Is Cardiovascular Screening Appropriate for Diabetic Patients Who Are Asymptomatic?

Written by Lori Alexander

Diabetes is a potent risk factor for cardiovascular disease (CVD), and cardiovascular (CV)-related mortality is higher among individuals with diabetes. Yet, recommendations for CVD screening among asymptomatic people with diabetes are not straightforward, said Wendy Post, MD, MS, FACC, Johns Hopkins University, Baltimore, Maryland, USA.

The purpose of screening is to identify higher-risk patients who, once identified, can be treated to reduce their risk. "But is this true for asymptomatic people with diabetes?" asked Dr. Post.

Evidence suggests that patients who are at higher CVD risk can be identified with currently available assessment tools. Coronary artery calcium (CAC) has been found to be a "very potent predictor of risk" in both diabetic and nondiabetic individuals, said Dr. Post. In the MESA study, CAC predicted CVD across nondiabetic subjects in four racial/ethnic groups, and a score of greater than 300 was associated with a nearly 10-fold increase in future events (HR=9.67) [Detrano R et al. *NEJM* 2008]. In a London study, CAC was strongly associated with CV events in asymptomatic participants with type 2 diabetes [Dhakshinamurthy VA et al. *Eur Heart J* 2006]. These studies also demonstrated that the CAC score predicted events more accurately than other traditional risk scores (such as the Framingham risk score).

HbA1C is also a potent predictor of risk, according to a meta-analysis of studies in diabetes. Dr. Post noted that the pooled relative risk was 1.18 (CI, 1.10 to 1.26) per 1% point increase in HbA1C [Selvin E et al. *Ann Intern Med* 2004].

The Detection of Silent Myocardial Ischemia in Asymptomatic Diabetic Subjects (DIAD) study has provided perhaps the most important information with which to address the question of screening in asymptomatic diabetic patients. In DIAD, 1123 asymptomatic patients with type 2 diabetes were randomly assigned to screening with adenosine stress radionuclide myocardial perfusion imaging (MPI) or to no screening, and therapy was determined by the treating physicians [Young LH et al. *JAMA* 2009]. MPI identified moderate or large defects in 33 subjects, and the event rate for this group was significantly higher than for patients with normal images (2.4% vs 0.4%; HR=6.3; p=0.001). However, there was no difference between the screened and unscreened groups in terms of myocardial infarction or cardiac death, the primary endpoint of the study, over 4.8 years of follow-up.

In asking why the risk of events is not decreased when diabetic, asymptomatic patients who are at increased risk are identified, Dr. Post noted, "Once we identify people with ischemia, there is no evidence that revascularization will help in patients treated with optimal medical therapy." The results of the COURAGE trial confirm this fact, as percutaneous coronary intervention with optimal medical therapy (OMT) did not improve outcomes over OMT alone, even among the 766 diabetic patients who were symptomatic [Boden WE et al. *NEJM* 2007]. Similar results were found in BARI-2D, in which there was no incremental benefit of early revascularization plus OMT compared with OMT alone in terms of survival among 2287 patients with type 2 diabetes and significant CVD [BARI-2D Study Group. *NEJM* 2009]; however, the early CABG group demonstrated reduced nonfatal MI over the OMT group. Revascularization can be considered in patients with persistent ischemic symptoms while on medical therapy or those with extensive ischemia.

The current guidelines for CVD screening among asymptomatic adults with diabetes provide somewhat conflicting recommendations. In its Standards of Medical Care in Diabetes—2011, the American Diabetes Association (ADA) noted that routine screening for CVD is not recommended, "as it does not improve outcomes as long as CVD risk factors are treated" [ADA. *Diabetes Care* 2011]. However, the 2010 guidelines published by the American College of Cardiology Foundation/American Heart Association (ACCF/AHA) provide somewhat different recommendations, noting that measurement of CAC is "reasonable" and that HbA1C and stress MPI "may be considered" for assessing CV risk in asymptomatic adults with diabetes [Greenland P et al. *Circulation* 2010]. Dr. Post recommended that clinicians follow the AHA/ACC guidelines for preventing CVD in diabetic patients [Buse JB et al. *Circulation* 2007]. She also described an "ABC approach" to CVD prevention that she applies to all patients—diabetic and nondiabetic, with or without symptoms (Table 1)—in order to treat the underlying atherosclerotic process to prevent acute coronary syndromes.

Table 1. ABC Approach to Prevention of CV Risk.

A	• Antiplatelet therapy • Angiotensin-converting enzyme inhibitor • Angiotensin receptor blocker
B	• Blood pressure control • Beta-blocker
C	• Cholesterol management • Cigarette smoking cessation
D	• Diet and weight management • Diabetes prevention and management
E	• Exercise