Acute MI Rates Differ With Two Insulins

BY ELIZABETH MECHCATIE

Type 2 diabetes patients have a greater likelihood of having an acute myocardial infarction if they are treated with insulin glargine than if they are treated with human neutral protamine hagedorn insulin, according to findings from a large retrospective study.

The results are hypothesis generating and should be interpreted cautiously, noted the study's lead author Dr. George G. Rhoads of the University of Medicine and Dentistry of New Jersey School of Public Health in Piscataway and his associates.

However, they do "raise the possibility that specific insulin formulations or regimens might confer different levels of risk of [acute myocardial infarction] in patients with type 2 diabetes mellitus, and that this effect might be independent of the intensity of glucose control," the investigators wrote (Am. J. Cardiol. 2009;104:910-6 [doi:10.1016/j.amjcard.2009.05.030]).

The investigators culled data from the Integrated Health Care Information System, a large administrative database.

All the inpatient claims analyzed were for acute myocardial infarctions (AMIs) among patients who were taking oral antidiabetic agents after initiation of either NPH, a basal insulin (5,461 patients), or insulin glargine, a newer, long-acting synthetic insulin analog (14,730 patients). Their mean age was 56 years.

In the neutral protamine hagedorn (NPH) group, significantly more patients were women and the rates of baseline comorbidities, medical claims for hypoglycemia, and medical service use for diabetes were higher, but the rates of hypertension, hyperlipidemia, and statin use were lower. The average adjusted hemoglobin A_{1c} was about 8% in the two groups.

During a mean 2-year follow-up period after initiating insulin treatment, the risk of an AMI was 56% greater in NPH insulin group, when compared with the insulin glargine group.

The study was sponsored by Sanofi-Aventis, the manufacturer of insulin glargine. An independent statistical analysis was conducted by a University of Medicine and Dentistry of New Jersey statistician. Dr. Rhoads has served as a consultant to Sanofi-Aventis; other authors have served as a speaker, adviser, and consultant for the company. ■

Musculoskeletal Issues in Diabetics Are a Red Flag

BY KATHRYN DEMOTT

Diabetic patients had a significantly greater prevalence of upper limb musculoskeletal abnormalities, compared with patients without the disorder, according to a study.

The presence of musculoskeletal abnormalities among diabetic patients also was associated with poor glycemic control.

Diabetic patients who have musculoskeletal abnormalities should have their glycemic control thoroughly assessed and should be examined for other complications, wrote the study's lead author, Dr. Navdha Ramchurn, from the department of rheumatology at the Gateshead (England) Health NHS Foundation Trust.

Dr. Ramchurn and his colleagues compared 96 patients with type 1 and 2 diabetes (mean age 55 years; 63% male) who were seeking care at the Gateshead Diabetes Center with 100 age- and gender-matched controls who were medical outpatients without diabetes. All patients were screened for musculoskeletal abnormalities using the GALS (gait, arms, legs, spine) instrument and the Regional Examination of the Musculoskeletal System (REMS).

About 75% of the diabetic patients screened positive for on the GALS, compared with 53% of the controls (Eur. J. Intern. Med. 2009 [doi:10.1016/j.ejim.2009.08.00].

Mean hemoglobin A_{1c} values were significantly higher among diabetic patients with hand and shoulder abnormalities, compared with those who had no abnormalities (9.1 vs. 8.0).

The investigators did not have any financial conflicts of interest. ■

CLINICAL GUIDELINES FOR FAMILY PHYSICIANS

Inpatient Glycemic Control

BY NEIL S. SKOLNIK, M.D., AND MERCEDES A. TIMKO, M.D.

Inpatient care of patients with diabetes is an important area of concern because patients with diabetes are hospitalized more often and have a longer duration of hospitalization than patients without diabetes, and hyperglycemia during hospital admissions has been linked to poor outcomes. The evidence defining optimal glycemic goals for diabetic inpatients continues to evolve, and the recommendations continue to change.

Early evidence suggested that intensive treatment of hyperglycemia led to better outcomes. This evidence led the American College of Endocrinology (ACE), the American Association of Clinical Endocrinologists (AACE), the American Diabetes Association (ADA), and others to develop recommendations for managing inpatient hyperglycemia in 2004, with the ADA adding such recommendations to its Standards of Medical Care in 2005.

Guidelines are most useful when they are available at the point of care. A handheld computer version of this guideline is available for download at www.redi-reference.com.

Since these original recommendations, however, additional studies have yielded inconsistent results in the critical care setting. Some studies have shown there is a risk of harm, even increased mortality, with intensive glycemic control, with higher rates of severe hypoglycemia leading to adverse outcomes. These mixed outcomes have led to confusion regarding the correct glycemic goals and how to achieve them. In addition, there is a lack of randomized controlled trial evidence supporting target glycemic goals for general medical and surgical patients.

Upholding the importance of glycemic control, the AACE and ADA created an updated consensus statement in 2009 to guide the management of inpatient hyperglycemia. Key goals of this effort were to define "reasonable, achievable, and safe" blood glucose targets and outline the systems, protocols, and procedures needed to achieve them. In what follows, we summarize this consensus statement for inpatient glycemic control (Endocr. Pract. 2009;15[4]:353-69), detailing recommendations for both critical and noncritical care settings.

Critically and Noncritically Ill Patients

For patients in the critical care setting, initiation of insulin therapy via intravenous infusion is recommended in response to a blood glucose threshold no greater than 180 mg/dL. A goal target range of 140-180 mg/dL is recommended for the majority of critically ill patients. Intravenous insulin infusion is the preferred mode of administration in this setting in conjunction with frequent glucose monitoring for optimization of control and individualized treatment.

A premeal blood glucose target of less than 140 mg/dL and random blood glucose values of less than 180 mg/dL are recommended for most noncritically ill patients treated with insulin so long as such goals can be achieved safely. In more stable patients with tight glycemic control in the outpatient setting, including those using an insulin pump, more stringent goals might be appropriate and achievable. Some patients might even be candidates for diabetes self-management, provided there is clear communication and cooperation with hospital staff. On the contrary, less stringent goals may be most appropriate in patients with severe comorbidities as well as terminally ill patients.

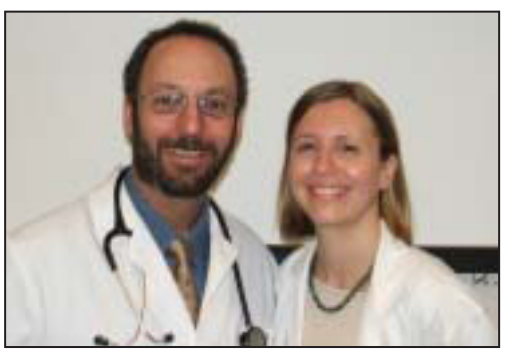
In non-ICU patients with diabetes or stress hyperglycemia, a scheduled subcutaneous insulin administration plan with basal, nutritional, and supplemental/corrective components is recommended. Exclusive use of short- or rapid-acting "sliding-scale" insulin, as prolonged monotherapy is strongly discouraged. It is not considered to be effective in most patients. It can pose a danger in type 1 diabetics and leads to "chasing" hyperglycemia as an afterthought rather than preventing and managing it. Utilizing the concept of correction insulin is preferable, where short-acting insulin is given in addition to basal insulin to correct blood glucose values that are above the target value.

Glycemic management is something that must be reviewed and adjusted appropriately on a daily basis in the context of the individual patient's overall clinical status. Over- and undertreatment of hyperglycemia can pose significant risks. Interpretation of glucose readings should be done with caution in patients who have anemia, polycythemia, or hypoperfusion or who are taking certain medicines. A glucose reading not consistent with the patient's status should be confirmed through a conventional lab assessment of plasma glucose.

Discharge planning, patient education, and clear communication and arrangements with outpatient care providers are critically important for a safe, optimal transition to outpatient glycemic management. For any patient who is hyperglycemic during hospitalization, follow-up should occur within 1 month of discharge.

The Bottom Line

Inpatient glycemic control in both the critical and noncritical care settings is challenging. Over- and undertreatment of hyperglycemia can pose significant risks. The new guideline seeks to present "reasonable, achievable, and safe" glucose targets and outline the resources needed to achieve them. Appropriate management of hyperglycemia in the inpatient setting reduces morbidity and is cost effective. Planning for transition from the inpatient to the outpatient setting for diabetic and otherwise hyperglycemic patients should begin at admission.



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