

A unifying concept for the quantitative definition of functional mitral regurgitation

²Research Institute for Complex Systems - Complexity-Research, Vienna, Austria

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.

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 $< 20\text{mm}^2$ and RegVol $< 30\text{ml}$), intermediate-risk (EROA $20\text{-}30\text{mm}^2$ and RegVol $30\text{-}45\text{ml}$) and, high-risk (EROA $\geq 30\text{mm}^2$ and RegVol $\geq 45\text{ml}$). In the intermediate-risk group, a RegFrac $\geq 50\%$ 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).

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

Abstract P1764 Figure 1 A-D

