EUROVALVE

DEBATING CHAMBER

CAMBRIDGE UNION SOCIETY

OCTOBER 7&8,2022

COURSE DIRECTORS

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Jeroen Bax, The Netherlands

LOCAL HOST

Madalina Garbi, United Kingdom

That this House believes HFpEF should be prevented by treating coexistent systemic hypertension, not early AVR

- Opposition Team -

Speaker: Augustin Coisne
Expert Panel : Erwan Donal, Mai-Linh Nguyen

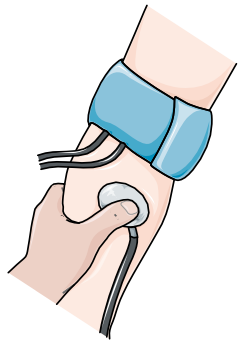
FACULTY DISCLOSURE

I disclose the following financial relationships:
Receiving grant/research support from Abbot Vascular, GE Healthcare
Paid speaker for Abbot Vascular, GE Healthcare

« Opposition is true friendship »

William Blake

(1757- 1827)



+

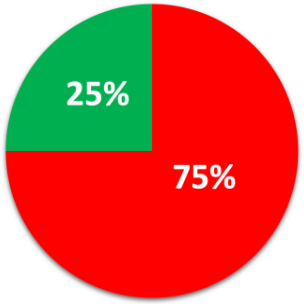
Common?

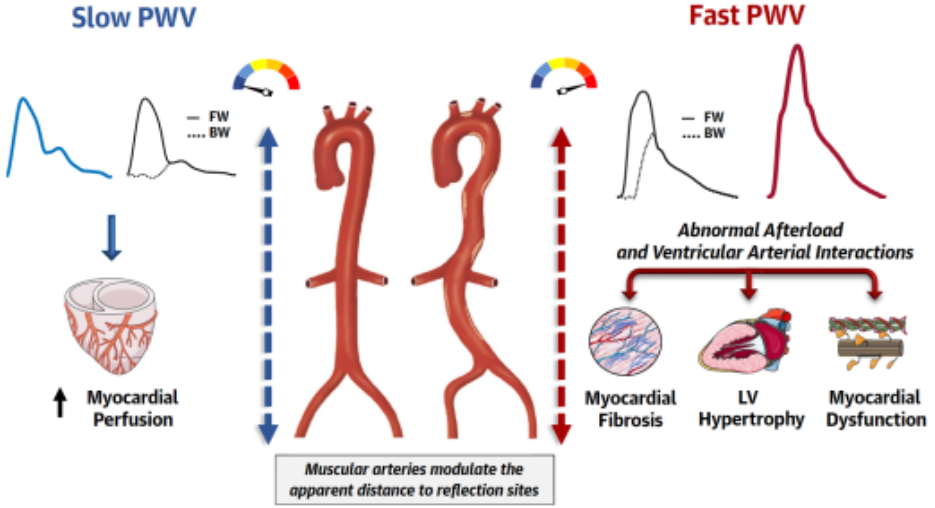
Relevant?

Meaningful?

no HTN

HTN





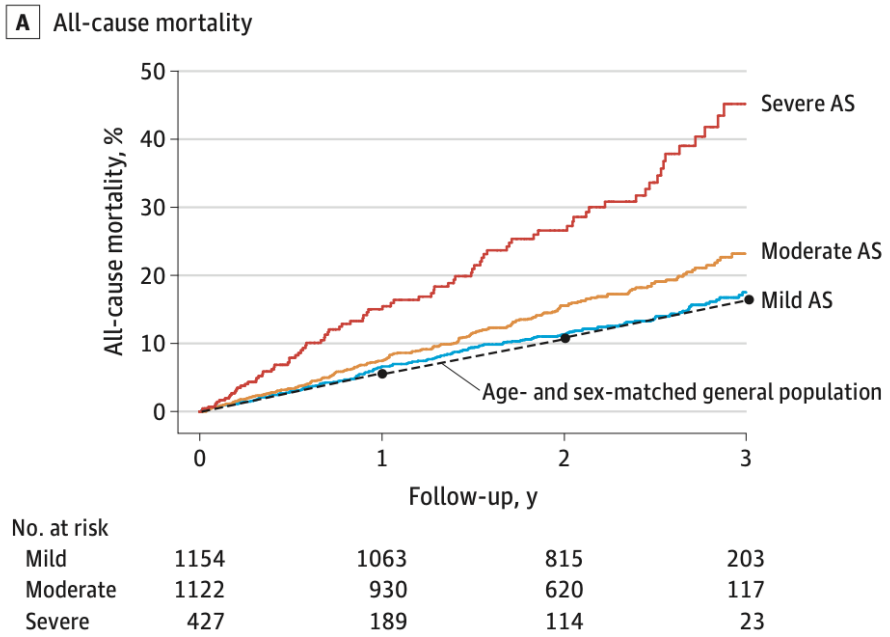
Compliant Aorta

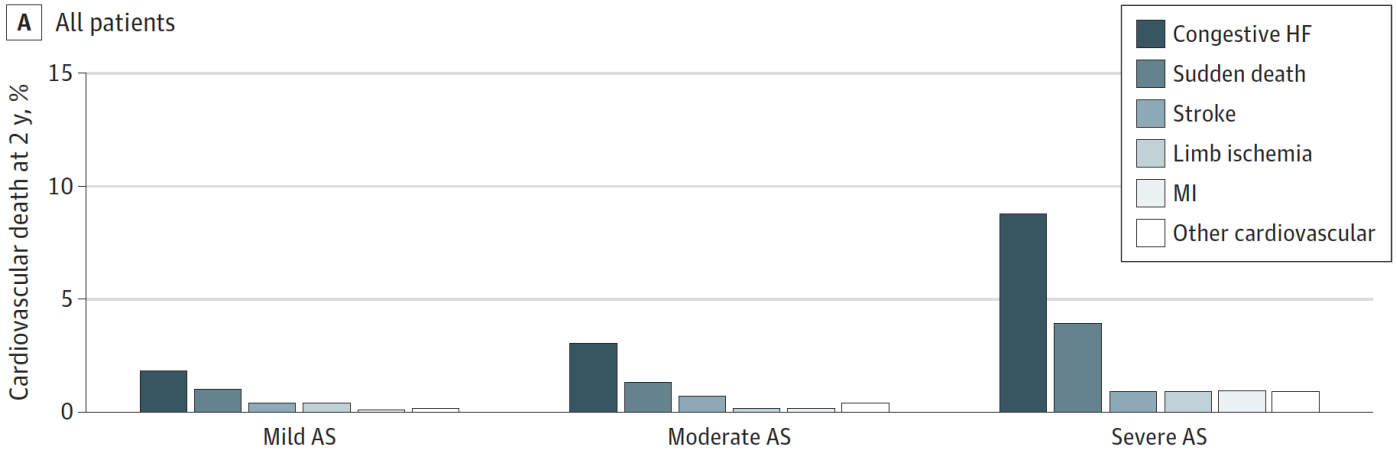
Stiff Aorta

5.3 Medical therapy

No medical therapies influence the natural history of aortic stenosis. Statins (which demonstrated favourable effects in pre-clinical studies) do not affect disease progression[246] and clinical trials targeting calcium metabolic pathways are ongoing. Patients with heart failure who are unsuitable (or waiting) for SAVR or TAVI should be medically treated according to ESC heart failure Guidelines.[247] ACEI are safe in aortic stenosis (provided that BP is monitored carefully) and may have beneficial myocardial effects before the onset of symptoms, and after TAVI and SAVR.[248–250] Coexisting hypertension should be treated to avoid additional afterload, although medication (particularly vasodilators) should be titrated to avoid symptomatic hypotension.

VALVENOR registry



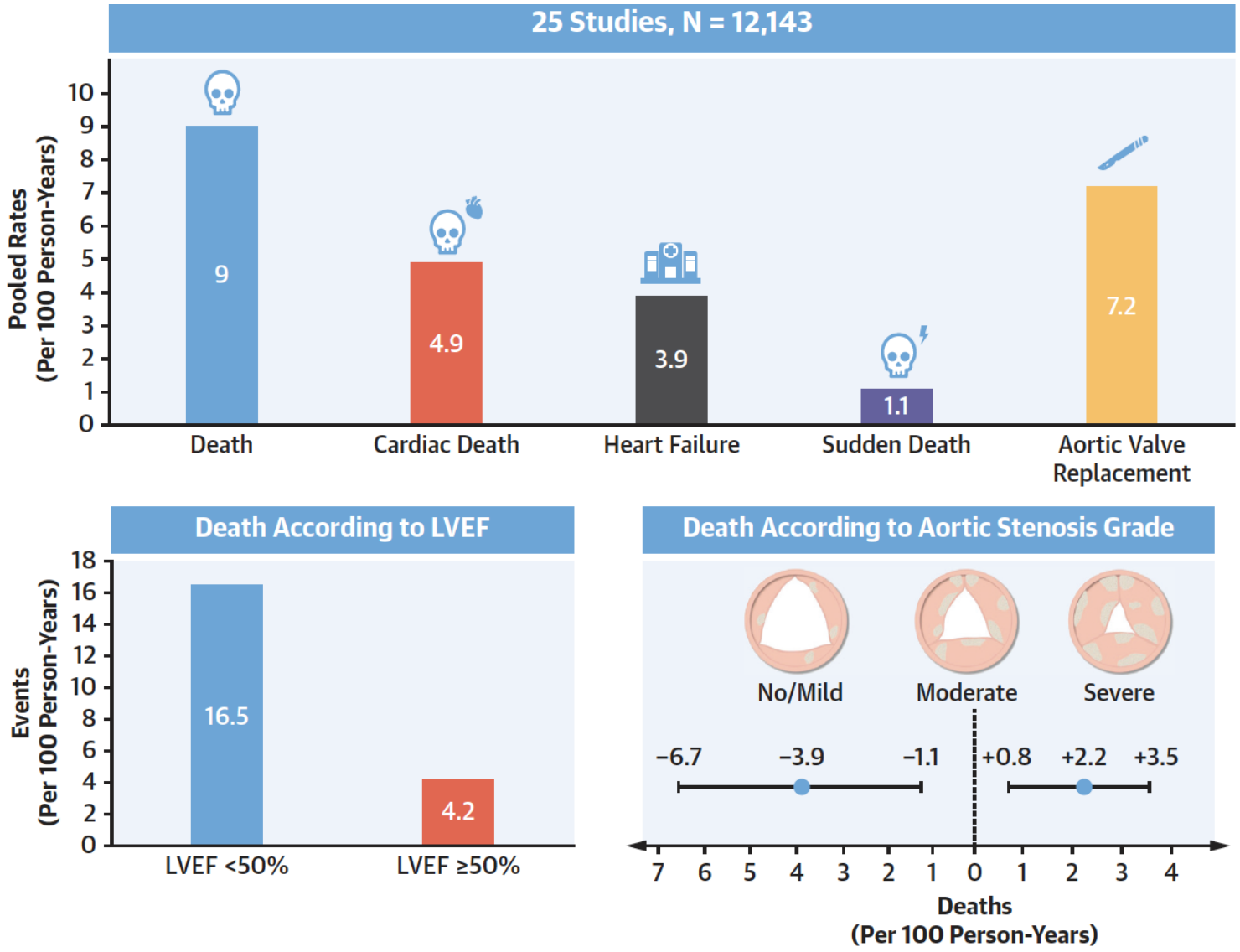


Adjusted for age, sex, diabetes, **history of hypertension,** previous myocardial infarction, previous coronary bypass, previous percutaneous coronary intervention, atrial fibrillation, previous hospitalization for heart failure, prior stroke, left ventricular ejection, and type of cardiology practice.

In a contemporary real-life population, already treated for HTN, moderate AS still associated with an increased risk of myocardial-related death

Coisne et al. JAMA Cardiol. 2021 Dec 1;6(12):1424-1431.

Clinical Outcomes of Patient with Moderate AS



Coisne et al. J Am Coll Cardiol Intv. 2022;15(16):1664-

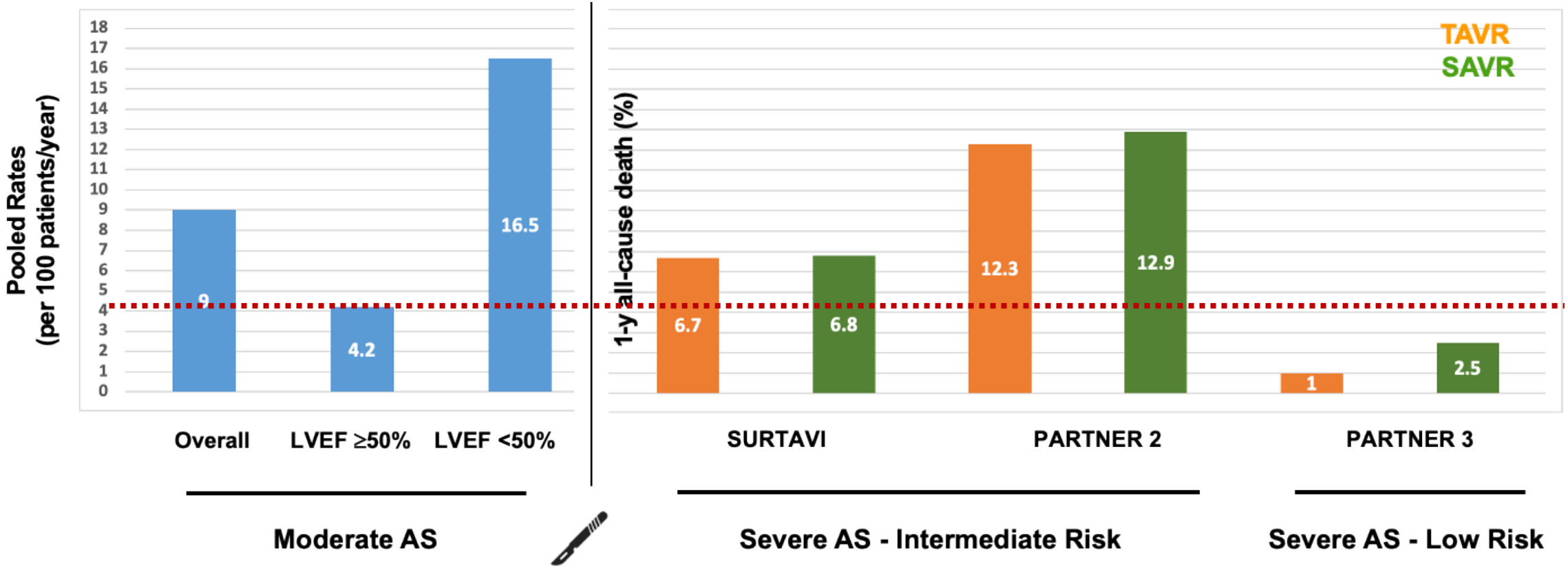
Clinical Outcomes of Patient with Moderate AS

Covariate	β	Standard Error	Lower bound	Upper bound	p value
Year of publication	-0.006	0.014	-0.034	0.023	0.684
Age	0.039	0.034	-0.030	0.109	0.253
BMI	-0.167	0.108	-0.422	0.087	0.164
Sex (female)	-0.005	0.009	-0.024	0.014	0.601
Hypertension	-0.001	0.023	-0.050	0.048	0.967
Diabetes	0.039	0.015	0.007	0.071	0.019
Atrial Fibrillation	0.026	0.019	-0.015	0.067	0.194
Coronary Artery Disease	0.026	0.009	0.006	0.046	0.017
Stroke	0.005	0.024	-0.049	0.059	0.841
Chronic Obstructive Pulmonary Disease	0.024	0.034	-0.058	0.105	0.517
NYHA class III/IV	0.038	0.010	0.015	0.061	0.004
Symptoms	0.017	0.004	0.009	0.025	<0.001
Aortic Valve Area	-0.111	1.349	-2.958	2.736	0.935
Mean Aortic Gradient	-0.025	0.029	-0.086	0.037	0.408
LV Ejection Fraction	-0.049	0.017	-0.085	-0.014	0.009

Meta-regression analysis of all-cause mortality

Hypertension was not associated with a significant impact on the overall estimate of all-cause death

Clinical Outcomes of Patient with Moderate AS



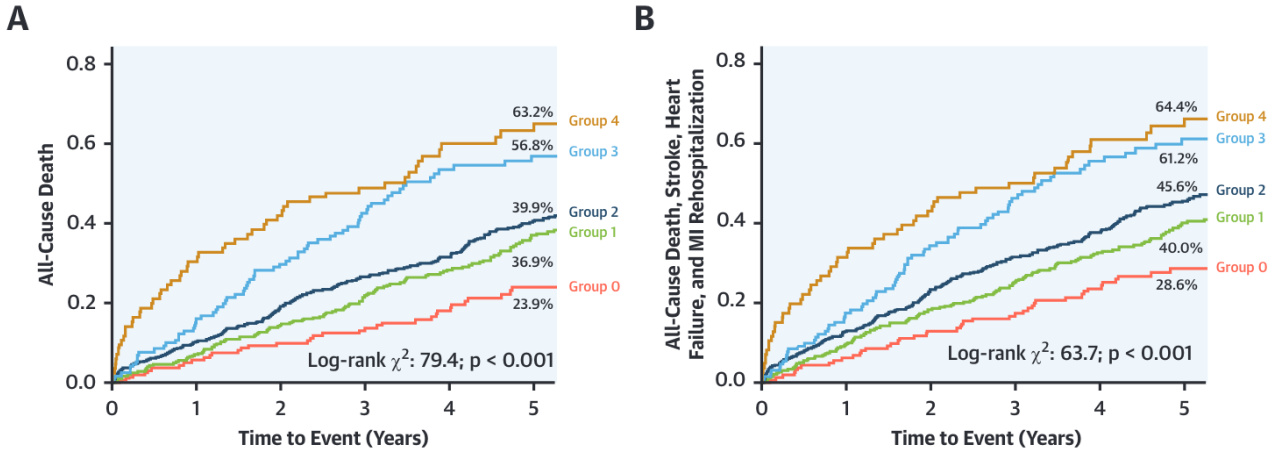
The benefit of treating earlier moderate AS is currently under investigations in several trials

Moderate AS and myocardial disease

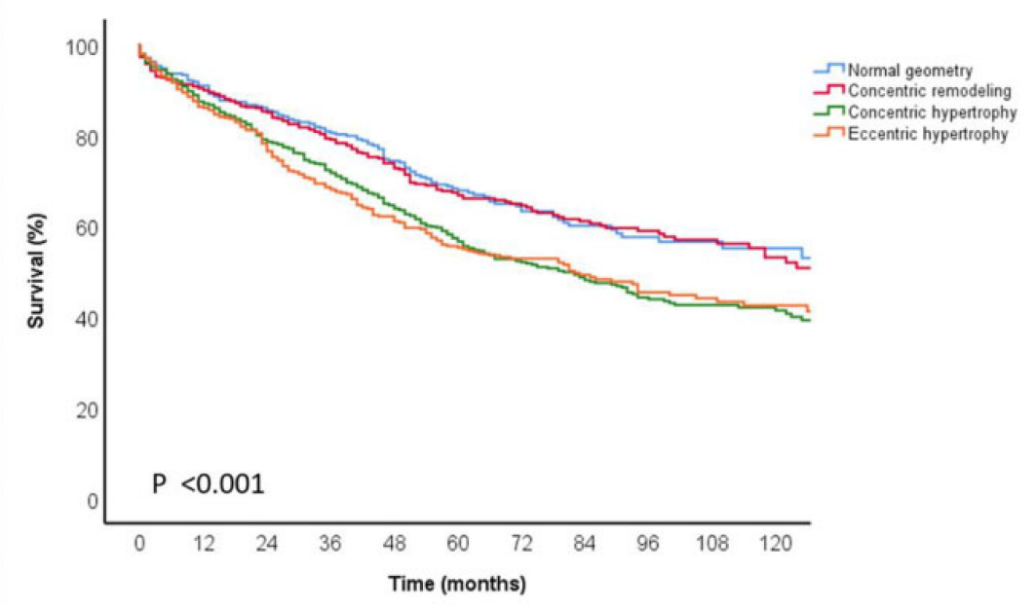
Extra-Aortic Valvular Cardiac Abnormalities

	Group 0	Group 1	Group 2	Group 3	Group 4
Involvement	No Extra-Valvular	Left Ventricular	Left Atrial or Mitral	Pulmonary or Tricuspid	Right Ventricular
Prevalence	13.1%	26.8%	42.6%	10.6%	6.9%
Echo-cardiographic criteria		LV mass index ♂ >115 g/m^2 ♀ >95 g/m^2 LV ejection fraction <50% E/e' ratio >14	Left atrial volume index >34 ml/m^2 Atrial fibrillation Moderate or severe mitral regurgitation	Systolic pulmonary arterial pressure >60 mm Hg Moderate or severe tricuspid regurgitation	TAPSE <16 mm

Outcomes According to Extent of Cardiac Involvement



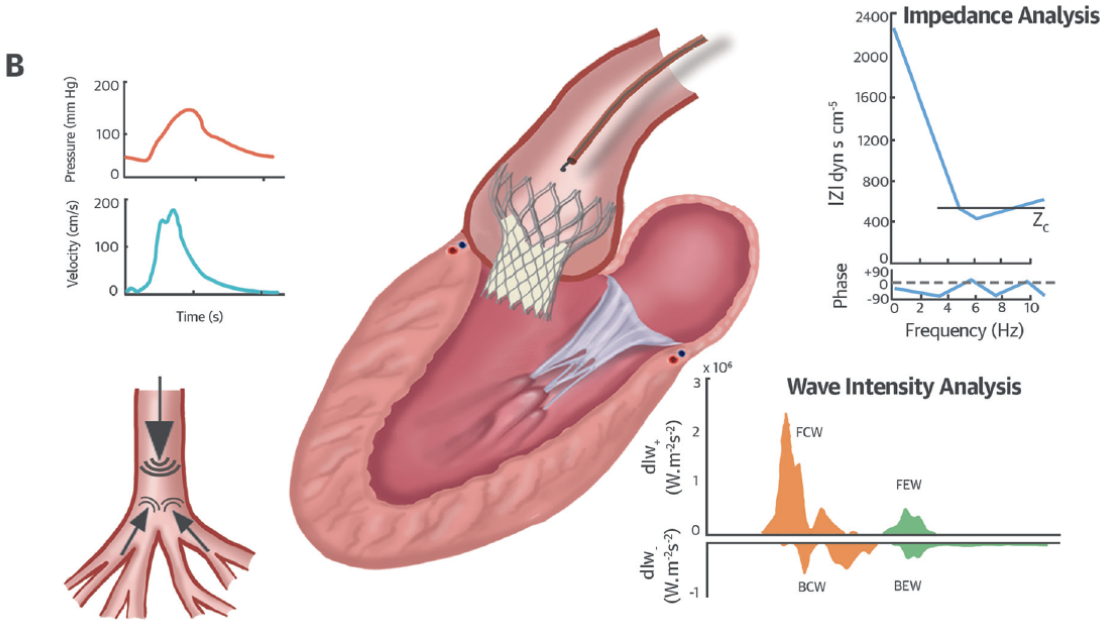
Amanullah. J Am Coll Cardiol Img. 2021;14(9):1724–1737.



Stassen. Eur Heart J Cardiovasc Imaging. 2022 Sep 10;23(10):1326-1335

An "abnormal" myocardium in moderate AS is already associated with poor outcomes

Systemic arterial load: Time to think globally



Factor	Pre-TAVR	Post-TAVR	p Value
Systemic vascular resistance index, dyn·s·cm^{-5}·m^2	1841 ± 562	2689 ± 1271	<0.0001
Arterial compliance, pressure decay method, ml·mm Hg^{-1}	1.20 ± 0.79	0.72 ± 0.33	0.002
Arterial compliance, area method, ml·mm Hg^{-1}	1.18 ± 0.77	0.74 ± 0.36	<0.001
Frequency domain analysis			
Z at fist harmonic frequency, dyn·s·cm^{-5}	519 ± 219	763 ± 280	<0.001
Z at second harmonic frequency, dyn·s·cm^{-5}	375 ± 208	541 ± 262	0.002
Z at third harmonic frequency, dyn·s·cm^{-5}	313 ± 244	395 ± 208	0.36
Characteristic impedance, dyn·s·cm^{-5}	258 ± 139	326 ± 193	0.06
Frequency of first Z minimum, Hz	3.9 ± 1.5	4.6 ± 1.1	0.6
Arterial elastance, mm Hg·ml^{-1}	1.2 ± 0.46	1.75 ± 0.70	<0.001
Arterial elastance, resistance method, mm Hg·ml^{-1}	1.09 ± 0.40	1.63 ± 0.65	<0.001
Augmentation index	392 ± 232	750 ± 739	0.025
Distance to reflection, m	0.11 ± 0.72	0.12 ± 0.09	0.06
Wave intensity analysis			
Wave speed, m·s^{-1}	3.57 ± 2.05	4.62 ± 2.01	0.034
Characteristic impedance, dyn·s·cm^{-5}	192 ± 124	247 ± 141	0.05

Stiffer vascular behavior post-intervention = increase invascular load after TAVR

Yotti et al. J Am Coll Cardiol 2015;65:423–33)

Conclusion

We believe that HFpEF should be prevented by treating earlier AS **and** coexistent systemic hypertension

(like for every patient)