Repeated ischemia/reperfusion leads to acceleration of AKI to CKD progression in rats

Shuhei Kobuchi

Dept. Pharm.,Pharmacol., Hyogo Univ. Health Sci.

Ischemia/Reperfusion (I/R) injury contributes to acute kidney injury (AKI) and subsequent chronic kidney disease (CKD). I/R injury model by single clamping renal artery is usually used. However, the mortality is high if the renal damage is severer and the AKI to CKD transition is not occurred if the damage is mild. The aim of study is to produce the new model of AKI to CKD transition with high survival rate and high reproduce. The rats were divided four groups, sham, single I/R, twice I/R and three time I/R. Animals were anesthetized by medetomidine, midazolam and butorphanol and the left artery and vein were clamped for 45 minutes 2 weeks after contralateral nephrectomy. Animals were sacrificed third I/R or sham-operation after 8 weeks and we measured renal functional parameters. Rats of all groups were alive. Urinary excretion of protein was progressively increased in second and third I/R although the other renal functional parameters were not changed. There was not significant change of renal functional parameters in sham and single I/R. These findings suggest that repeated I/R leads to glomerular injury. In conclusion, repeated I/R-injury model is possibly useful for investigation of AKI to CKD transition.