

Abnormal carotid arteries found in children with kidney disease

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A federally funded study led by researchers at Johns Hopkins Children's Center has found that children with mild to moderate kidney disease have abnormally thick neck arteries, a condition known as carotid atherosclerosis, usually seen in older adults with a long history of elevated cholesterol and untreated hypertension.

The findings—published online ahead of print on Sept. 13 in the *Clinical Journal of the American Society of Nephrology*—are particularly striking, the researchers say, because they point to serious blood vessel damage much earlier in the disease process than previously thought. As a result, they add, even children with early-stage kidney disease should be monitored aggressively and treated promptly for both hypertension and high cholesterol to reduce the risk for serious complications down the road.

The researchers caution they are not sure whether the same <u>fatty deposits</u> that clog adult arteries are the reason behind the abnormally thick carotid arteries they observed in the study. But because most of the children involved in the research already had high cholesterol and hypertension—the leading causes of adult <u>atherosclerosis</u>—the investigators believe they are dealing with a disturbingly early onset of this condition in an already vulnerable population.

"Untreated hypertension and high cholesterol increase the risk for longterm <u>vascular damage</u> in any child, but in a child with kidney disease they can wreak much more serious havoc," says study lead investigator



Tammy Brady, M.D., M.H.S., a pediatric nephrologist at Hopkins Children's.

Chronic kidney disease by itself increases <u>cardiovascular risk</u> because of <u>chronic inflammation</u> and altered metabolism, the investigators say. But the presence of any additional risk factors—such as obesity, high cholesterol and hypertension—can further fuel that risk and put children with kidney disease on a path to early heart attack and stroke if left untreated, they add.

In the current multi-center study, which compared 101 children with kidney disease to 97 healthy children, the majority of patients with kidney disease had high blood pressure (87 percent) and elevated cholesterol (55 percent). One-quarter of them were overweight or obese.

Elevated cholesterol and chronically high blood pressure can cause fatty build-up inside the arteries and make them harder and stiffer. A narrowed <u>carotid artery</u>—the neck vessel that carries blood from the heart to the brain—not only restricts blood flow to the brain but is vulnerable to dangerous fatty plaque ruptures that can lead to heart attacks or strokes.

In their study, researchers performed neck ultrasounds to measure the internal thickness of the carotid artery. On average, children with kidney disease had carotid arteries about 0.02 millimeters thicker than those of children without kidney disease, but some children had arteries up to 0.06 millimeters thicker than their healthy counterparts. High blood pressure and elevated cholesterol increased the difference. Children with hypertension had arteries 0.04 millimeters thicker on average, and children with elevated triglyceride levels had arteries that were 0.05 millimeters thicker.

"We cannot emphasize this enough: Pediatricians who take care of



children with chronic kidney disease—even kids with early-stage kidney disease—should screen them early for cardiovascular damage, assess their <u>risk factors</u> and treat hypertension and <u>high cholesterol</u> promptly and aggressively," Brady says.

An estimated 20 million Americans have chronic kidney disease, according to the CDC. Because <u>chronic kidney disease</u> often evolves silently over a period of years, researchers estimate that many adults with late-stage or end-stage kidney disease developed the disease as children.

More information: cjasn.asnjournals.org/content/ ... 130312.full.pdf+html

Provided by Johns Hopkins University School of Medicine

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