

An Overview of Hypoglycemia in the Critically Ill

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Abstract

Hypoglycemia is a common and serious problem among patients with diabetes mellitus. It is also perceived as the most important obstacle to tight glucose control using intensive insulin therapy in critically ill patients. Because glucose is an obligatory metabolic fuel for the brain, hypoglycemia always represents an emergency that signals the inability of the brain to meet its energy needs. When left untreated, hypoglycemia can result in permanent brain damage and ultimately, death. In the context of critical illness that limits endogenous glucose production and increases glucose utilization, inadequate nutrition, or insufficient provision of glucose, intensive insulin therapy is the most frequent cause of hypoglycemia. Neurogenic and neuroglycopenic symptoms of hypoglycemia can remain unknown because of the underlying critical illness and sedation. Thus, close and reliable monitoring of the glycemic level is crucial in detecting hypoglycemia. In prospective randomized controlled studies comparing the effects of two glucose regimens, intensive insulin therapy aimed to reach strict glucose control (<110 mg/dl) but increased the incidence of severe hypoglycemia (<40 mg/dl) by four- to sixfold. Severe hypoglycemia is statistically associated with adverse outcomes in intensive care unit patients, although a direct causal relationship has not been demonstrated.

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Abbreviations: (ICU) intensive care unit, (FFA) fatty free acids, (RCT) randomized control trial

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