine Echocardiography
5-20 ug/kg/min (5 ug/kg/min increments, q5-10 minutes)
Stop test: typical symptoms (angina) BP drops ≥ 20 mmHg significant ventricular arrhythmia

Stress Echo in Valvular Heart Disease <i>Measures of Interest</i>		
Valve Disease	Measures	Calculations
Aortic Stenosis	CW AV, PW LVOT, CW TR, A4C, A2C	MG, AVA, PASP, LVEF
Aortic Regurgitation	A4C, A2C	LVEF
Mitral Stenosis	CW MV, CW TR	MG, PASP
Mitral Regurgitation	PISA radius, CW MR CW TR, A4C, A2C	EROA, RV, PASP, LVEF, GLS

Stress Testing in Valvular Heart Disease <i>Indications</i>	
Aortic stenosis	AHA/ACC class IIa (Symptoms, BP response)
Aortic regurgitation	AHA/ACC no class assignment (Symptoms, functional capacity)
Mitral stenosis	AHA/ACC class I (Discrepant echo and symptoms [MV gradient, PA pressure])
Mitral regurgitation	AHA/ACC class IIa (Symptoms, exercise tolerance, discrepant data [MR severity and PASP])

Additional potential markers for risk stratification are available using stress echo!

Stress Echo in Valvular Heart Disease <i>Measures to Guide Decision-making for Valve Intervention</i>		
	Stress Echo Parameter	Indication for Intervention
Aortic stenosis (Classical Low Flow AS)	Symptoms	AHA class I, ESC class I
	Fall in BP ↑ MG ≥20mmHg ↓ LVEF	AHA class IIa, ESC IIa ESC IIb
	MG ₂₀ 40mmHg/AVA ₂ 1.0cm ²	AHA class IIIa, ESC IIa (+CR) and IIb (-CR)
Aortic regurgitation	Symptoms ↓ LVEF	- -
Mitral regurgitation	Symptoms PASP >60 mmHg ↑ LVEF <4% / ↑ GLS <-2%	- ESC IIb -
Mitral stenosis (Mild MS & Symptoms)	Symptoms PASP >60 mmHg MG >15mmHg	- } AHA class IIb

CONCLUSIONS:

1. Stress echo can provide important physiologic and prognostic information that can be used to guide the management of the patient with valvular heart disease.

2. Current AHA/ACC and ESC Guidelines on the management of patients with valvular heart disease support and recommend the use of stress echo when evaluating these patients.

REFERENCES:

- Nishimura RA, Otto CM, et al. 2014 AHA/ACC Guideline 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. *Circulation* 2014;129(23):e521-643.
- Vahanian A et al. Joint Task Force on the Management of Valvular Heart Disease of the European Society of Cardiology (ESC); European Association for Cardio-Thoracic Surgery (EACTS). Guidelines on the management of valvular heart disease (version 2012) *Eur Heart J* 2012;33(19):2451-96.
- Henri C et al. Exercise testing and stress imaging in valvular heart disease. *Can J Cardiol* 2014;30(9):1012-26.