

System that regulates blood pressure is amiss in some healthy, young blacks

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Dr. Matthew Diamond is a nephrology fellow in the Medical College of Georgia School of Medicine. Credit: Medical College of Georgia

When stress increases blood pressure, a natural mechanism designed to bring it down by excreting more salt in the urine doesn't work well in about one-third of healthy, black adolescents, researchers report.

They hope the finding, which is being presented May 8 at the American Society of Hypertension 24th Annual Scientific Program in San Francisco, will lead to early identification of youth at risk of becoming hypertensive adults.

"The way it's supposed to work is the higher your blood pressure goes, the system is supposed to be suppressed so you urinate out more sodium and the blood pressure goes down in response," says Dr. Matthew Diamond, nephrology fellow in the Medical College of Georgia School of Medicine. Dr. Diamond, who is presenting the findings, is a finalist for the society's 2009 Young Investigator-in-Training abstract competition.

The renin-angiotensin-aldosterone system helps

regulate blood pressure, prompting the kidneys to hold onto more salt - and fluid - if it's too low and to get rid of salt when it's high.

But when MCG researchers looked at the system's activity by measuring levels of the hormones it uses to help regulate sodium [excretion](#), the system - which worked essentially perfectly in healthy white adolescents - appeared dysfunctional in a significant number of the black [adolescents](#).

The study involved 168 15-18-year-olds with normal pressures who had been on sodium- and potassium- controlled diets for two weeks. Researchers took blood pressure, urine and [blood](#) samples as participants rested for two hours, played video games intended to stimulate environmental stress, then recovered for two hours at MCG's Georgia Prevention Institute.

"For reasons we don't understand, the black kids have improper suppression of this renin-angiotensin-aldosterone system," Dr. Diamond says.

To make sure the "fight-or-flight" mechanism designed to raise [blood pressure](#) to escape a tight spot was not to blame for holding onto sodium, the researchers measured heart rates but could find no relationship. Fat, which produces aldosterone, a hormone that can increase sodium retention, also was ruled out because participants were not obese.

"There is nothing we know about that is explaining what we are seeing yet we have some pathology here that could potentially explain difficult hypertension in kids," he says.

One of his next steps is screen participants for a genetic mutation that has been linked to hypertensive kidney disease to see if that's a factor that can be used to help identify those at risk for hypertension and kidney disease.

Source: Medical College of Georgia

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