

Prognostic Significance of Right Coronary Artery Morphology During ST-Segment Elevation Myocardial Infarction.

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Background: Previous studies have shown that C-shaped morphology of the right coronary artery (RCA) is independently associated with atherosclerotic lesions and endothelial dysfunction. However, its prognostic significance (vs. Sigma-shaped RCA) in patients with ST-segment elevation MI (STEMI) is unclear.

Objective: To evaluate, if a C-shaped RCA is associated with worse clinical outcome than a Sigma-shaped RCA in STEMI patients. The primary end-point was 30 days MACE rate: a composite of death reinfarction and need for target vessel revascularization.

Methods: The study consisted of 1520 patients with STEMI who underwent urgent coronary angiography and enrolled in a prospective Database from 1/2001 to 7/2008. The RCA morphology was determined according to conventional angiographic images and only patients with dominant RCA were included. Data on clinical outcomes with a follow-up of up to 3 years was collected.

Results: In left coronary system-related STEMI, patients with a C-shaped RCA had worse outcome than patients with a Sigma-shape (30 days: death- 8.2% vs. 2.9%, p=0.037; MACE- 22.6% vs. 12.6%, p= 0.004). These differences were independent of existing RCA stenosis (p=0.007) and were sustained to the end of follow-up (Figure). Among patients with RCA-related STEMI, there was no association between RCA morphology and MACE rate (30 days: 9.8% vs. 8.9%, p=0.85).

Conclusions: In STEMI patients with a culprit in the left coronary system, those with C-shaped RCA have worse clinical outcome than those with Sigma-shaped RCA. Evaluating the RCA morphology in left STEMI patients may improve risk stratification of STEMI. However, the pathophysiological mechanism underlying these findings warrants further evaluation.

