Title of Topic: Gastric residuals in assessment of TF tolerance

Stance: Pro


Discussion of Topic:

Supplemental nutrition support is crucial in the management of patients in the Intensive Care Unit (ICU). In the majority of critically ill patients, enteral nutrition is preferred over parenteral nutrition due to less adverse outcomes (McClave, S. A. et al, 2009). Although it is the preferred method of delivering nutrition, there are still concerns with its use. The main concerns are the potential to develop gastrointestinal (GI) intolerances and/or gastric aspiration. To monitor GI intolerances, measuring gastric residual volumes (GRVs) are used as a tool to evaluate tolerance. This study, along with many others, determined whether setting a limit higher than the 200-250 ml current limit could be used without increasing complications in critical care patients.

For eight months in 2006, a prospective, randomized study included 322 patients (average age of 60-65 years) in 28 participating ICUs in Spain. The study compared the effects of increasing the limit for GRV for mechanically ventilated, enterally fed patients. Only patients fed through a Nasogastric tube were included in the study. Each investigator, who followed the recommendations of a metabolic work group, calculated estimated nutrition needs and selected appropriate formulas for these patients.

Patients were randomly assigned to either a control group or the study group. The control group had a GRV limit of 200 ml while the study group had a GRV limit of 500 ml. GRV was measured every six hours during the first enteral nutrition (EN) day, every eight hours the second day and once per day after the third day of tolerated infusion of formula. Starting on the first day and continuing into the third day, all patients received Metoclopramide as a prophylactic prokinetic agent.

On a daily basis, gastrointestinal complications were determined and recorded. Gastrointestinal complications were defined as abdominal distension, high gastric residuals, vomiting, diet regurgitation, and diarrhea.
Patients were followed a maximum of 28 days or until the end of EN. The study’s primary outcome variables included days on mechanical ventilation, length of stay, diet volume ratio (received/diet prescribed), incidence of GI complications, and ICU-acquired pneumonia.

At the end of the study, frequency of gastrointestinal complications was higher in the group control group (63.6%) vs. the study group (47.8%), which was attributed to the frequency of the high gastric residual volume (HGRV). Also, the average number of HGRV events per patient was higher in the control group (0.96 ± 1.59) vs. the study group (0.44 ± 0.88). Frequencies of the remaining gastrointestinal complications (including abdominal distension, vomiting, diet regurgitation, and diarrhea) were similar in both groups. Duration of mechanical ventilation, length of stay, and frequency of pneumonia were also similar in both groups.

In conclusion, this study found that a limit of 500 ml is not associated with adverse effects such as GI complications. In fact, the frequency of complications was higher in the control group. Therefore, a limit of 500 ml can be used as a recommended limit for measuring GRV in critically ill patients.

**Bottom Line:**

The American Dietetic Association’s (ADA) Evidence Analysis Library (EAL) states: Evaluating GRV in critically ill patients is an optional part of a monitoring plan to assess tolerance of EN. However, holding EN infusion when the GRV is higher than the set limit is associated with delivery of less formula and decreased mean caloric intake. Therefore, using a higher limit for GRV would increase the chances of a patient receiving more formula and better nutrition.

**Opportunities for the RD/DTR:**

Studies have shown that a negative energy balance is related to more complications in the critically ill population. As dietetic professionals, we need to help develop protocols that increase the limit for GRV in order to decrease the energy deficit and promote increased formula infusion into critically ill patients.
References

Critical Illness Evidence-Based Nutrition Practice Guideline. *ADA Evidence Library.*

