Title

Triglyceride and Time to ESRD Across CKD Stages With Adjustment for Other Components of Metabolic Syndrome Among 2.1 Million US Veterans

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Abstract

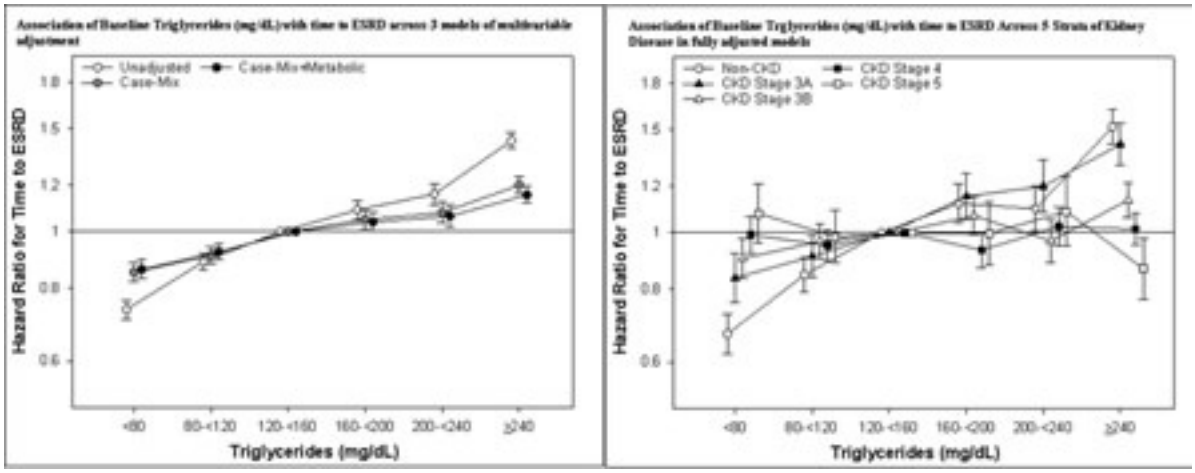
Introduction: Prior studies evaluating associations between metabolic syndrome and its components (including high triglycerides) with kidney disease incidence have shown conflicting results. Moreover, the association of triglycerides (TG) with renal disease endpoints independent of other metabolic syndrome components is still unclear, thus we examined the association of TG with time to end-stage renal disease (ESRD) in consideration of other components of metabolic syndrome and across chronic kidney disease (CKD) stage.

Methods: In a cohort of 2,075,226 US veterans with available serum triglyceride and creatinine between 2004-2006, we examined the association of baseline TG with time to ESRD (transition to renal replacement therapy) with censoring for mortality. Cox models were used to examine associations with hierarchical adjustment: unadjusted, case-mix (including smoking and statin use) and markers of metabolic syndrome (obesity, hypertension, dyslipidemia, and elevated glucose). We also examined associations across strata of baseline CKD stage ascertained at the time of TG measurement.

Results: The cohort was 65+/-14 years old, and comprised 5% females, 15% blacks, 76% non-CKD patients and 22% diabetics. Baseline triglyceride was median [IQR] 129 [88,193] mg/dL. Using TG 120-<160 mg/dL as a reference, we observed a direct linear association of TG with risk of ESRD across all levels of adjustment. Patients with the highest TG >=240mg/dL had a 16% higher risk of ESRD independent of covariates including components of metabolic syndrome (aHR: 1.16, 95%CI: 1.12, 1.20). Across strata of baseline CKD stage, the association was incrementally attenuated and reverses for CKD stage 5. In CKD stage 5, patients with a TG had a slower time to transition to ESRD (aHR: 0.87, 95%CI: 0.77, 0.98).

Conclusions: In this large veteran cohort, higher triglycerides were incrementally associated with a faster progression to ESRD, independent of other components of metabolic syndrome. However, this association

was progressively attenuated across worsening CKD stages. Future studies with considerations for competing death events, time varying covariates and the impact of lipid modifying therapies are warranted.



Triglycerides; Kidney; Metabolic syndrome; Epidemiology; Research