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**Title:** Impact of sleep-disordered breathing on myocardial salvage and infarct size in patients with acute myocardial infarction

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**Body:** Background: SDB may be a risk factor for expansion of infarct size early after acute MI by exposing the heart to repetitive oxygen desaturations and increased cardiac afterload. Objectives: The objective of this study was to assess the impact of sleep-disordered breathing (SDB) on myocardial salvage and infarct size within three months after acute myocardial infarction (MI). Methods: Patients with acute MI and percutaneous coronary intervention were enrolled in this prospective observational study. All patients underwent cardiovascular magnetic resonance (CMR) to define salvaged myocardium and infarct size within 5 days and at three months after acute MI. Patients were stratified according to apnea-hypopnea-index (AHI) assessed by polysomnography at baseline into those with (AHI  $\geq$ 15/h) and without (AHI <15/h) SDB. Results: Of the 56 patients included, 29 (52%) had SDB. The area at risk between both groups was similar ( $40\pm 12\%$  vs  $40\pm 14\%$ ,  $p=0.925$ ). Patients with SDB had significantly less salvaged myocardium (myocardial salvage index  $52\%$  vs  $77\%$ ,  $p<0.001$ ), smaller reduction in infarct size ( $0.3\%$  vs  $6.5\%$ ,  $p<0.001$ ) within three months after acute MI, a larger final infarct size ( $23\%$  vs  $12\%$ ,  $p<0.001$ ) and a lower final left ventricular ejection fraction ( $48\%$  vs  $54\%$ ,  $p=0.023$ ). In a multivariate analysis including established risk factors for large MI, AHI was independently associated with less myocardial salvage and a larger infarct size three months after acute MI. Conclusions: SDB was associated with less myocardial salvage and a smaller reduction in infarct size. These findings suggest a contribution of SDB to impaired healing of MI.