

Residual Pulmonary Hypertension in Patients After Mitral Valve Surgery

The Impact of Rheumatic Etiology

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DISCLOSURES

None (all co-authors)

Background

- Residual pulmonary hypertension (PHT) – not uncommon following successful mitral valve surgery
- Determinants of residual PHT – poorly defined
 - Impact of rheumatic etiology on post-operative pulmonary artery systolic pressure (PASP) ?

Methods

- Study population
 - 122 pts s/p mitral valve surgery (replacement n=88; repair n=34)
- Exclusion criteria
 - Overt mitral prosthesis dysfunction / mean $\Delta P > 8$ mmHg
 - Concomitant aortic prosthesis or AS / AR (\geq moderate)
 - LVEF $< 50\%$
 - Measurements of PASP – not available (pre- / post-operative)
- The factors associated with elevated post-operative PASP were determined (multivariate linear & logistic regression)

Clinical & Echocardiographic Characteristics

	Comparison by Etiology			Comparison by Post-operative PASP		
	RHD (n = 62)	Non-RHD (n = 60)	<i>P</i>	≥ 35 mmHg (n = 61)	< 35 mmHg (n = 61)	<i>P</i>
Age at last echo, yrs	65±11	64±15	0.8	69±10	60±14	<0.001
Male, n (%)	12 (19)	41 (68)	<0.001	17 (28)	36 (59)	0.001
Follow-up post-op, yrs	5.7 (2.4-10.2)	2.7 (1.0-6.6)	0.001	5.0 (1.5-9.7)	3.2 (1.0-6.9)	0.05
Heart rate, min ⁻¹	70±14	69±13	0.8	69±14	70±14	0.52
Atrial fibrillation, n (%)	31 (50)	13 (22)	0.001	33 (54)	11 (18)	<0.001
LA dilatation*, n (%)	38 (61)	15 (25)	<0.001	36 (59)	17 (28)	0.001
Mitral prosthesis, n (%)	62 (100)	26 (43)	<0.001	50 (82)	38 (62)	0.02
Mean mitral ΔP, mmHg	4.7±1.7	4.3±1.7	0.2	4.8±1.7	4.1±1.7	0.02
PASP – pre-op, mmHg	43±16	35± 12	0.01	55±17	46±18	0.007
PASP – post-op, mmHg	55±19	46±16	0.001	49±14	29±4	<0.001
RHD, n (%)				39 (64)	23 (38)	0.004

* Moderate or severe LA dilatation (visual assessment); continuous data – mean ± SD or median (25-75%)

Predictors of Post-op PASP ↑

Variable	Linear Regression			Logistic regression PASP ≥ 35 mmHg		
	B	95% CI	P	OR	95% CI	P
Age at last echo, per 10 yrs	2.9	1.2-4.7	0.001	1.7	1.1-2.6	0.02
Male	- 4.2	(- 8.5)-0	0.05	0.3	0.1-0.7	0.004
Atrial fibrillation	9.1	4.6-13.6	<0.001	5.0	1.9-13.4	0.001
Trans-mitral ΔP (mean) > 4 mmHg*	6.7	2.5-10.8	0.002			
PASP – pre-op, per 10 mmHg	1.8	0.6-3.0	0.004			
PASP – pre-op ≥ 50 mmHg				3.2	1.3-8.0	0.01

* Median value in study population

Independent predictors of PASP ≥ 50 mmHg (n=22): age, AF, trans-mitral ΔP

Rheumatic etiology entered (forced) into models:

- Linear model
- Logistic model (PASP ≥ 35 mmHg)
- Logistic model (PASP ≥ 50 mmHg)

P value

0.25

0.6

0.24

Summary

- Residual PH – common following *successful* mitral valve surgery
 - 50% - post-op PASP \geq 35 mmHg
 - 18% - post-op PASP \geq 50 mmHg
- High frequency of rheumatic etiology in pts with residual PHT
- Independent predictors of post-op PASP \uparrow :
 - Age (@ end of f/u), female gender
 - Atrial fibrillation (@ end of f/u)
 - Pre-operative PHT
 - Elevated trans-mitral ΔP (minor PPM; overt PPM – excluded)
- Rheumatic etiology – *not* an independent predictor of post-op PASP \uparrow
 - Association with post-op PHT via its association with other risk factors for post-op PHT (female gender, AF, pre-op PHT)