46th ESPEN CONGRESS
46th ESPEN Congress
on Clinical Nutrition & Metabolism
Milan, Italy • 7-10 September 2024
CLINICAL NUTRITION : "THE" TRANSVERSAL SCIENCE

PREDICTING ENTERAL FEEDING SUCCESS AMONG CRITICALLY ILL RECEIVING WHEY/STANDARD PROTEIN SOURCES: A RETROSPECTIVE OBSERVATIONAL STUDY

Orit Raphaeli [1], Liran Statlender[2], Ilya Kagan[2], Guy Fishman[2], Eyal Robinson[2], Pierre Singer[2]
1 Industrial Engineering and Management, Ariel University, Israel
2 General Intensive Care, Rabin Medical Center, Petah Tikva, Israel

P043

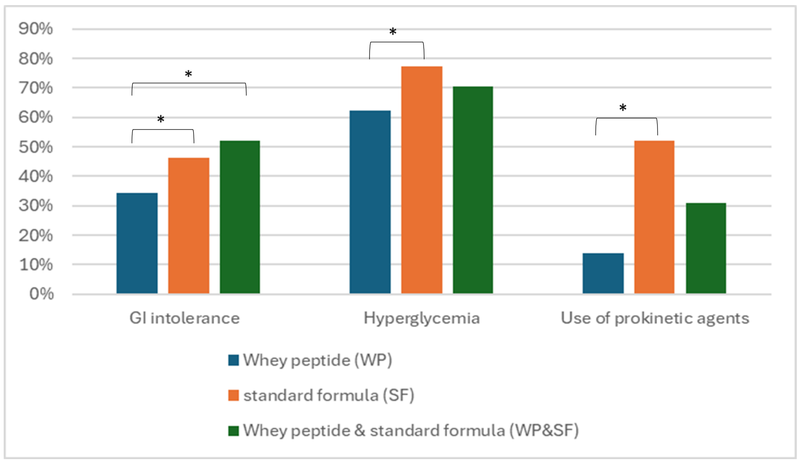
Background

Enteral feeding (EN) is recommended as the preferred route to start nutritional support for critically ill patients [1]. It remains unclear what is the association of specific formulas in clinical outcomes and regarding gastrointestinal tolerance[2].

This study aims to explore differences between whey peptide-based EN and standard formulas in predicting EN success among a mixed ICU population.

Results

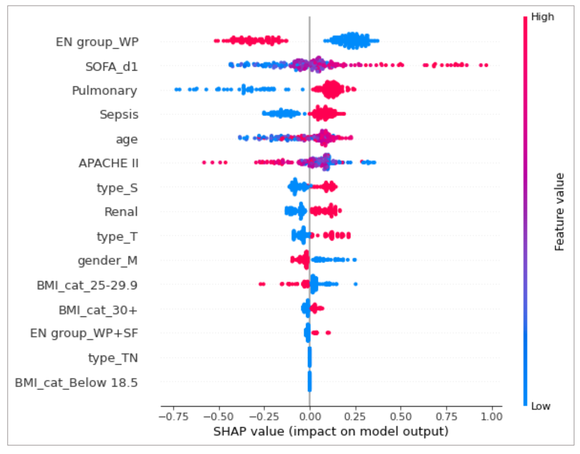
Result 1: Primary outcomes by EN formula type; * p < 0.05 for pairwise comparisons to WP



Result 2: Odds ratio in Logistic Regression for primary outcomes

Variable	*Odds Ratio*	*95% CI*	*p-value*
Outcome: GI Intolerance			
WP (reference: SF)	*0.61*	*[0.42, 0.88]*	*<.01*
SOFA_day1	*1.09*	*[1.04, 1.14]*	*<.001*
Pulmonary comorbidity	*1.68*	*[1.10, 2.50]*	*<.05*
Outcome: Hyperglycemia			
WP (reference: SF)	*0.45*	*[0.30, 0.68]*	*<.001*
age	*1.02*	*[1.01, 1.03]*	*<.001*
APACHE II	*1.04*	*[1.01, 1.07]*	*<.05*
Outcome: Use of Prokinetic			
WP (reference: SF)	*0.21*	*[0.14, 0.32]*	*<.001*
WP&SF (reference: SF)	*0.49*	*[0.31, 0.78]*	*<.05*
Kidney comorbidity	*1.59*	*[1.06, 2.24]*	*<.05*

Result 3: SHAP summary plots for predicting GI intolerance by the XGBoost algorithm



Method

- A single-center observational cohort study included adult patients hospitalized in the General ICU of Beilinson Hospital (Israel) (2011–2018)
- Inclusion criteria: ICU stay greater than 96 hours & received whey peptide-based (WP) or standard EN formulas (SF)
- Data included patient demographics, admission data, nutritional support, GI output, and prokinetic medication
- Primary outcomes: GI intolerance (occurrence of gastric residual volume greater than 250 ml/day or GI symptoms: diarrhea/vomiting/GI bleeding), hyperglycemia, and usage of prokinetic agents
- The associations between EN formula types and patient characteristics with primary outcomes were evaluated via multivariable logistic regression and supervised machine learning techniques (including decision trees, random Forest, and XGBoost algorithms). The SHAP technique was used to study the importance and impact of each patient characteristic on outcome.
- The ethical committee of Rabin Medical Center approved the study

Summary/ Highlights

Lower GI intolerance, greater glycemic control, and reduced use of prokinetic agents were associated with the use of WP formulas relative to SF. Precision delivery of EN using WP-based formulas is a strategy to increase the benefit of nutrition to critically ill patients.

ESPEN The European Society for Clinical Nutrition and Metabolism

46th ESPEN Congress
on Clinical Nutrition & Metabolism
Milan, Italy • 7-10 September 2024
CLINICAL NUTRITION : "THE" TRANSVERSAL SCIENCE

References

1. Singer P et al. ESPEN short version and revised guideline on clinical nutrition in the intensive care unit. Clinical Nutrition 42 (2023) 1671-1689
2. Nguyen D-Let al. Characteristics and feeding intolerance in critically ill adult patients receiving peptide-based enteral nutrition: A retrospective cross-sectional study. Clin Nutr ESPEN 59 (2024) 270-278

Research Support: grant from Nestle

Contact information
oritraphaeli@gmail.com