Potential Implications of Coronary Artery Calcium Testing for Guiding Aspirin Use Among Asymptomatic Individuals With Diabetes

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OBJECTIVE—It is unclear whether coronary artery calcium (CAC) is effective for risk stratifying patients with diabetes in whom treatment decisions are uncertain.

RESEARCH DESIGN AND METHODS—Of 44,052 asymptomatic individuals referred for CAC testing, we studied 2,384 individuals with diabetes. Subjects were followed for a mean of 5.6 ± 2.6 years for the end point of all-cause mortality.

RESULTS—There were 162 deaths (6.8%) in the population. CAC was a strong predictor of mortality across age-groups (age <50, 50–59, ≥60), sex, and risk factor burden (0 vs. ≥1 additional risk factor). In individuals without a clear indication for aspirin per current guidelines, CAC stratified risk, identifying patients above and below the 10% risk threshold of presumed aspirin benefit.

CONCLUSIONS—CAC can help risk stratify individuals with diabetes and may aid in selection of patients who may benefit from therapies such as low-dose aspirin for primary prevention.

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risk category using criteria from the recent aspirin use guidelines. It is noteworthy that within the low and intermediate risk groups, we observed that individuals with CAC >100 had a mortality rate of >10 deaths/1,000 person-years, consistent with a recommendation for aspirin therapy. Additionally, absence of CAC among high-risk individuals translated into a low risk of 6.59 deaths/1,000 person-years.

**CONCLUSIONS**—We have shown that CAC measurements may help risk stratify patients with diabetes across age-group, sex, and RF burden. Most individuals with diabetes <60 years of age have a low near-term risk of <5 deaths/1,000 person-years when CAC = 0. Additionally, we have shown that most individuals with CAC >100 have a mortality rate of >10 deaths/1,000 person-years. We have also demonstrated that individuals with diabetes ≥60 years have a mortality rate of >10 deaths/1,000 person-years, regardless of CAC score, when at least one other RF is present.

Although diabetes is defined by some guidelines as a CHD risk equivalent, the use of aspirin for primary prevention among individuals with diabetes remains controversial. Given the conflicting data, a consensus group recently provided updated recommendations concluding that patients with diabetes with a 10-year CVD risk >10% should receive low-dose aspirin for primary prevention (7), further emphasizing the importance of enhanced risk stratification among individuals with diabetes.

CAC has the potential to identify individuals who are at higher risk and thus might benefit from aspirin (based on a 10-year CVD risk >10%) and who may not otherwise be identified by age and RF-based risk estimates. Additionally, among individuals identified as high risk by age and RF (10-year CVD risk >10% and thus recommended for aspirin), 16% had CAC = 0, which translated into a mortality rate of <10 deaths/1,000 person-years; this suggests that even among individuals classified as high risk by age and RF, absence of CAC can identify individuals with a 10-year CVD risk <10%, whose risk of bleeding from aspirin may outweigh potential benefit.

The main limitation of our data is the use of all-cause mortality in place of CVD event rates. Although most deaths in patients with diabetes are cardiovascular in origin, many CVD events do not result in death. This would predominantly lead to event rate underestimated. Self-reported RF is an additional limitation. Although the absence of continuous risk variables may represent an additional limitation, the use of categorical RF data has been validated as a method of risk stratification (9).

In conclusion, CAC has the ability to help risk stratify individuals with diabetes across age-group, sex, and RF burden and may help identify individuals who may benefit from more aggressive therapy, such as low-dose aspirin, for primary prevention. Our study also points to individuals with diabetes who likely will not benefit from CAC testing; namely those ≥60 years with additional RF, because their 10-year CVD risk is >10%. Although our study is informative, definitive recommendations must come from clinical outcomes trials where treatment decisions are driven by CAC-based risk stratification.

**References**


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