Hyperglycemia Control of the *Nil Per Os* Patient in the Intensive Care Unit: Introduction of a Simple Subcutaneous Insulin Algorithm

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Abstract

Background:

Diabetes patients in the intensive care unit (ICU) and either *nil per os*, on enteral feedings, or on total parenteral nutrition are often treated with sliding-scale insulin (despite lack of evidence showing benefit) or intravenous insulin (IVI) infusion, a nursing intensive procedure requiring hourly glucose measurements, and insulin rate adjustments. We introduced a subcutaneous insulin algorithm (SQIA) that would equal the glucose goals for IVI but have the simplicity of q4 hour adjustable sliding-scale insulin.

Methods:

As part of a quality improvement project, we developed a simple SQIA that titrates insulin to the requirements of the individual patient. Glucoses were monitored q4 h and SQ rapid-acting insulin administered based on both the previous insulin dose and current glucose level. Fourteen consecutive hyperglycemic patients admitted to ICU-A were placed on the SQIA. Glucose and insulin data were also obtained on 18 patients in an identical ICU-B who were treated with the usual IVI protocol, which is q1–2 h.

Results:

Duration on the SQIA was 4.5 ± 0.6 days (range 0.8–7) and on IVI 1.9 ± 0.6 days (range 0.25–9). Due to difference in length on protocols, only data for the first 3 days could be statistically compared. During this time, the mean ± standard error of glucoses for the SQ and IV groups were 157.3 ± 3.8 and 157.0 ± 2.2 (not significant). No differences were seen in hypoglycemia rates.

Conclusions:

A simple SQIA allows insulin doses to be adjusted to the individual patient's needs and meet current ICU goals for glycemic control. Its adoption may reduce the workload of nurses.

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