SYNERGISTIC IMPACT OF CHRONIC KIDNEY DISEASE AND DIABETES MELLITUS ON PERIPHERAL VASCULAR ATHEROSCLEROTIC PLAQUE NEOVASCULARIZATION AND INFLAMMATION

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Background: Neovascularization and inflammation in peripheral vascular atherosclerosis is increased in patients with diabetes mellitus (DM). Although chronic kidney disease (CKD) augments thrombotic risk in these patients, the impact of CKD on atherosclerotic plaque progression in the setting of DM remains unknown.

Methods: We compared total atherosclerotic plaque neovascularization, inflammation and lipid core content in lower extremity atherectomy specimens in 46 patients taken at the time of directional atherectomy. Patients were grouped by no CKD/no DM (n=18), DM alone (n=18) and both CKD and DM (n=10). We evaluated neovascularization and inflammation using double-label immunohistochemistry with CD34 for neovessel density and CD68/CD3 for inflammation score. The presence or absence of lipid core was assessed using H&E staining.

Results: Neovessel density was lowest in those without DM or CKD, intermediate with DM alone and greatest among those with both CKD and DM (Figure, p<0.001). Semiquantitative intimal and medial inflammation scores increased in an analogous stepwise fashion. Similarly, lipid core was identified in 27%, 44% and 70% of atherectomy specimens from those without CKD or DM, DM alone and both CKD and DM, respectively (p=0.03).

Conclusion: CKD enhances peripheral vascular atherosclerotic plaque neovascularization, inflammation and lipid content in diabetic patients. These findings suggest plaque progression in diabetic CKD patients might be greater compared to DM alone.