

Risk Factors for Inpatient Hypoglycemia during Subcutaneous Insulin Therapy in Non-Critically Ill Patients with Type 2 Diabetes

Farnoosh Farrokhi, M.D.,¹ Olena Klindukhova, M.D.,¹ Prakash Chandra, M.D.,¹ Limin Peng, M.D.,² Dawn Smiley, M.D.,¹ Christopher Newton, M.D.,¹ Francisco Pasquel, M.D.,¹ Maria E. Ferreira, M.D.,¹ and Guillermo Umpierrez, M.D.¹

Abstract

Objective:

We aimed to determine risk factors associated with hypoglycemia during subcutaneous insulin therapy in non-critically ill patients with type 2 diabetes.

Methods:

We conducted an analysis of three randomized control trials using basal/bolus regimen and regular sliding scale insulin (SSI) in patients with diabetes admitted to medical and surgical settings.

Results:

We analyzed medical records of 261 general medicine and 211 noncardiac surgery patients treated with basal/bolus regimen with glargine/gulisine ($n = 169$), detemir/aspart ($n = 67$), neutral protamine Hagedorn/regular ($n = 63$), or with SSI ($n = 173$). The overall frequency of mild and severe hypoglycemia (<70 and <40 mg/dl) was 19% and 2%, respectively. During treatment, medical patients experienced a higher number of hypoglycemia than surgical patients (23% versus 13%; $p = .005$), but the rate of severe hypoglycemia was similar between groups (1.9% versus 1.9%; $p =$ not significant). Increasing age, impaired kidney function (glomerular filtration rate < 60 ml/min), total daily insulin dose, and type of insulin regimen (basal/bolus versus SSI) during hospitalization were important contributors for hypoglycemia in both medical and surgical patients. Among these variables, increasing age and type of insulin regimen (basal/bolus versus SSI) were found to be independent predictors of hypoglycemic events.

Conclusions:

Mild hypoglycemic events are common during subcutaneous insulin therapy in medical and surgical patients with type 2 diabetes. Increasing age, impaired renal function, daily insulin dose, and insulin regimen (basal/bolus versus SSI) are important predictors of hypoglycemia during insulin therapy in patients with type 2 diabetes mellitus.

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Author Affiliations: ¹Department of Medicine, Emory University, Atlanta, Georgia; and ²School of Public Health, Emory University, Atlanta, Georgia

Abbreviations: (BG) blood glucose, (GFR) glomerular filtration rate, (ICU) intensive care unit, (NPH) neutral protamine Hagedorn, (SSI) sliding scale insulin, (TDD) total daily dose

Keywords: basal insulin, detemir, glargine, hospital hyperglycemia, hypoglycemia, neutral protamine Hagedorn, sliding scale insulin

Corresponding Author: Guillermo E. Umpierrez, M.D., Emory University School of Medicine, Grady Health System, 49 Jesse Hill Jr. Drive, Atlanta, GA 30303; email address geumpie@emory.edu