

Transcript Details

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Dietary Management of Blood Glucose in Critically Ill Overweight & Obese Patients

Announcer:

Welcome to *Navigating Enteral Nutrition* on ReachMD. This medical industry feature, focusing on dietary management of blood glucose in critically ill overweight and obese patients," is produced in collaboration with Nestle Health Science, *Empowering Healthier Lives Through Nutrition*.

Dr. Rice:

Hi, I'm Dr. Todd Rice, an intensivist and Associate Professor of Medicine at Vanderbilt University Medical Center. My area of focus is critical care illness and sepsis. Today, I'll be reviewing the DIVINE Study, sponsored by Nestle Health Science. This was an open-label randomized trial in which we looked at the dietary management of blood glucose in critically ill overweight and obese patients.

First, let's review some background for this study. We know that hyperglycemia is common in the physically stressed critically ill patient, and the primary treatment for that is exogenous insulin. But this is often associated with side effects, like hypoglycemia, which limit its utility.

Customarily, nutrition for critically ill patients mirrors traditional macronutrient recommendations for the healthy population, which is to say approximately 20% protein, 30% fat, and 50% carbohydrate, with goals of meeting 100% of energy needs as soon as possible during the first week following ICU admission. But there have been unexpected negative clinical outcomes associated with ICU hyperglycemia and overfeeding, and these are prompting a reassessment of macronutrient roles in critical illness, particularly protein and carbohydrates.

The purpose of the DIVINE study, which was a multicenter, randomized, open-label clinical trial with parallel design conducted in the U.S. and Canada, was to determine whether using an enteral nutrition formula containing low carbohydrates, medium chain triglycerides, and very high levels of hydrolyzed whey protein could facilitate improved glucose control while avoiding worsening hyperglycemia.

Patients eligible for the study were mechanically ventilated, critically ill, overweight, or obese and required enteral nutrition for at least 5 days.

The experimental group received an enteral formula of 37% hydrolyzed whey protein and 29% carbohydrate, while the control group received an enteral formula of 25% intact casein protein and 45% carbohydrates.

Both the control and experimental groups had 51 patients enrolled, and both groups were similar with respect to age, body mass index, APACHE II score, and diagnosis.

Protein intake was similar between the control and experimental groups on the first 5 days, and energy intake was 18.2 kcal/kg/IBW/d compared to 12.5 kcal/kg IBW/d, respectively. These levels were maintained after the first 24 hours and through day 5 of the ICU stay. The primary difference in total energy intake was through differences in carbohydrates, with 126g/day average in the control group compared to 61g/day average in the experimental group.

Significant differences in metabolic parameters were noted in the experimental group. The use of a hydrolyzed 100% whey protein and low carbohydrate formula as part of a hypocaloric feeding regimen was associated with significant improvement in normalization of blood glucose and a significant decrease in the number of times insulin was administered.

A rationale for better glucose control may be multifactorial and formula-related with improved insulin sensitivity secondary to the nature of the substrate as well as total amounts of protein and energy delivered.

We can conclude from this study that nutritional support for critically ill patients needs to be individualized and is therapeutic. Current data suggests that the use of a very high protein and a lower carbohydrate enteral nutrition formula is associated with both decreased hyperglycemic events and insulin requirements in critically ill overweight and obese patients in a medical intensive care unit.

Announcer:

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