Predicting acute kidney injury and future cardiac events using urinary liver-type fatty acid-binding protein in patients with acute myocardial infarction

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Background: Urinary liver-type fatty acid-binding protein (L-FABP) has been known as a candidate biomarker for early detection of acute kidney injury (AKI). It has also been suggested to have an effective predictive value for cardiovascular mortality in patients. Therefore, this study aimed to examine the ability of urinary L-FABP in predicting AKI and future cardiovascular events in patients with acute myocardial infarction (AMI).

Methods: We evaluated consecutive 258 patients with AMI. Urinary L-FABP was measured at admission and a 2-year follow-up was performed. AKI was defined as an increase of $>$0.3 mg/dl in serum creatinine level within 2 days after emergency percutaneous coronary intervention. The composite endpoint was cardiovascular death, nonfatal myocardial infarction, nonfatal stroke, or hospitalization for heart failure.

Results: AKI was detected in 20 patients (7.8%). Patients with AKI had significantly higher urinary L-FABP levels (68.0 µg/gCr vs 3.1 µg/gCr, $p<0.001$) compared to those with non-AKI. Receiver operating characteristic analysis showed urinary L-FABP levels exhibited 85.7% sensitivity and 96.0% specificity, at a cutoff value of 29.7 µg/gCr. We used propensity score analyses to balance measurable confounders between patients with and without AKI, including age, left ventricular ejection fraction, an inflammation marker, renal function, and albuminuria. In logistic regression adjustment with the propensity score, urinary L-FABP level of $>$29.7 µg/gCr was an independent predictor of AKI (p=0.001). Furthermore, high urinary L-FABP ($>$29.7 µg/gCr) on admission correlated with an increased risk of the composite endpoints during 2-year follow-up in the Kaplan–Meier analysis ($p<0.001$).

Conclusions: Urinary L-FABP level may be a useful biomarker for predicting not only the onset of AKI but also adverse cardiovascular events in patients with AMI.