Carotid Artery MRI Improves Risk Assessment for Cardiovascular Disease

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OAK BROOK, Ill. — MRI measurements of wall thickness in the carotid arteries improve cardiovascular disease risk assessment, according to a new study appearing in the journal Radiology.

Researchers measured carotid artery wall thickness in 698 men and women with no known history of cardiovascular disease. The participants underwent ultrasound and MRI between 2000 and 2004 to compare carotid artery wall thickness.

From July 2000 to December 2013, the researchers enrolled 698 men and women from the Multi-Ethnic Study of Atherosclerosis (MESA), a major, long-running project involving six major research centers around the U.S. Study participants ranged in age from 45 to 84 years old with a mean age of 63 at first visit and no known history of cardiovascular disease. The participants underwent ultrasound and MRI between 2000 and 2004 to compare carotid artery wall thickness.

During subsequent follow-up, the researchers looked for any correlation between carotid artery wall thickness measurements and coronary heart disease and stroke.

"What we saw was surprising," Dr. Wasserman said. "MRI measures of carotid artery wall thickness were more consistently associated with cardiovascular events than was intima-media thickness using ultrasound. This tells us that perhaps MRI could be a better predictor of cardiovascular events, especially stroke."

Researchers measured carotid artery wall thickness using MRI improves cardiovascular disease risk assessment.

"Wall thickness measurements of the carotid arteries using MRI improves cardiovascular disease risk assessment."

"Researchers measured carotid artery wall thickness in 698 men and women with no known history of cardiovascular disease."

"Vessel wall MRI is a noninvasive technique that can image the entire carotid wall circumference."
Men and women 45 to 84 years of age free of clinical CVD at baseline (n = 6814)

Carotid IMT measured utilizing ultrasound at visit 1 (n = 6814)

Carotid wall thickness measured utilizing MRI at visit 2 (n = 1000)

Participants who underwent both non-contrast proton-density (PD) and gadolinium enhanced (GD) MRI (n = 732)

Excluded 34 participants with missing CVD risk factors

Final study sample size (n = 698)

Figure 1. Study flow diagram. CVD = cardiovascular disease, IMT = intima-media thickness.
Figure 2. Images show common carotid artery (CCA) wall thickness assessment in a 62-year-old man by using, A, ultrasound and, B, MRI.

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