Physicians beware: Cholesterol counts in kidney disease patients

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To understand the health effects of high cholesterol levels, doctors first need to assess malnutrition and inflammation status in their chronic kidney disease (CKD) patients, according to a study appearing in an upcoming issue of the *Journal of the American Society Nephrology* (*JASN*).

Patients with CKD often develop and die from cardiovascular disease (CVD). While it's well known that high cholesterol puts people at risk for CVD in the general population, the relationship is not so clear in CKD patients. In fact, research has shown that dialysis patients with higher cholesterol levels die at a lower rate than those with lower cholesterol levels. It's not that high cholesterol is beneficial; rather, it may indicate a lesser degree of malnutrition and inflammation, two serious and interrelated complications of kidney disease.

To see whether malnutrition and/or inflammation might modify the relationship of cholesterol and CVD, Gabriel Contreras MD MPH (University of Miami Miller School of Medicine), senior author Lawrence Appel, MD (Welch Center for Prevention, Epidemiology and Prevention, Johns Hopkins Medical Institutions), and colleagues studied 990 African-Americans with hypertension and CKD who were not yet on dialysis, 31% of whom had malnutrition and/or inflammation. Over the course of 12 years, 20% of patients experienced a new CVD event such as heart attack, stroke, congestive heart failure, or death from heart disease, with similar numbers in the groups with (19%) and without malnutrition and/or inflammation (21%). In the patients with

malnutrition and/or inflammation, high blood cholesterol levels were not associated with CVD events; however, in the patients without malnutrition and/or inflammation (69%), patients' risk of developing a new CVD event increased as cholesterol levels rose. (Compared to patients with cholesterol levels less than 200 mg/dL, patients with cholesterol levels between 200 and 239 mg/dL had a 1.19-fold increased risk; those with cholesterol levels of 240 mg/dL or more had a 2.18-fold increased risk.)

Take-away message: "In CKD patients, the inconsistent and often inverse relationship of cholesterol level with CVD and overall mortality may be explained by the presence of malnutrition and/or inflammation," said Dr. Contreras. "Whereas traditional risk factors such as elevated blood cholesterol levels remain important, they appear to compete and interact with non-traditional risk factors such as malnutrition and inflammation. Doctors caring for CKD patients should take into account the presence of malnutrition and inflammation as they interpret blood cholesterol levels." Malnutrition and/or inflammation complicate blood cholesterol readings in CKD patients, making it important that physicians investigate the causes of high or low cholesterol in their patients.

More information: The article, entitled "Malnutrition-Inflammation Modifies the Relationship of Cholesterol with Cardiovascular Disease," will appear online on September 23, 2010, doi 10.1681/ASN.2009121285

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