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INFLAMMATION AND APPARENT TREATMENT RESISTANT HYPERTENSION IN PATIENTS WITH CHRONIC KIDNEY DISEASE

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INTRODUCTION: Apparent treatment-resistant hypertension (ATRH) is highly prevalent and associated with cardiovascular disease (CVD) risk in patients with chronic kidney disease (CKD). We analyzed the association of inflammatory biomarkers with ATRH and its complications in CKD patients.

METHODS: ATRH was defined as blood pressure (BP) $\geq$140/90 mm Hg while taking $\geq$3 antihypertensive medications or BP $<$140/90 mm Hg while taking $\geq$4 medications. Analyses included 1,359 Chronic Renal Insufficiency Cohort (CRIC) Study participants with ATRH and 2,008 hypertensive participants without. Logistic regression was used to examine cross-sectional associations of inflammatory biomarkers and ATRH adjusting for demographic, lifestyle, and clinical risk factors and treatments. Cox proportional hazards models were used to assess the impact of inflammatory biomarkers on associations of ATRH with composite CVD and mortality beyond conventional risk factors.

RESULTS: Multivariable-adjusted odds ratio (95% confidence intervals [CI]) of ATRH for the highest tertile vs. lowest tertile of inflammatory biomarker levels was 1.29 (95% CI, 1.05-1.59) for interleukin-6 (IL-6), 1.49 (95% CI, 1.20-1.85) for tumor necrosis factor-α (TNF-α) and 0.77 (95% CI, 0.63-0.95) for transforming growth factor-β (TGF-β). High-sensitivity C-reactive protein, fibrinogen, interleukin-1β, and interleukin-1 receptor antagonist were not significantly associated with ATRH. Adding inflammatory biomarkers to Cox models did not attenuate the significant association of ATRH with CVD and mortality.

CONCLUSIONS: Our findings show higher levels of IL-6 and TNF-α and lower levels of TGF-β were independently associated with odds of ATRH. Targeting specific inflammatory pathways may improve BP control in CKD patients.