

Preface

Hyperglycemia, Cardiovascular Disease, and Hospitalized Patient Outcomes

Hyperglycemia at the time of hospital admission is a significant predictor of increased mortality among patients with acute myocardial infarction (AMI). Furthermore, hyperglycemia and insulin resistance both exacerbate a large number of systemic factors—including matrix metalloprotease production, C-reactive protein, platelet aggregation, fibrinogen, von Willebrand factor, factor VII, factor VIII, tissue factor, and sympathetic nervous system activity—that are known to increase the risk of coronary artery disease or to predict relatively poor clinical outcomes following AMI. Several studies have found that hyperglycemia is associated with abnormalities of myocardial blood flow. Therefore, widespread awareness about effective strategies for hyperglycemia management in hospitalized patients is warranted.

This publication presents 4 articles that focus on the multifactorial complexities associated with hyperglycemia in hospitalized patients. These articles are an outgrowth of presentations made during a symposium for cardiologists and other cardiac care professionals on “Improving Control of Hyperglycemia” held in Dallas, Texas, in November 2005.

The first article reports on study findings that document the impact of hyperglycemia on patient outcomes during hospitalization, including the relationship between diabetes and AMI. This article further discusses the potential impact of interventions that target hyperglycemia as a strategy to improve outcomes in patients with AMI.

The second article describes the anti-inflammatory and antiatherogenic effects of insulin therapy, highlighting various studies that have found that glucose is a pivotal proinflammatory and thrombogenic substance that promotes the development of coronary artery disease and that insulin suppresses inflammation and other mechanisms of vascular disease.

The third article provides an endocrinologist’s view on the practical use of insulin, reporting on the development of an insulin infusion protocol for hospitalized patients with diabetes and the lessons learned through the implementation of this protocol for patients in both critical and noncritical care settings.

The fourth article reports on the findings of the Portland Diabetic Project, which has enrolled >5000 patients with diabetes mellitus to study the effects of perioperative insulin administration on morbidity and mortality after open-heart surgical procedures. Using the mean blood glucose value obtained by measuring glucose levels every 0.5 to 2 hours during the initial 3-day postoperative period as the primary measure of glycemic control, researchers have instituted a continuous intravenous insulin protocol that effectively eliminates hyperglycemia, thereby reducing postoperative mortality and morbidity in patients with diabetes who require cardiac surgery.

With increased attention to achieving glycemic control during hospitalization, patients may experience improvements in clinical outcomes. Additional studies are needed to help clinicians determine specific ways of incorporating insulin infusion therapy into current cardiac care treatment strategies.

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