
Atherosclerosis in Abdominal Aorta May Signal Future Heart Attack, Stroke



Two MRI measurements of the abdominal aorta — the amount of plaque in the vessel and the thickness of its wall — are associated with future cardiovascular events, such as a heart attack or stroke, according to a study of more than 2,000 adults. Results of the study are published online in the journal *Radiology*.

“This is an important study, because it demonstrates that atherosclerosis in an artery outside the heart is an independent predictor of adverse cardiovascular events,” said the study’s lead author, Christopher D. Maroules, M.D., a radiology resident at the University of Texas Southwestern Medical Center in Dallas and lead author. “MRI is a promising tool for quantifying atherosclerosis through plaque and arterial wall thickness measurements.”

In the study, researchers analysed abdominal MR images of 2,122 participants (mean age 44) in the Dallas Heart Study, a multiethnic population-based study of healthy adults from Dallas County, Texas. Two measurements were obtained from the MR images: mean abdominal aortic wall thickness, or the thickness of the vessel wall, and the amount of plaque buildup, referred to as the aortic plaque burden.

Following imaging, study participants were monitored for a period of 7.8 years. During that time, 143 participants experienced an adverse cardiovascular event in which arterial blood flow was obstructed, resulting in death or medical intervention. Researchers categorised the events as related to the heart (cardiac events) or to other arteries (called extra-cardiac vascular events) such as those in the brain or abdomen.

Of the 143 cardiovascular events, 34 were fatal. Seventy-three were non-fatal cardiac events, including heart attack or coronary revascularisation, and 46 were non-fatal extra-cardiac vascular events, such as stroke or carotid revascularisation.

Using the MRI measurements, the researchers found that increased abdominal aortic wall thickness correlated with a greater risk for all types of cardiovascular events. An increase in both wall thickness and aortic plaque burden was associated with an increased risk for non-fatal extra-cardiac vascular events.

“These MRI measurements may add additional prognostic value to traditional cardiac risk stratification models,” Dr. Maroules said.

MR imaging of the abdominal aorta is less technically challenging than other vascular imaging exams because of the large size of the vessel and its lack of proximity to a moving organ, such as the heart or the lungs. In addition, images of the abdominal aorta are often captured when patients undergo other exams, such as MRI of the spine or abdomen.

“The abdominal aorta is incidentally imaged on a regular basis,” Dr. Maroules said. “Radiologists can infer prognostic information from routine MRI exams that may benefit patients by identifying subclinical disease.”

According to Dr. Maroules, further MRI research will contribute to a better understanding of the progression of atherosclerosis, which scientists believe begins with a remodelling or thickening of the vessel wall prior to the build-up of plaque.

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