CAROTID INTIMA MEDIA THICKNESS PREDICTS RENAL OUTCOME AND CARDIOVASCULAR EVENTS IN PATIENTS WITH CHRONIC KIDNEY DISEASE

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Introduction and Aims: Carotid intima-media thickness (CIMT) is known not only as a marker of systemic atherosclerosis but also a simple marker of vascular endothelial disorder. However, in patients with chronic kidney disease (CKD), its role remains unclear. We retrospectively evaluated the role of CIMT as a predictive marker of renal outcome in CKD.

Methods: We retrospectively enrolled 243 patients newly diagnosed with CKD stage 4, 5 not on dialysis at a single department of nephrology between March 2008 and December 2013. Patients who did not undergo carotid artery ultrasound examination within three months from first visit and required dialysis within three months from first visit were excluded. On carotid artery ultrasound examination, we measured CIMT at three points of the common carotid artery bilaterally and calculate the mean CIMT and plaque score. Primary endpoint was end-stage renal disease requiring dialysis. Secondary endpoint was a composite of end-stage renal disease requiring dialysis and non-fatal cardiovascular events, analyzed as time to the first event. Endpoint-free survival was calculated by Kaplan Meier analysis and compared by the log-rank test. We used Cox proportional hazards analysis to determine the independent predictor for both endpoints among clinical data at the time of referral to a nephrologist. Adjusted splines curves were used to determine the best cut-off value of CIMT to predict both endpoints.

Results: The final analysis included 138 participants with a median follow-up of 24.7 (interquartile range, 12.2-30.2) months. Among these 138 subjects, median age was 68 (interquartile range, 57-76) years, 63.0% were men, 55.8% had diabetes mellitus, 31.2% had a history of cardiovascular disease, and median creatinine level was 3.25 (interquartile range, 2.29-4.53). Mean CIMT was 0.95 (0.75-1.24) mm and plaque score was 6.2 (3.6-10.4). During the study period, 91 (65.9%) patients required dialysis and 108 (78.2%) reached the composite endpoint. After adjustment with other established predictive factors of renal outcome, mean CIMT (per 0.10-mm increase) was found not to be a predictive marker for the primary endpoint (HR 2.343, 95%CI 1.080-5.080, p=0.031), but to be predictive for the composite endpoint (HR 1.238, 95%CI 1.072-1.356, p=0.039). Plaque score was not predictive for either endpoint. Adjusted spline curve analysis suggested that the optimal cut-off value of mean CIMT was 1.3 mm for both endpoints. Patients with mean CIMT above the cut-off point showed a significantly poor composite outcome compared with those below the mean CIMT cut-off. (p=0.004)

Conclusions: In this series, CIMT was not predictive of renal outcome, but was predictive of renal endpoint and cardiovascular events.

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