



CARDIOLOGY

Competing Cardiovascular Outcomes

A cardiovascular event is known to occur as a consequence of subclinical atherosclerosis, but knowing just what kind of event is most likely to occur might help direct prevention strategies, suggest researchers from Northwestern University Feinberg School of Medicine in Chicago, Illinois; University of Minnesota School of Public Health in Minneapolis; Tufts Medical Center in Boston, Massachusetts; the National Institutes of Health in Bethesda, Maryland; and the University of Vermont in Burlington.

Subclinical atherosclerosis, measured by coronary artery calcium (CAC), is associated with a higher risk of both multiple cardiovascular disease (CVD) outcomes and non-CVD death. However, to what degree? The researchers aimed to find out in their study of 3,095 men and 3,486 women from the Multi-Ethnic Study of Atherosclerosis. They suggest that their analysis provides a novel way of

understanding the temporal sequence of cardiovascular events associated with atherosclerosis.

The researchers compared risks for specific CVD events and non-CVD death. Over a mean follow-up of 7 years, they recorded 320 CVD events and 157 non-CVD deaths in men and 212 CVD events and 112 non-CVD deaths in women. In women, the hazard ratio (HR) for any CVD event compared with a non-CVD death occurring first for a CAC score of 0 was 1.40; for a CAC score of ≥ 100 , the HR was 3.07. At all strata (0, 1-99, ≥ 100), for both men and women, coronary artery disease (CAD) was the most common first CVD event.

In men, within each stratum of CAC score, any CVD event was the more likely first event, compared with a non-CVD death. The cumulative incidence of any CVD event occurring first in men with no detectable CAC was 4%; the incidence of non-CVD death was 3%. Either CAD death or nonfatal myocardial infarction was the most likely first CVD event across all strata of CAC.

In women, any CVD event was also most likely to occur first across all strata of CAC over non-CVD death (3.2% vs 2.4%, respectively). As with men, the risk increased with the burden of CAC. Similarly, those patients with the highest levels of CAC had significantly greater risks of heart failure as the first event (HR, 6.45).

Nonetheless, participants—even those with the highest levels of CAC—were more likely to die of noncardiovascular rather than cardiovascular causes. But when nonfatal CVD outcomes were included, participants at all levels of CAC were still more likely to experience any CVD event compared with non-CVD death.

Even nonfatal CVD events impose a “tremendous burden” on patients and the health care system, the researchers note. Their results, they suggest, may aid clinicians in determining whether a patient will live long enough to benefit from CVD prevention therapies. ●

Source: Desai CS, Ning H, Kang J, et al. *Am J Cardiol.* 2013;111(11):1541-1546.
doi: 10.1016/j.amjcard.2013.02.003.