Poster Session

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A unifying concept for the quantitative definition of functional mitral regurgitation

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Background: Diverging guideline definitions for the quantitative assessment of severe secondary mitral regurgitation (sMR) reflect the lacking link of the sMR spectrum to mortality and has introduced a source of uncertainty and continuing debate.

Objectives: The current study aimed to define improved risk-thresholds specifically tailored to the complex nature of sMR that provide a unifying solution to the ongoing guideline-controversy.

Methods: We enrolled 423 heart failure patients under guideline directed medical therapy and assessed sMR by effective regurgitant orifice area (EROA), regurgitant volume (RegVol) and regurgitant fraction (RegFrac).

Results: Measures of sMR severity were consistently associated with 5-year mortality with a HR for a 1-SD increase of 1.42 (95%CI 1.25-1.63, P < 0.001) for EROA, 1.37 (95%CI 1.20-1.56, P < 0.001) for RegVol and 1.50 (95%CI 1.30-1.73, P < 0.001) for RegFrac. Results remained statistically significant after bootstrap- or clinical confounder-based adjustment. Spline-curve analyses (Figure 1A-C) showed a linearly increasing risk enabling to stratify in low-risk (EROA < 20mm2 and RegVol < 30ml), intermediate-risk (EROA 20-30mm2 and RegVol 30-45ml) and, high-risk (EROA≥30mm2 and RegVol≥45ml). In the intermediate-risk group, a RegFrac ≥50% as indicator for hemodynamic severe sMR was associated with poor outcome (P = 0.017). A unifying concept based on combined assessment of the EROA, the RegVol, and the RegFrac (Figure 1D) showed a significantly better discrimination compared to the currently established algorithms (Table 1).

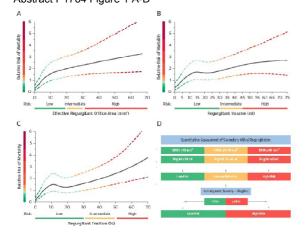
Conclusions: Risk-based thresholds tailored to the pathophysiological concept of sMR provide a unifying solution to the ongoing guideline controversy. An algorithm based on the combined assessment of the unifying cut-offs for EROA, RegVol and RegFrac improves risk prediction compared to currently established grading.

Table 1

Definition of severe sMR	Cox regression analysis		ROC analysis		IDI analysis	
	HR (95%CI)	P-Value	ROC	P-Value-for-comparison	IDI	P-Value
Unifying concept	3.76 (2.71-5.23)	< 0.001	0.63			
ACC/AHA definition	3.20 (2.14-4.78)	< 0.001	0.57	< 0.001	0.06	< 0.001
ESC/EACTS definition	1.52 (1.10-2.09)	0.01	0.55	< 0.001	0.13	< 0.001
ACC/ASE expert consensus	1.89 (1.40-2.56)	< 0.001	0.59	0.04	0.08	< 0.001

Comparison of the unifying concept with the ACC/AHA, ESC/EACTS and ACC/ASE expert consensus definitions of sMR by Cox regression, ROC, and IDI demonstrated the most powerfull prediction by the unifying concept with significantly higher ROC area under the curve and better discriminatory power by IDI.

Abstract P1764 Figure 1 A-D



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