Sickle cell trait is not risk factor for kidney disease

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Researchers at Wake Forest Baptist Medical Center report that sickle cell trait is not a risk factor for the development of severe kidney disease in African-Americans. This study, published in the August online issue of *Kidney International*, contradicts findings from a 2010 study that first suggested that having one copy of the sickle cell gene was a kidney disease risk factor.

Individuals with sickle cell trait inherit one sickle cell disease gene and one normal gene variant. Sickle cell trait usually does not have any of the symptoms of sickle cell disease and these individuals live a normal life. Seven to 9 percent of African-Americans in the United States have sickle cell trait.

"Although doctors have known for years that having two copies of the sickle cell gene puts people at an increased risk for developing kidney disease, the 2010 study was the first to suggest that having only one copy of this gene had the same result," said Barry I. Freedman, M.D., professor of nephrology and senior author of the Wake Forest Baptist study. "Had this been true, it would have had huge implications for public health, and caused concern for thousands of African-Americans with sickle cell trait."

Kidney disease is a growing public health problem, with approximately half a million individuals in the United States receiving dialysis treatments to replace the function of their failed kidneys. The problem is particularly problematic in African-Americans, whose rates of kidney disease are four times higher than those of European Americans.

Patients with sickle cell disease are known to develop kidney disease, including increased risk for end-stage kidney disease (ESKD) requiring dialysis, Freedman said.

Freedman's study assessed risk variants in 3,258 unrelated African-Americans from the southeastern United States. His study tested for a genetic association between sickle cell trait and common forms of ESKD in African-Americans.

No evidence of association between sickle cell trait and either diabetic or non-diabetic ESKD was detected in this large sample of African-Americans.

"Our results stand in contrast to a series of 188 patients with ESKD reported by Derebail (Journal of Society of Nephrology, 2010)," Freedman said. "Strengths of this new report include the large sample size, direct genotyping for sickle cell trait and adjustment for African ancestry, age and gender.

"We conclude that African-Americans with one copy of the sickle cell gene are not at increased risk for developing non-diabetic or diabetic end-stage kidney disease, relative to unaffected individuals."

Provided by Wake Forest Baptist Medical Center