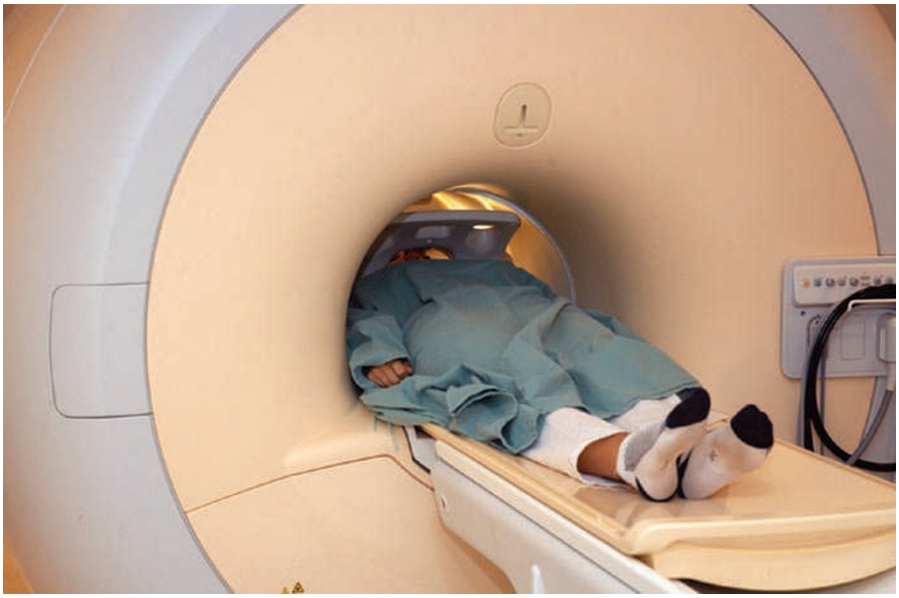
ACUTE CORONARY SYNDROMES

CMR characterization of RV ischemic injury in patients with acute STEMI

Ischemic injury to the right ventricle is currently thought to occur quite commonly after acute myocardial infarction (MI). Indeed, "while we previously almost exclusively focused on the left ventricle when studying infarct patients, right ventricular (RV) assessment has nowadays become part of [standard] cardiovascular magnetic resonance imaging (CMR) evaluation," comments Dr Jan Bogaert, from UZ Leuven, Belgium. Detailed knowledge of the pathophysiology of RV ischemic injury is vital for the development of strategies to aid in RV recovery post-MI; however, our understanding of this process has been limited to date. In an attempt to overcome this problem, Jan Bogaert and colleagues from Belgium and Italy have performed an extensive CMR characterization of RV ischemic injury in 242 patients who had an acute ST-segment elevation MI (STEMI) between May 2006 and September 2008.

All of the evaluated patients had left ventricular (LV) edema and half had RV edema 1 week after STEMI onset. Analysis of the first 70 patients assessed in the study indicated that both LV and RV edema had disappeared in all patients by the 4-month CMR assessment.

Of the 123 patients with RV edema 1 week after STEMI onset, 60% were found to also have RV infarcts at this time; the amount of involved RV myocardium in these patients was smaller than that of the existing edema. Only 20% of the patients with RV edema early after STEMI onset had RV infarcts at the 4-month assessment and the extent of infarction was substantially reduced. Early but nonpersistent RV ischemic injury was associated with recovery of initial RV dysfunction.



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Almost all of the assessed patients (97%) had LV infarcts at both the 1-week and 4-month assessments; half of these infarcts occurred in the inferior wall and half in the anterior wall. RV abnormalities (RV edema ± RV infarction) were contiguous with LV infarcts. Of the patients with anterior LV infarcts, 33% and 11% had RV edema alone and RV edema + RV infarction, respectively. Of the patients with inferior LV infarcts, 75% and 54% had RV edema alone and RV edema + RV infarction, respectively. The extent of RV abnormality was considerably larger in these individuals than in patients with anterior LV infarcts.

"Because of the thin RV wall, the assessment of RV ischemic injury remains challenging," comments Bogaert. "Our future work, therefore, is focused [primarily] on an improvement of RV wall visualization." The researchers are also attempting to obtain a better understanding of the histological correlate of the observed CMR findings.

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Original article Masci, P. G. *et al.* Right ventricular ischemic injury in patients with acute ST-segment elevation myocardial infarction: characterization with cardiovascular magnetic resonance. *Circulation* doi:10.1161/CIRCULATIONAHA.110.940254