



Plasma Lipids and Risk of Developing Renal Dysfunction: the Atherosclerosis Risk in Communities Study

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ABSTRACT

BACKGROUND: Animal and in vitro data suggest that dyslipidemia plays an important role in the initiation and progression of chronic renal disease, but few prospective studies have been conducted in humans.

METHODS: We studied the relationship of plasma lipids to a rise in serum creatinine of 0.4 mg/dL or greater in 12,728 Atherosclerosis Risk in Communities (ARIC) participants with baseline serum creatinine that was less than 2.0 mg/dL in men and less than 1.8 mg/dL in women.

RESULTS: During a mean follow-up of 2.9 years, 191 persons had a rise in creatinine of 0.4 mg/dL or greater, yielding an incidence rate of 5.1 per 1000 person years. Individuals with higher triglycerides and lower high-density lipoprotein (HDL) and HDL-2 cholesterol at baseline were at increased risk for a rise in creatinine after adjustment for race, gender, baseline age, diabetes, serum creatinine, systolic blood pressure, and antihypertensive medication use (all P trends ≤ 0.02). The adjusted relative risk for the highest versus lowest quartile of triglycerides was 1.65 (95% CI, 1.1, 2.5, P = 0.01) and for HDL was 0.47 (95% CI, 0.3, 0.8, P = 0.003). These associations were significant in participants with normal creatinine (defined as <1.4 mg/dL for men and <1.2 mg/dL for women), with diabetes, and without diabetes. The effect of high triglycerides was independent of plasma glucose, but was weaker and less consistent after further adjustment for fasting insulin in nondiabetics.

CONCLUSIONS: High triglycerides and low HDL cholesterol, but not low-density lipoprotein cholesterol, predict an increased risk of renal dysfunction. The treatment of these lipid abnormalities may decrease the incidence of early renal disease. *Kidney Int.* 2000; 58(1): 293-301



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