

# Nonobstructive CAD associated with increased risk of heart attack, death

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In a study that included nearly 38,000 patients, those diagnosed with nonobstructive coronary artery disease (CAD) had a significantly increased risk of heart attack or death one year after diagnosis, according to a study in the November 5 issue of *JAMA*.

Nonobstructive [coronary artery disease](#) (CAD) is atherosclerotic plaque that would not be expected to obstruct blood flow or result in anginal symptoms (such as chest pain). Although such lesions are relatively common, occurring in 10 percent to 25 percent of [patients](#) undergoing coronary angiography, their presence has been characterized as "insignificant" or "no significant CAD" in the medical literature. However, this perception of nonobstructive CAD may be incorrect, because prior studies have noted that the majority of plaque ruptures and resultant myocardial infarctions (MIs; heart attacks) arise from nonobstructive plaques. Despite the prevalence of nonobstructive CAD identified by coronary angiography, little is known about its risk of adverse outcomes, according to background information in the article.

Thomas M. Maddox, M.D., M.Sc., of the VA Eastern Colorado Health Care System, Denver, and colleagues compared [heart attack](#) and mortality rates among patients with nonobstructive CAD, obstructive CAD, and no apparent CAD. The patients included in the study were all U.S. veterans who underwent elective coronary angiography for CAD between October 2007 and September 2012 in the Veterans Affairs health care system. Patients with prior CAD events were excluded. CAD extent was defined by degree of vessel narrowing and distribution (1, 2, or 3 vessel).

During the study period, 37,674 patients underwent elective [coronary angiography](#) for indications related to CAD; of those, 22.3 percent had nonobstructive CAD and 55.4 percent had

obstructive CAD. Within 1 year, 845 patients died and 385 were rehospitalized for MI. The researchers found that the 1-year MI risk progressively increased by the extent of CAD, rather than abruptly increasing between nonobstructive and obstructive CAD. Patients with nonobstructive CAD had an associated risk of MI that was 2-to 4.5-fold greater than among those with no apparent CAD. Similar observations were seen with 1-year mortality and the combined outcome of 1-year MI and death.

"These findings highlight a need to recognize that nonobstructive CAD is associated with significantly increased risk for MI, consistent with prior biologic studies indicating that a majority of MIs are related to nonobstructive stenosis [narrowing of an artery]. Correspondingly, these results reveal the limitations of a dichotomous [divided into two parts] characterization of angiographic CAD into 'obstructive' and 'nonobstructive' to predict MI and highlight the importance of preventive strategies such as pharmacotherapy treatments and lifestyle modifications to mitigate these risks," the authors write.

**More information:** [DOI: 10.1001/jama.2014.14681](#)

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