

## CHRONIC KIDNEY DISEASE

## Association of carotid artery intima–media thickness with CKD in patients without cardiovascular disease

The association of chronic kidney disease (CKD) with cardiovascular mortality is well established. According to Mahmut Yilmaz and colleagues, this association may not always be linked to accelerated atherosclerosis. “The rapid normalization of intima–media thickness that occurs concurrently with the normalization of fluid balance after transplantation suggests that factors other than atherosclerotic plaques are responsible for the increased intima–media thickness in patients with CKD”, explains Yilmaz.

Carotid artery intima–media thickness—a marker of atherosclerotic plaques—is elevated in many patients with CKD. However, evidence suggesting that intima–media thickness may also be increased by shear stress led Yilmaz and colleagues to hypothesize that factors unrelated to atherosclerosis, such as fluid overload and endothelial dysfunction, may affect intima–media thickness in patients with CKD. The researchers investigated this hypothesis by

characterizing predictors of intima–media thickness in 406 patients with CKD but without risk factors for atherosclerosis. They found that intima–media thickness was inversely correlated with renal function. By contrast, no association between intima–media thickness and traditional risk factors for cardiovascular disease was found.

“...factors other than atherosclerotic plaques are responsible for the increased intima-media thickness...”

The researchers also assessed intima–media thickness in patients before and after renal transplantation. They found that intima–media thickness decreased within 30 days of transplantation and reached normal thickness by 90 days after transplantation.

The researchers say that the lack of association between intima–media

thickness and cardiovascular risk factors, together with the rapid normalization of intima–media thickness after transplantation, indicates that the association between increased intima–media thickness and mortality in patients with CKD is not entirely attributable to atherosclerosis. “These findings support our hypothesis that fluid overload and endothelial dysfunction or other factors that are closely related to renal function are the main drivers of intima–media thickness in CKD”, summarizes Yilmaz.

The researchers plan further studies to investigate the effect of aggressive correction of fluid overload on endothelial function and cardiovascular disease in patients with CKD.

Susan J. Allison

**Original article** Yilmaz, M. I. *et al.* Predictors of carotid artery intima-media thickness in chronic kidney disease and kidney transplant patients without overt cardiovascular disease. *Am. J. Nephrol.* 31, 214–221 (2010)