USE OF A VERY HIGH PROTEIN ENTERAL NUTRITION FORMULA ASSISTS IN MEETING THE PROTEIN NEEDS OF PATIENTS RECEIVING INTRAVENOUS SEDATION WITH PROPOFOL

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BACKGROUND & OBJECTIVES

Critical illness dramatically increases muscle proteolysis and protein requirements. ASPEN/SCCM Guidelines for the Provision and Assessment of Nutrition Support Therapy in the Adult Critically Ill Patient recommend protein provision of up to 2.5 g protein/Kg[1]. Most adult critically ill patients receive less than half the recommended amount of protein during ICU stay[2].

Use of intravenous sedation (propofol) to manage anxiety and agitation, especially when mechanically ventilated. Propofol is provided in a lipid medium and contributes to daily caloric provision. Manipulation of nutrition support through addition of protein powders is necessary to avoid excessive caloric intake.

The primary objective of the trial was to assess the protein intake of patients receiving propofol before and after introduction of a very high protein tube feeding.

METHODS

Population:

- 40 subjects that received propofol
  - 20 subjects prior to the 2011 commercialization of a very high protein, semi-elemental formula (STD EN)
  - 20 subjects who received a very high protein, semi-elemental formula (VHP EN; Peptamen Intense VHP)

Data Collection:

- Subjects were assigned to a formula group based on the formula received Day 1 of the study.
- Study days were counted as any day on which formula intake was recorded.

METHODS

Measures:

- Demographics (age, gender, admitting diagnosis)
- Daily propofol dose
- Estimated nutrition needs
- Enteral prescription

Statistics:

- Descriptive characteristics were tabulated using number and percent within formula groups.
- Protein and calorie needs were described using mean, standard deviation, minimum, and maximum for both the lower and upper bounds of the reported range of needs.
- Calorie intake (from formula alone, propofol alone, and formula plus propofol) and protein intake were described using mean, standard deviation, minimum, and maximum for each study day.
- The summary mean intakes for all study days were compared between formula groups using a t-test.

DEMOGRAPHICS

- 40 patients with neurological diagnoses, receiving propofol in the ICU were included

	VHP EN (n=20)	STD EN (n=20)
	N (%)	N (%)
Gender		
Male	13 (65%)	14 (77%)
Missing	0	2
Age at admission (yrs)		
<25	5 (26%)	5 (25%)
25-44	9 (47%)	6 (30%)
45+	5 (26%)	9 (45%)
Mean (range)	36.7 (18-67)	39.9 (17-63)

RESULTS

Propofol dose:

- Similar in both groups (NS)

Nutritional Intake:

- Protein intake was significantly higher in the VHP EN group (p=0.044)
- Daily caloric intake from enteral formula alone was significantly less in the VHP EN group (p=0.016)
- Clinically significant lower daily total caloric intake (EN plus propofol) in the VHP EN group that did not reach statistical significance (p=0.072).

	VHP EN group	STD EN group	p-value
Daily Propofol Dose	19.5 mL/hr (516.6 kcal/day)	19.0 mL/hr (492.0 kcal/day)	NS
Protein Intake	97.9 ± 28.6 g/day	81.7 ±19.5 g/day	p=0.044
Caloric Intake (EN Only)	1077.1 ± 314.7 kcal/d	1333.2 ± 329.2 kcal/d	p=0.016
Caloric Intake (Total)	1593.7 ± 393 kcal/d	1825.2 ± 398.1 kcal/d	p=0.072

CONCLUSION

The use of a very high protein, semi-elemental formula allowed for increased protein provision without increasing caloric intake in adult critically ill patients receiving propofol. These preliminary data suggest that use of this type of formula allows for provision of nutrients closer to that recommended in the ASPEN/SCCM Guidelines for the Provision and Assessment of Nutrition Support Therapy in the Adult Critically Ill Patient.

1. McClave S. et al. *JPEN*. 2016.; 40(2):159-211. **2.** Heyland D. et al. *JPEN* 2016; epub Oct 10.

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