Improving Nutrition Status in End-Stage Renal Disease Using Appetite Stimulants

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Introduction

Objective:

This study aims to evaluate the current research for implementing appetite stimulants to improve nutrition status in patients with End-Stage Renal Disease (ESRD) using the evidence analysis process instated by the Academy of Nutrition and Dietetics.

Background:

The ESRD population is at high risk for chronic-disease related malnutrition (Fig. 1) due to metabolic abnormalities that induce anorexia. Previous studies have indicated that poor appetite correlated with increased mortality rate. Thus, medical professionals are looking for ways to preserve nutrition status in this population in order to improve clinical outcomes. Currently, there are no guidelines that outline appropriate usage of appetite stimulants within the ESRD population.

Methods

A search plan was created to establish criteria for study selection (Fig. 2). Seven studies met the criteria. These studies were critically appraised in the areas of relevance and validity, and each study received a class ranking related to the study design (Fig. 3). Conclusion of research was scored from one to five describing the evidence for implementing this practice.

Results

Outcomes in stronger study designs noted significant increases in appetite, albumin levels, and protein catabolic rates. Weaker studies found significant changes in weight, appetite, and protein catabolic rates, while other nutrition parameters had varying results (Fig. 3).

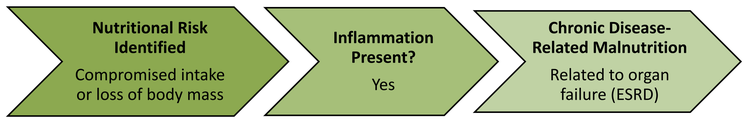

Fig. 1: A.S.P.E.N. description of Chronic Disease-Related Malnutrition

Study Selection Criteria	
Inclusion	**Exclusion**
• Participant Age: >20 years • Participants were receiving either hemodialysis (HD) or peritoneal dialysis (PD) with history of anorexia • Study groups had a minimum of five subjects in each study group • Study publication date > 2002	• Animal Studies • Review Articles

Fig. 2: Criteria that was used for selection of studies.

Author, Year, Study Design, Class Rating	Intervention	Outcomes	Limitations
Monfared A et al, 2009 Randomized Controlled Clinical Trial Class: A Rating: +	Patients in experimental group were treated with MA, 40 mg BID for two months.	• In experimental group serum albumin levels rose (P=.008) , protein catabolic rate increased (P<.001), and improved appetite. • No statistically significant weight change.	Small sample size, short follow-up, lack of medium-term nutrition markers, and body-composition determination could be limitations of this study.
Ashby DR et al, 2009 Randomized Crossover Trial Class: A Rating: +	Daily injection of 12 micrograms per kilogram of Ghrelin/Saline solution administered one hour before meal. Treatment groups were switched after a wash-out week.	• Energy intake increased in experimental group (P<0.001) and daily intake increased during the week (P=0.04). • No changes in other nutrition labs.	Small sample size, study did not last long enough to evaluate effects on weight gain.
Rammohan M et al, 2005 Before-After Study Class: D Rating: Neutral	Patients were instructed to take 400 mg MA solution every day for 16 weeks.	• Weight and BMI increased by 9%, proportion of body fat increased by 31%, and triceps skin fold increased by 40% (P<.01). • Serum albumin increased 0.6 g/dL (P=.03). • Daily protein and energy intake increased to 42% by the end of the trial (P ≤.01).	Small sample size
Kotzmann et al, 2003 Before-After Study Class: D Rating: Neutral	rhGH 0.125IU/kg three times a week for the first four weeks and 0.25 IU/kg three times a week for the remainder of the study.	• Serum albumin, prealbumin, transferrin, cholesterol, HDL, cholinesterase as well as predialytic creatinine and blood urea nitrogen showed no significant changes. • Total body fat decreased significantly from 17% to 16% (P<0.05). Lean body mass remained stable throughout entire study.	Small sample size, sponsored by drug company
Golebiewska JE et al, 2011 Before-After Study Class: D Rating: Neutral	Malnourished patients on dialysis were instructed to take 4ml (160 mg) of MA daily for six months.	• Weight increased from 63.26 ± 13.04 to 65.58 ± 12.53 (P<0.01), and BMI increased 23.5±3.8 to 24.66±4.23 (P<0.001). Changes became statistically significant after three months of treatment. • Serum albumin increased from 36.46 ± 1.82 to 40.33 ± 2.71 (P<0.001). Changes became significant after one month of treatment. • All participants reported an increase in appetite and increased in intake	Small sample size, no measure for change in body composition, lack of visual analogue scale for appetite assessment compared to actual food intake.
Costero O et al, 2004 Before-After Study Class: D Rating: Neutral	160 mg of MA per day for a time period ranging from 1-23 months (5.93±5.12 months on average).	• Appetite increased in 68.8% of patients. • Weight gain became statistically significant after three months of treatment (weight at third month: 68±10.4 kg; p<.05). • Increase in serum albumin was not statistically significant.	Small sample size, no method for assessing change in appetite, or record compliance when taking MA.
Lucas MF et al, 2010 Before-After Study Class: D Rating: Neutral	160 mg MA daily, single dose	• Appetite increased in 81% of participants. • Increases in weight, serum albumin, creatinine, and protein catabolic rate were considered to be statistically significant (P-values: <.01, <.05, <.01, <.001 respectively).	Small sample size

Fig. 3: Overview table of studies reviewed for evidence analysis project.

Final Remarks

Conclusion:

The evidence gathered from the studies discussed in this research concludes that all appetite stimulants in these studies are an effective means for improving certain parameters contributing to nutrition status of a patient with ESRD, including improved serum albumin levels, improved appetite, increased energy intake, and weight gain. Of the current studies available for review, small sample size and inadequate study design are the largest limitations when it comes to justification for applying the findings of these studies into clinical practice without reservation.

Grade:

Due to the noted limitations, the grade assigned to this clinical question is Grade III: Limited. More studies with stronger research designs and larger sample sizes should be conducted over an adequate amount of time in order to determine if a higher grade can be assigned.

Recommendations:

When prescribing appetite stimulants in patients with ESRD for the purpose of improving nutrition status, care-givers should monitor side-effects, especially signs of fluid retention and hyperglycemia. Significant improvements in nutrition status should not be expected until three months of treatment. Application of findings should be limited to the adult population. Studies involving children have yet to be evaluated.

DISCLOSURE: *This material is the result of work supported with resources at the Memphis VA Medical Center. The contents of this poster do not represent the views of the U.S. Department of Veterans Affairs or the United States Government.*