

## Frequency and prognostic impact of right ventricular involvement in acute myocardial infarction

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**Background:** Right ventricular (RV) involvement complicating myocardial infarction (MI) is thought to impact prognosis, but potent RV markers for risk stratification are lacking.

**Purpose:** To assess the frequency and prognostic implications of concomitant structural and functional RV injury in MI.

**Methods:** Cardiac magnetic resonance (CMR) was performed in 1235 patients with MI (STEMI: n=795; NSTEMI: n=440) 3 days after reperfusion by primary percutaneous coronary intervention. Central core laboratory-masked analyses included structural (edema representing reversible ischemia, irreversible infarction, microvascular obstruction [MVO]) and functional (ejection fraction, global longitudinal strain [GLS]) RV alterations. The clinical endpoint was the 12-month rate of major adverse cardiac events (MACE).

**Results:** RV ischemia and infarction were observed in 19.6% and 12.1% of patients, respectively, suggesting complete myocardial salvage in one-

third of patients. RV ischemia was associated with a significantly increased risk of MACE (10.1% versus 6.2%;  $p=0.035$ ), while patients with RV infarction showed only numerically increased event rates ( $p=0.075$ ). RV MVO was observed in 2.4% and not linked to outcome ( $p=0.894$ ). Stratification according to median RV GLS (10.2% versus 3.8%;  $p<0.001$ ) but not RV ejection fraction ( $p=0.175$ ) resulted in elevated MACE rates. Multivariable analysis including clinical and left ventricular MI characteristics identified RV GLS as an independent predictor of outcome (hazard ratio 1.05, 95% confidence interval 1.00–1.09;  $p=0.034$ ) in addition to age ( $p=0.001$ ), Killip class ( $p=0.020$ ), and left ventricular GLS ( $p=0.001$ ), while RV ischemia was not independently associated with outcome.

**Conclusions:** RV GLS is a predictor of post-infarction adverse events over and above established risk factors, while structural RV involvement was not independently associated with outcome.