Diabetes Continues to Confer an Adverse Prognosis Following Acute Coronary Syndromes

Donahoe SM, Stewart GC, McCabe CH, et al. Diabetes and mortality following acute coronary syndromes. JAMA 2007; 298:765–75.

Study Overview

Objective. To evaluate the influence of diabetes on mortality following acute coronary syndromes (ACS), including ST-segment elevation myocardial infarction (STEMI) and unstable angina (UA)/non-STEMI (NSTEMI), using a large database.

Design. Subgroup analysis of patients enrolled in randomized clinical trials evaluating ACS therapies.

Setting and participants. 62,036 patients with ACS were identified from 11 independent clinical trials from the Thrombolysis in Myocardial Infarction (TIMI) Study Group conducted between 1997 and 2006. Of 46,577 STEMI patients and 15,459 UA/NSTEMI patients, 10,613 (17.1%) had diabetes. A multivariable model was used to adjust for baseline characteristics, aspects of ACS presentation, and treatments for the ACS event.

Main outcome measures. Mortality at 30 days and 1 year following the initial ACS event.

Main results. 30-day mortality was significantly higher among patients with diabetes than those without diabetes presenting with UA/NSTEMI (2.1% vs. 1.1%; $P < 0.001$) or STEMI (8.5% vs. 5.4%; $P < 0.001$). After adjusting for relevant patient characteristics, aspects of ACS presentation, and treatments for the ACS event, diabetes was independently associated with higher 30-day mortality after UA/NSTEMI (odds ratio [OR], 1.78 [95% confidence interval {CI}, 1.24–2.56]) or STEMI (OR, 1.40 [95% CI, 1.30–2.10]). Mortality at 1 year was also higher in diabetic patients with UA/NSTEMI (7.2% vs. 3.1%; $P < 0.001$) or STEMI (13.2% vs. 8.1%; $P < 0.001$). At 1 year, diabetes was a significant independent risk factor for all-cause mortality in patients presenting with UA/NSTEMI (hazard ratio [HR], 1.65 [95% CI, 1.30–2.10]) or STEMI (HR, 1.22 [95% CI, 1.08–1.38]).

Conclusion. Despite recent advances in therapies for ACS, diabetes continues to be associated with higher mortality at 30 days and 1 year.

Commentary

Over the past 2 decades in the United States, coronary deaths have been reduced due to preventive and aggressive strategies developed for ACS patients; however, these gains have been offset by the increased burden of cardiovascular disease attributed to diabetes [1]. Using a large group of patients from various TIMI trials, Donahoe et al showed that diabetes continues to be associated with increased mortality. Also concerning is their finding that 1-year mortality of patients with diabetes presenting with UA/NSTEMI approached that of patients without diabetes presenting with STEMI.

This study by Donahoe et al is well-designed, with adjustment for many clinically relevant risk factors; however, there are several limitations to this type of analysis. The database pooled patients from several different clinical trials, and the effect of the different therapies under study in each trial was

Outcomes Research in Review SECTION EDITORS

Harvey J. Murff, MD, MPH
Vanderbilt University Medical Center
Nashville, TN

Mark S. Horng, MD, MPH
VA Greater Los Angeles Healthcare System
Los Angeles, CA

Ashish K. Jha, MD, MPH
Brigham and Women's Hospital
Boston, MA

Ula Hwang, MD, MPH
Mount Sinai School of Medicine
New York, NY

Lisa M. Kern, MD, MPH
Weill Medical College of Cornell University
New York, NY

Salomeh Keyhani, MD, MPH
Mount Sinai School of Medicine
New York, NY

Nirav R. Shah, MD, MPH
New York University School of Medicine
New York, NY

Robert L. Huang, MD, MPH
Vanderbilt University Medical Center
Nashville, TN

Mark W. Friedberg, MD, MPP
Brigham and Women's Hospital
Boston, MA

not clear. The authors noted that this was a subgroup analysis, and the patients in the subgroup were not predetermined in the individual trials. The largest limitation is that the severity of diabetes was not evaluated. Diabetes status was determined by self-report, and it was not possible to establish whether or not diabetes was well controlled. Measurement of glycemic control, such as by hemoglobin A_{1c} or fasting glucose levels, would have been helpful in this regard. The study also used all-cause mortality instead of cardiovascular death as the outcome of interest.

Applications for Clinical Practice

Diabetes is independently associated with increased mortality in patients with UA/NSTEMI and STEMI, even after adjusting for baseline characteristics and treatment strategies. This study stresses the importance of aggressively treating patients with diabetes as well as initiating optimal medical therapy for ACS. Newer therapies and strategies are needed to ameliorate the adverse impact of diabetes.

—Review by Robert L. Huang, MD, MPH

Reference

1. Ford ES, Ajani UA, Croft JB, et al. Explaining the decrease in U.S. deaths from coronary disease, 1980–2000. N Engl J Med 2007;356:2388–98.

Copyright 2007 by Turner White Communications Inc., Wayne, PA. All rights reserved.