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

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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/glulisine (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.