

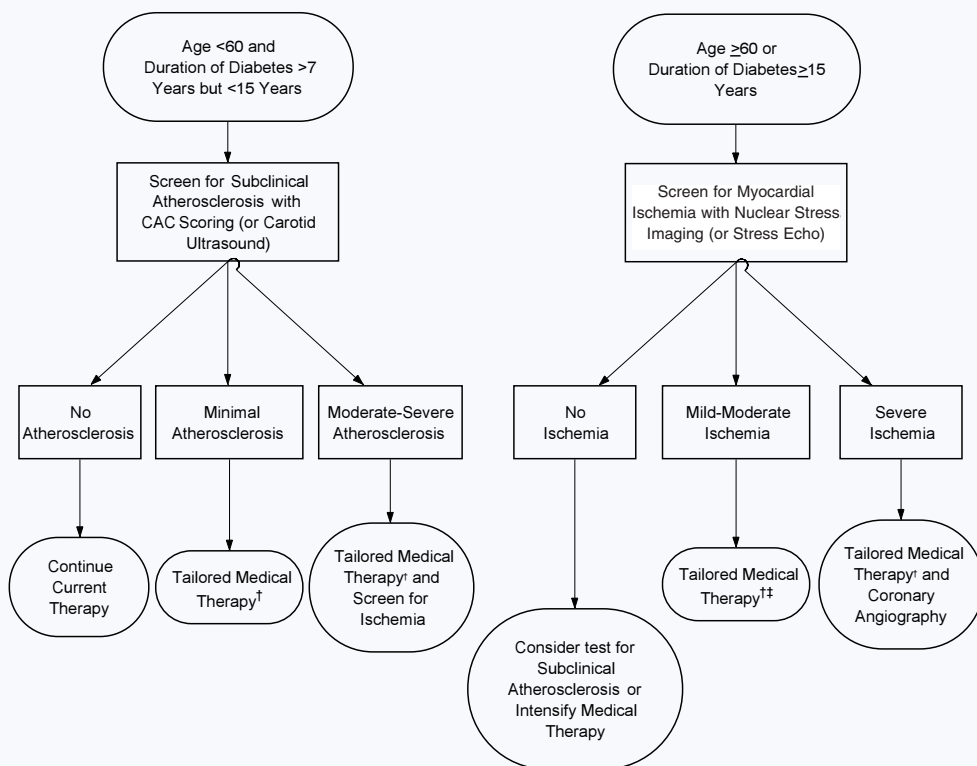
THE CASE FOR SCREENING ASYMPTOMATIC DIABETICS FOR CORONARY DISEASE

Cardiovascular disease accounts for 80% of deaths in diabetics.¹ The risk of MI in patients with diabetes is similar to that of patients without diabetes who have had a previous MI.² Autopsy studies have demonstrated advanced coronary lesions in nearly three-fourths of diabetic individuals without clinically apparent CHD.³ The prevalence of coronary calcification is similar in asymptomatic individuals with type 2 diabetes and nondiabetic individuals with symptomatic CHD.⁴ The prevalence of silent ischemia among asymptomatic diabetics ranges from 20% to greater than 50%.^{5,6} A patient with diabetes and CHD carries a significantly worse prognosis than a diabetic patient without CHD.² Therefore, asymptomatic diabetics should be screened for CHD. In addition to risk stratification, detecting CHD may improve patient motivation to adhere to medical therapy, and may identify a higher risk subset that would benefit from coronary angiography and revascularization.

SCREENING FOR SILENT ISCHEMIA WITH NUCLEAR STRESS IMAGING

The ACC has deemed it appropriate to perform nuclear stress imaging for asymptomatic patients at moderate-to-high risk of CHD, and to repeat a nuclear study in such individuals 2 or more years after a previously normal study.⁷ Patients with diabetes are at moderate-to-high risk for CHD,

Proposed CHD Screening Strategy for Patients with Diabetes* and No Symptoms



*Type 1 or Type 2

†Initiate beta-blocker and angiotensin converting enzyme inhibitor; intensify statin-based therapy to achieve low-density lipoprotein cholesterol <70mg/dL

‡The benefit of revascularization in a patient with no symptoms and no high risk features is unestablished

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and therefore qualify for nuclear stress test screening.

In the DIAD study, adenosine myocardial perfusion imaging (MPI) was used to screen 1,123 asymptomatic patients with type 2 diabetes for myocardial ischemia.⁵ 22% of patients had silent ischemia.

In another study, MPI was compared with angiographic findings in 1,427 asymptomatic diabetic patients without known CHD.⁸ 58% had abnormal MPI, and 18% had a high-risk study. Of those with a high-risk study, 61% had angiographically high-risk coronary disease with an annual mortality rate of 5.9%. Those with low-risk scans also had a

relatively high annual mortality rate of 3.6%.

In a multicenter cohort of 370 asymptomatic patients with diabetes and at least two additional risk factors, Valensi et al identified ischemia in 35% of patients using stress MPI, 43% among patients > 60 years of age.⁹

SCREENING FOR SUBCLINICAL ATHEROSCLEROSIS

Most MIs originate from atherosclerotic plaque that is not obstructive and therefore would not be detected by a test for myocardial ischemia.¹⁰ Since diabetic patients with normal MPI have a higher cardiovascular event rate than nondiabetic patients with a normal study,¹¹ it makes sense to search noninvasively for the presence of subclinical atherosclerosis in asymptomatic diabetics with coronary artery calcium (CAC) scanning or measurement of carotid intima-media thickness (cIMT).

Coronary Artery Calcification

A number of studies have revealed a higher prevalence of CAC in patients with diabetes. Schurgin et al scanned 139 patients with diabetes for coronary artery calcium and compared their findings with nondiabetic individuals.¹² 75% had a CAC score >0, indicating the presence of subclinical atherosclerosis. 25% had CAC scores > 400, compared with 7.2% of randomly selected controls. In a retrospective analysis of more than 1,500 asymptomatic individuals, patients with type 2 diabetes were 2.9 times more likely to have some coronary calcification (CAC score > 0).¹³ In the PREDICT Study, CAC screening was performed in 495 asymptomatic diabetics.¹⁴ Their median CAC score was 119.

A study of 10,377 asymptomatic patients (903 with type 2 diabetes) followed for five years found that for every increase in CAC score at baseline, there was a greater increase in mortality for diabetic than for nondiabetic subjects. Patients with and without diabetes who were found to have no coronary calcification had a low risk of death, approximately 1% at five years.¹⁵

Carotid Intima-Media Thickness

Carotid IMT is a significant predictor of coronary events, and diabetes is associated with increased common carotid artery IMT.^{16,17} Yamasaki et al followed 287 patients with type 2 diabetes for three years and determined that baseline cIMT independently predicted nonfatal CHD events.¹⁸

SUMMARY

Subclinical atherosclerosis and silent ischemia in asymptomatic diabetics is common. Screening such patients according to traditional risk factors will frequently fail to identify CHD, thus losing the opportunity for early

diagnosis and intensified management. A more aggressive approach to identifying asymptomatic coronary disease should therefore be applied to this patient population.

RECOMMENDATIONS

Identification of subclinical atherosclerosis and ischemia in asymptomatic patients with diabetes is worthwhile for risk stratification and for guiding therapy. In a recent review, Dr. Yasmine Ali and I proposed an approach to identify more high-risk individuals in a pre-symptomatic phase (see Figure).¹⁹ Further research is needed to define the optimal approach.

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