고혈압과 신장 질환에서 요산의 역할

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Uric Acid in Hypertension and Renal Disease: the Chicken or the Egg?

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Although it has been recognized that hyperuricemia is associated to hypertension or renal dysfunction dates to the late 19th century, uric acid has been regarded as a marker of decreased renal function rather than a risk factor for the development or progression of renal disease. Originally the focus was whether gout might cause kidney disease via the deposition of crystals associated with inflammation, and hence manifest as an "extra-articular" form of gout. Natural history studies prior to the availability of uric acid-lowering drugs reported that up to 25% of gouty subjects developed proteinuria, 50% developed renal insufficiency, and 10% to 25% developed end-stage renal disease. However, there was a debate of "chronic urate nephropathy" as a true disease entity since focal deposition of uric acid crystals could not be a mechanism to explain the diffuse renal injury observed in biopsies of gouty patients with chronic kidney disease (CKD). Hence, gouty nephropathy was viewed as a non-entity, and since then most nephrologists do not measure uric acid or consider it as a risk factor in the management of CKD. Recent epidemiologic studies in healthy population or the subject with established kidney disease have reported the independent role of uric acid in lowering glomerular filtration rate and increasing the risk for new-onset kidney disease. Furthermore, lowering uric acid in patients with established renal disease is found to stabilize renal function independent with other confounders, suggesting the causative role of uric acid in progression of CKD, rather than an incidental findings related to CKD severity. Recent epidemiologic and interventional studies have also provided provocative data that uric acid may be a true risk factor for hypertension. Given the consideration of the worldwide epidemic of cardiovascular disease (CVD) and CKD and an importance of identifying modifiable risk factors of these diseases, clinical implication of hyperuricemia needs to be re-considered with large randomized clinical trials to investigate whether uric acid-lowering therapy plays a role in halting the progression of CVD and/or CKD.