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Prognostic Value of Serum Uric Acid and 1-Year Arterial Stiffness Progression for Long-Term Cardiovascular Events in ACS Patients Undergoing PCI

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Background: Uric acid and arterial stiffness are independent predictors of cardiovascular risk. However, their combined prognostic value in acute coronary syndrome (ACS) patients undergoing percutaneous coronary intervention (PCI) remains unclear.Methods: In a prospective cohort, we enrolled 240 ACS patients who underwent successful PCI. Serum uric acid and brachial-ankle pulse wave velocity (baPWV) were measured at baseline and again at 1-year follow-up. Patients were subsequently followed for the occurrence of major adverse cardiovascular events (MACE) beyond 1 year, including cardiovascular death, myocardial infarction, target vessel revascularization, or hospitalization for heart failure. Multivariable logistic regression was performed to identify independent predictors of future MACE based on baseline and 1-year laboratory values and arterial stiffness measurements.Results: During follow-up beyond the first year, MACE occurred in 34 patients (14.2%). The mean time to MACE occurrence was 18.2 +/- 5.9 months after PCI. Higher baseline uric acid was independently associated with increased MACE risk (odds ratio 1.45, 95% confidence interval 1.08-1.94, p=0.012). A PWV increase greater than 1.5 m/s between baseline and 1-year follow-up was also independently associated with subsequent MACE (OR 1.62, 95% CI 1.17-2.35, p=0.006). Patients with both high baseline uric acid and significant PWV progression had the highest event rate (24.5%).Conclusion: In ACS patients treated with PCI, baseline uric acid and 1-year progression in arterial stiffness were independently associated with long-term cardiovascular outcomes. These markers may assist in post-PCI risk stratification.