Abstract  BACKGROUNDS:  

Hyperuricemia and metabolic acidosis have emerged as important risk factors for progression of kidney disease. In this study, we aimed to investigate the effects of allopurinol on metabolic acidosis and endothelial functions in hyperuricemic stage 2-4 chronic kidney disease (CKD) patients.

METHODS:  

Thirty patients with stage 2-4 CKD and serum uric acid levels over 5.5 mg/dl were included in the study group. They were prescribed 300 mg/day per oral allopurinol treatment for three months. Age- and gender-matched CKD patients (n = 30) with similar clinical characteristics were taken as the control group and were not given allopurinol treatment. Endothelial functions were measured via flow-mediated dilatation (ΔFMD %) over the forearm. pH and HCO3 levels in venous blood, Cr clearance and proteinuria levels were calculated in all patients at baseline and in the third month.

RESULTS:  

Serum uric acid levels significantly decreased in the study group from 7.9 ± 1.6 to 6.4 ± 1.7 (p < 0.001). Cr clearance (from 43.4 ± 20.1 to 51.4 ± 24.9, p = 0.011), serum bicarbonate levels (from 21.4 ± 3.4 to 23.0 ± 3.4, p = 0.007) and ΔFMD % values (from 5.8 ± 2.5 to 6.2 ± 2.7, p = 0.006) increased significantly in the allopurinol group. There were no significant changes except for ΔFMD % values (decreased from 6.27 ± 1.62 to 5.71 ± 1.90, p = 0.005) in the control group. ΔFMD % variations within the two groups were clearly significant in the repeated ANOVA general linear model.

CONCLUSION:  

We assume that decreasing uric acid levels with allopurinol treatment seems to be helpful in restoring endothelial functions, preventing metabolic acidosis and slowing down the progression of CKD.