

Renal Flow Reserve and Renal Resistance Index after Successful Percutaneous Renal Angioplasty for Renal Artery Stenosis
Predict Renal Functional Recovery

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(Background) It has been reported that renal flow reserve (RFR) and renal resistance index (RI) can be estimated using intrarenal bolus injection of dopamine ($50 \mu\text{g}/\text{kg}$). The purpose of this study was to assess the relationship between RFR and RI after percutaneous renal angioplasty (PTRA) and to investigate their impact on renal functional recovery in patients with atherosclerotic renal artery stenosis (ARAS). (Methods) Eight patients with ARAS who underwent PTRA were enrolled and studied. Renal artery flow velocity at distal site of the stenosis was measured after PTRA using Doppler guide wire (FlowWire, Volcano therapeutics, USA), and repeated after an intrarenal bolus injection of dopamine ($50 \mu\text{g}/\text{kg}$). RFR was defined as renal artery averaged peak flow velocity (APV) at hyperemia divided by renal artery APV at baseline. RI was calculated as the ratio of mean blood pressure (MBP) to APV at hyperemia. Creatinine clearance (CCr) was measured before and after PTRA. (Results) All patients underwent successful PTRA. RFR after PTRA correlated well with Ccr after PTRA ($r=0.51$, $p=0.050$). Similarly, RI correlated well with Ccr after PTRA ($r=0.67$, $p=0.046$). (Conclusions) RFR and RI immediately after PTRA may predict renal functional recovery in patients with ARAS.