Metabolic Management of the Patient with Ischemic Heart Disease: Diabetes and Metabolic Syndrome

Diabetes Mellitus—A CV Disorder

"Let's get one thing clear," said Mark Creager, MD, Harvard Medical School. "Diabetes is a cardiovascular disorder."

Dr. Creager reviewed links between hyperglycemia and endothelial dysfunction, including the interplay of free fatty acids that increase oxidative stress. "Hyperglycemia activates signaling events at the endothelial level we'd just as soon never got started," he said. "Ultimately, hyperglycemia has a direct effect on thrombosis and fibrinolysis."

GIK Infusion

Raphael Diaz, MD, Estudios Clinicos Latino America (ECLA), Rosario, Argentina, looked at a new treatment option in diabetics with CV disease—glucose, insulin, and potassium (GIK) infusion.

"GIK infusion has been postulated to improve mortality in both diabetic and nondiabetic patients with AMI," Dr. Diaz said. But the data so far has been contradictory.

The Diabetes Mellitus Insulin-Glucose Infusion in Acute Myocardial Infarction (DIGAMI) study had a striking result: diabetic patients admitted for suspected AMI who received GIK infusion had significantly reduced mortality. DIGAMI 2 was a follow-up to the first DIGAMI trial—but failed to demonstrate significant benefit from GIK infusion.

Dr. Diaz served as an investigator for the CREATE-ECLA Trial which examined the effect of GIK infusion on mortality in patients with STEMI. Conducted in more than 20,000 patients with STEMI, the patients were randomly assigned to receive GIK infusion for 24 hours plus usual care or to receive usual care alone.

"The results were disappointing," said Dr. Diaz. "There were no significant differences between the GIK and control groups in rates of cardiac arrest, cardiogenic shock, or reinfarction."

The Chronic Stable Patient

"When we say stable, we're talking about asymptomatic, not free of risk factors," said David J. Schneider, MD, University of Vermont.

Plaque rupture transforms chronic stability into an acute event, "and diabetic individuals are particularly at risk," Dr. Schneider said. "Hyperglycemia is a potent pro-inflammatory factor. And we know that diabetics or patients with metabolic syndrome are hypercoagulable. You have to throw everything you've got at these patients to make a difference."

PCI in Diabetics

"Hyperglycemia is an important predictor of impaired flow in PCI," according to Richard Nesto, MD, Lahey Clinic.

Diabetics presenting for PCI are more often women, obese, with lower EFs and higher CRP levels. "They leave the cath lab in as good a shape as non-diabetics," Dr. Nesto said. But these patients tend to have more restenosis, more progressive disease, and more post-PCI complications including MI, HF, and death.

"It's diabetes' status as a metabolic disorder that contributes to poor long-term outcomes after PCI," said Dr. Nesto.

CABG in Diabetics

"Diabetics have worse post-CABG outcomes than non-diabetics," said Mark Connolly, MD, Cathedral Advanced Cardiothoracic Surgeons.

A group of factors that Dr. Connolly called "the deadly quartet"—diabetes, obesity, hypertension, and hyperlipidemia—carry "ominous risk going in to surgery." Dr. Connolly noted that every 50 mg/dL increase in blood sugar added nearly a day in the hospital (and nearly $3,000 in additional costs).

"Diabetics approaching CABG demand rigorous multidisciplinary care," Dr. Connolly said. "We must focus on intensive glucose control, lipid therapy, diet, and patient education."