

Predictive Value of Serum Cystatin C,  $\beta_2$ -Microglobulin, and Urinary L-FABP on the Development of Contrast-Induced Nephropathy

<sup>1</sup>Yokohama Sakae Kyosai Hospital

Tsuyoshi Nozue<sup>1</sup>, Ichiro Michishita<sup>1</sup>, Kei Yamamoto<sup>1</sup>, Ryo Kamijima<sup>1</sup>, Yuya Kimura<sup>1</sup>, Hironasa Katoh<sup>1</sup>, Taku Iwaki<sup>1</sup>, Ichiro Mizuguchi<sup>1</sup>, Motohiro Miura<sup>1</sup>

**Background:** Contrast-induced nephropathy (CIN) has been recognized as a serious complication of diagnostic coronary angiography and percutaneous coronary intervention (PCI), and has been associated with prolonged hospitalization and adverse clinical outcomes. Useful predictors of CIN are necessary to minimize the risk of developing CIN. **Methods:** We prospectively measured serum cystatin C (CysC) and  $\beta_2$ -microglobulin ( $\beta_2$ -MG), and urinary liver-type fatty acid-binding protein (L-FABP),  $\beta_2$ -MG and N-acetyl- $\beta$ -D-glucosaminidase (NAG) before and 1 day after percutaneous coronary intervention (PCI) in 96 patients undergoing elective PCI. **Results:** The frequency of CIN was 5% (5/96). Baseline serum  $\beta_2$ -MG ( $4.2 \pm 2.6$  vs.  $2.2 \pm 1.0$  mg/L,  $p=0.0007$ ) and CysC ( $1.51 \pm 0.52$  vs.  $1.11 \pm 0.34$  mg/L,  $p=0.013$ ) levels were significantly higher in the CIN group. Urinary  $\beta_2$ -MG, NAG, and L-FABP levels became significantly elevated after PCI. Of these, the mean change of urinary L-FABP was significantly bigger in the CIN group ( $25.2 \pm 31.5$  vs.  $8.9 \pm 16.3$  ng/mL,  $p=0.044$ ). Univariate linear regression analysis showed that the mean change of urinary L-FABP correlated positively with the volume of contrast medium ( $r=0.460$ ,  $p<0.0001$ ). Receiver-operating characteristic analysis showed that baseline serum  $\beta_2$ -MG exhibited 75% sensitivity and 80% specificity at a cut-off point of  $>2.8$  mg/L for detecting CIN, and baseline serum CysC exhibited 75% sensitivity and 73% at a cut-off point of  $>1.26$  mg/L. **Conclusions:** Baseline serum  $\beta_2$ -MG and CysC were useful predictors of CIN. The change in urinary L-FABP serves as an indicator of renal injury due to contrast medium and as an adjunct predictor of CIN.