

Coronary Plaque Characteristics According to the Renal Function in Patients with Acute Myocardial Infarction: An Intravascular Ultrasound Analysis

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OBJECTIVES: We used intravascular ultrasound (IVUS) to assess plaque characteristics in acute myocardial infarction (AMI) patients with varying degrees of renal dysfunction. **METHODS:** We used IVUS to assess plaque morphology and morphometry in 310 acute myocardial infarction (AMI) patients (125 ST segment elevation and 185 non-ST segment elevation MI) with varying degrees of renal dysfunction according to creatinine clearance (CrCl): Group I [CrCl >70 ml/min (n=153)]; Group II [CrCl 30 to 69 ml/min (n=103)]; Group III [CrCl <30 ml/min, (n=54 including 20 dialysis patients)]. **RESULTS:** Reference segment and lesion site plaque burden were greatest ($30.1 \pm 12.3\%$ vs. $36.9 \pm 11.4\%$ vs. $41.2 \pm 10.8\%$, $p=0.003$, and $77.4 \pm 11.0\%$ vs. $79.8 \pm 12.5\%$ vs. $82.0 \pm 10.3\%$, $p=0.031$, respectively) and lesions were longest (20.9 ± 9.1 mm vs. 23.1 ± 9.5 mm vs. 26.3 ± 9.6 mm, $p=0.038$) in lowest CrCl group. Infarct-related artery plaque rupture (31.4% vs. 34.0% vs. 53.7% , $p=0.011$), multiple plaque ruptures (11.1% vs. 12.6% vs. 33.3% , $p<0.001$), and IVUS-detected thrombus (22.9% vs. 23.3% vs. 40.7% , $p=0.027$) were most common in lowest CrCl group. During one-year follow-up, the incidences of non-fatal MI (2.6% vs. 4.9% vs. 11.1% , $p=0.044$) and cardiac death (3.9% vs. 6.8% vs. 14.8% , $p=0.024$) were observed most frequently, and there was a strong trend toward highest incidence of stent thrombosis (2.0% vs. 3.9% vs. 9.3% , $p=0.057$) in lowest CrCl group. **CONCLUSIONS:** A significant decrease in renal function was associated with more diffuse atherosclerosis, more unstable plaque morphology, and poor clinical outcome in patients with AMI.