Objective To investigate the changes of renal resistive index (RRI) and the serum levels of necrosis α (TNF-α) and interleukin 10 (IL-10) in patients with hypertensive renal damage, whereby to explore the correlation of RRI, TNF-α and IL-10 with the hypertensive renal damage.

Methods Seventy three patients with primary hypertension were divided into two groups according to their urinary albumin excretion rate (UAER): normal urinary hypertensive group (n=37), hypertensive renal damage group (n=36). RRI was measured using Doppler ultrasonography, serum TNF-α and IL-10 using radioimmune assay. Thirty normotensive healthy persons were selected as normotensive control group.

Results RRI and TNF-α were significantly higher and IL-10 significantly lower in patients with essential hypertension than those in normotensive control group (p<0.5), and in patients with hypertension, those with renal damage had higher RRI and TNF-α and a lower IL-10 than those without (p<0.5), with a statistically significant difference among groups (p<0.5). RRI, TNF-α and IL-10 were found to have correlations with UAER (r=0.801, p<0.01; r=0.703, p<0.01; r=−0.613, p<0.01), but no correlation with the level of blood pressure, and RRI positively correlated with TNF-α (r=0.609, p<0.001), negatively with IL-10 (r=−0.533, p<0.01).

Conclusions RRI is remarkably increased in patients with hypertensive renal damage, whereby can be used as a parameter, together with UAER, in evaluating hypertensive renal damage. TNF-α is increased and IL-10 decreased significantly in patients with hypertensive renal damage, indicating that the imbalanced cytokine network may play a role in the pathological mechanisms of hypertensive renal damage.