Muscle mass may not fully explain higher creatinine in blacks with kidney disease

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Why do black patients with advanced kidney disease have higher levels of creatinine, a standard indicator of kidney function, than whites" Contrary to what doctors have thought, the difference may not necessarily reflect differences in muscle mass related to younger age or differences in body composition, reports a study in the July 2008 issue of the *Clinical Journal of the American Society of Nephrology (CJASN).*

Led by Dr Joy Hsu of University of California, San Francisco, School of Medicine, the researchers measured serum creatinine concentrations and estimated body composition in more than 3,000 dialysis patients. Doctors measure creatinine to estimate how well a patient's kidneys are functioning—a higher creatinine level is generally a sign of lower kidney function. Creatinine levels were compared for black patients versus those of other racial/ethnic groups.

As in previous studies, blacks had higher creatinine levels than non-black patients. "A widely assumed explanation for this racial difference is that black patients tend to develop end-stage kidney disease earlier than whites," Dr Hsu explains. "So blacks on dialysis tend to be younger than whites and persons of other races and ethnicities and so may have more muscle mass, and creatinine is a natural breakdown product of muscle."

To test this assumption, the researchers used a technique called bioelectrical impedance analysis to estimate the patients' muscle mass. "We hypothesized that adjusting for muscle mass and related factors would eliminate or reduce the racial differences in serum creatinine level," says Dr Hsu.

However, even after adjustment, creatinine levels continued to be significantly higher for black patients. "The higher creatinine levels in black patients compared to non-black patients could not be entirely explained by differences in age, sex, body size, or muscle mass," according to Dr Hsu.

In the United States, rates of kidney disease—including end-stage renal disease (ESRD), requiring dialysis or transplantation to replace lost kidney function—are substantially higher among blacks than whites. The higher serum creatinine levels in black patients are another significant difference. "It is also unclear how this racial difference in creatinine levels is related to racial differences in kidney disease," says Dr. Hsu.

If muscle mass isn't necessarily the answer, more research will be needed to find the real reason why black patients have higher blood creatinine levels than white patients, Dr. Hsu adds. "Perhaps the answer or answers to this question will help explain why blacks are affected by progressive chronic kidney disease more so than whites."

Source: American Society of Nephrology