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Uric acid and CKD progression with the review of recent multi-center studies

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Hyperuricemia is considered as a risk factor of chronic kidney disease (CKD), hypertension, metabolic syndrome and cardiovascular disease, but there is no consistent cutoff level for hyperuricemia and there is no universally accepted recommendation for urate-lowering therapy in asymptomatic hyperuricemia. Uric acid acts as an antioxidant in the extracellular environments, but intracellular uric acid provokes pro-inflammatory response and proximal tubular dysfunction with the release of inflammatory cytokines. The renal tubular density is related to uric acid levels in glomerular disease. Hyperuricemia may be associated with progression of CKD, but the recent meta-analysis did not show that allopurinol retards the CKD progression whereas another meta-analysis including 19 randomized controlled trials (RCTs) demonstrated the renal benefits and improving in blood control. In several randomized controlled trials, febuxostat effectively controls hyperuricemia and delays the progression of CKD, but others did not. These different results make it difficult to draw consistent recommendations. There are several ongoing trials about the benefits of urate-lowering therapy with febuxostat. Although there was no consensus in treatment of asymptomatic hyperuricemia and there are still several unsolved questions, patients with coronary artery disease, CKD and early onset hypertension with persistent hyperuricemia may likely to have benefits with urate-lowering therapy.