STUDY SUMMARY

Clinical Benefits Associated with Use of Peptide-Based Enteral Tube Feeding Formulas in Mechanically Ventilated Adult ICU Patients

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Journal of Parenteral and Enteral Nutrition 2023;47(Supp 2):S92-S93.
Poster Presentation at the 2023 ASPEN Nutrition Science and Practice Conference, Las Vegas, NV

Background

More than 5 million patients are admitted to US intensive care units (ICUs) yearly, with approximately 38.9% requiring mechanical ventilation (MV). Critical Care Guidelines suggest enteral tube feeding (ETF) if duration of MV > 72 hours. Many of these patients experience gastrointestinal (GI) and/or glucose intolerance, associated with decreased ETF delivery and worsened clinical outcomes. Nutritionally complete hydrolyzed 100% whey protein ETF (WPBD) was developed for more efficient absorption and tolerance, and enhanced digestibility.

Objective

The primary objective of this retrospective, cross-sectional real-world observational analysis was to compare characteristics and associations of ETF with clinical outcomes of GI and glucose intolerance in adult MV patients in the ICU receiving WPBD, other peptide-based formulas (OPBD) or intact standard ETF (SETF).

Methods

Data of adult critically ill mechanically ventilated patients who received ETF at least 3 of 5 consecutive days was collected through PINC® AI Healthcare Data for the period of 2017-2021. Patient characteristics and clinical outcomes were compared between those who received WPBD (Peptamen® formulas), OPBD or SETF.

Results:

There were 12,887 patients from 53 US hospitals included in this study (3,004 WPBD, 3514 OPBD and 6369 SETF). Patients received ETF for a mean of 8.3 days and stayed in the ICU for a mean of 14.7 days. Comparing WPBD to OPBD: odds of GI intolerance was 25% lower, glucose intolerance 47% lower and mortality 24% lower for WPBD recipients (each $p < .0001$). Comparing WPBD to SETF, odds of GI intolerance were 20% lower ($p=.001$) and glucose intolerance 15% lower ($p=.06$) in the WPBD group.

Table 1: Clinical outcomes among mechanically ventilated adult ICU patients receiving ETF formulas

Results	GI Intolerance	Glucose Intolerance	Mortality
Prevalence (%)	WPBD: 12.9%	WPBD: 8.7%	WPBD: 29.5%
	OPBD: 18.0%*	OPBD: 15.9%*	OPBD: 35.0%*
	SETF: 14.7%†	SETF: 10.3%†	SETF: 19.8%†
Unadjusted OR (95% CI)	WPBD vs (ref OPBD): 0.68 (0.59 – 0.77)*	WPBD vs (ref OPBD): 0.50 (0.43 – 0.59)*	WPBD vs (ref OPBD): 0.78 (0.70 – 0.86)*
	WPBD vs (ref SETF): 0.86 (0.76 – 0.98)†	WPBD vs (ref SETF): 0.82 (0.71 – 0.96)†	WPBD vs (ref SETF): 1.70 (1.54 – 1.88)†
Adjusted OR (95% CI) ††	WPBD vs (ref OPBD)[1]: 0.75 (0.65 – 0.87)*	WPBD vs (ref OPBD)[1]: 0.53 (0.44 – 0.63)*	WPBD vs (ref OPBD)[1]: 0.76 (0.68 – 0.85)*
	WPBD vs (ref SETF)[2]: 0.80 (0.70 – 0.91)†	WPBD vs (ref SETF)[2]: 0.85 (0.72 – 1.01)	WPBD vs (ref SETF)[2]: 1.60 (1.43 – 1.78)†

Abbreviations:
Enteral Tube Feeding (ETF); 100% whey, peptide-based (WPBD); other peptide-based diets (OPBD); intact-protein standard ETF formulas (SETF); gastrointestinal (GI); odds ratio (OR); confidence interval (CI)
***WPBD vs OPBD, p< .05; †WPBD vs SETF, p< .05**
††Adjusted for demographics, medications, hospital and clinical characteristics
[1] Adjusted OR from regressions including all 3 ETF cohorts in which OPBD is used as the reference group.
[2] Adjusted OR from regressions including all 3 ETF cohorts in which SETF is used as the reference group.

Conclusions:

- **Better GI tolerance and glycemic control were associated with WPBD relative to OPBD and SETF usage in ICU patients on MV**
- **Use of 100% whey peptide-based formulas is a strategy to help minimize GI and glucose intolerance and may clinically benefit patients mechanically ventilated in the ICU, helping to facilitate adequate and optimal delivery of ETF**

Journal Link to Abstract S92-S93:
https://aspenjournals.onlinelibrary.wiley.com/doi/epdf/10.1002/jpen.2491

Summary prepared by Nestlé Health Science

NEST-15473-0124

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