

Validating Appetite Assessment Tools Among Patients Receiving Hemodialysis

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Objective: To test the performance of appetite assessment tools among patients receiving hemodialysis (HD).

Design: Cross-sectional.

Subjects: Two hundred twenty-one patients receiving HD enrolled in seven dialysis facilities in Northern California.

Intervention: We assessed 5 appetite assessment tools (self-assessment of appetite, subjective assessment of appetite, visual analog scale [VAS], Functional Assessment of Anorexia/Cachexia Therapy [FAACT] score, and the Anorexia Questionnaire [AQ]).

Main Outcome Measures: Reported food intake, normalized protein catabolic rate, and change in body weight were used as criterion measures, and we assessed associations among the appetite tools and biomarkers associated with nutrition and inflammation. Patients were asked to report their appetite and the percentage of food eaten (from 0% to 100%) during the last meal compared to usual intake.

Results: Fifty-eight (26%) patients reported food intake $\leq$ 50% (defined as poor appetite). The prevalence of anorexia was 12% by self-assessment of appetite, 6% by subjective assessment of appetite, 24% by VAS, 17% by FAACT score, and 12% by AQ. All the tools were significantly associated with food intake $\leq$ 50% ($P < .001$), except self-assessment of appetite. The FAACT score and the VAS had the strongest association with food intake $\leq$ 50% (C-statistic 0.80 and 0.76). Patients with food intake $\leq$ 50% reported weight loss more frequently than patients without low intake (36% vs 22%) and weight gain less frequently (19% vs 35%; $P = .03$). Normalized protein catabolic rate was lower among anorexic patients based on the VAS (1.1 ± 0.3 vs 1.2 ± 0.3 , $P = .03$). Ln interleukin-6 correlated inversely with food intake ($P = .03$), but neither interleukin-6 nor C-reactive protein correlated with any of the appetite tools. Furthermore, only the self-assessment of appetite was significantly associated with serum albumin ($P = .02$), prealbumin ($P = .02$) and adiponectin concentrations ($P = .03$).

Conclusions: Alternative appetite assessment tools yielded widely different estimates of the prevalence of anorexia in HD. When considering self-reported food intake as the criterion standard for anorexia, the FAACT score and VAS discriminated patients reasonably well.

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Introduction

ANOREXIA IS DEFINED as a reduction of the desire to eat.¹ In patients receiving hemodialysis (HD), there is a robust relation between anorexia and poor health-related quality of life as well as higher risks of

hospitalization and mortality.¹ Considering the clinical relevance of anorexia, several tools have been proposed for screening in the general population, where questionnaires and visual analog scale (VAS) are most commonly used.² Because anorexia specifically reflects the loss of the “desire” to eat, food intake may not be affected in anorexic patients. Nevertheless, in daily practice, reduced food intake is frequently used as a surrogate marker of the presence of anorexia and its severity. Recent evidence obtained in a large European survey shows that hospitalized patients reporting reduction of food intake, as assessed by intake at each meal over the most recent day, were at higher risk of mortality within 30 days, even more than patients reporting involuntary body weight loss.³ More recently, patients who reported reduced food intake during the most recent lunch (eating half, a quarter, or nothing) were at particularly high risk of adverse outcomes.⁴ This evidence highlights the potential relevance of relating anorexia to patients’ eating behavior, even if anorexia and inadequate nutritional intake are not identical constructs.

The primary aims of the present study were: (1) to assess the prevalence of anorexia in a population of patients

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receiving HD using currently available appetite assessment tools (including questionnaires and VAS); and (2) to assess the relations among different tools and self-reports of food intake. In addition, we aimed to evaluate which of the appetite assessment tools were associated (and to what degree) with clinical parameters, including inflammatory and nutritional biomarkers.

Methods

Population

In the period between November 2010 and July 2011, adult men and women on HD who were participants in the San Francisco Bay Area sites of the USRDS A Cohort study To Investigate the Value of Exercise/Analyses Designed to Investigate the Paradox of Obesity in ESRD (ACTIVE/ADIPOSE) study⁵ were asked to additionally complete multiple appetite assessment tools and a self-report of food intake. According to the exclusion criteria for ACTIVE/ADIPOSE, patients not willing or unable to give informed consent or to complete study questionnaires (i.e., patients with dementia or cognitive impairment) were excluded. We also excluded patients with suboptimal understanding of English language and patients with diseases other than end-stage renal disease (ESRD) associated with wasting (i.e., cancer, acute, or chronic infection).

We administered the appetite assessment tools during a routine study visit. We measured body weight (kg) to the nearest 0.1 kg and height to the nearest 0.5 cm using a stadiometer (AYRTON model number S100) and calculated Quételet's index (body mass index [BMI]) in kg/m².

Appetite

We assessed appetite using 5 different appetite assessment tools immediately before the beginning of a mid-week HD session (Table 1).

- In the “self-assessment of appetite changes” during a 30-day period, patients were asked to compare their present appetite to their appetite over the last month, rating it as increased, decreased, or unchanged. This is a qualitative tool that allows a rapid assessment of anorexia and tends to minimize the influence of recent flares of chronic diseases.⁶
- The “subjective assessment of appetite” referred to the last week (increased, remained the same, or decreased) was performed according to the first question of the Appetite and Diet Assessment Tool, as previously performed in HD. This qualitative tool may prove effective in routine monitoring of the efficacy of anti-anorexia therapies.^{7,8}
- The “VAS,” consisting of a line of 100 mm, the extremes anchored to “no hunger” (0 mm) and “hunger” (100 mm), was administered. Patients were asked to place a line on the VAS that corresponded to their current appetite. This tool allows a quantitative “measure” of appetite, but there is no defined cutoff value on the VAS for diagnosing anorexia. Zabel et al.⁹ have previously shown that the mean VAS score reported by patients receiving dialysis with poor appetite is ≤ 50 mm, whereas the mean VAS score reported by patients receiving HD with good appetite is > 50 mm. Therefore, we defined a VAS score ≤ 50 mm as indicative of anorexia.
- The “Functional Assessment of Anorexia/Cachexia Therapy (FAACT) score,” recently developed by the European Society for Clinical Nutrition and Metabolism, is based on a subset of the FAACT, in particular, the anorexia/cachexia subscale-12 section.¹⁰ This FAACT-European Society for Clinical Nutrition and Metabolism score consists of 12 questions related to appetite and food intake and allows a

Table 1. Characteristics of the 5 Appetite Assessment Tools Administered

Appetite Assessment Tool	Time Frame of Reference	Description
Self-assessment of appetite changes	30 d	Present appetite versus appetite over the last month (increased, decreased, or unchanged).
Subjective assessment of appetite	7 d	Present appetite versus appetite last week (increased, decreased, or unchanged).
Visual analog scale	At the moment it is completed	Present appetite indicated with a line on a scale (scale extremities: “no hunger” (0 mm); “hunger” (100 mm)).
Functional Assessment of Anorexia/Cachexia Therapy score	At the moment it is completed	12 questions related to appetite and food intake. Each question allows for 5 answers (i.e., not at all, a little bit, somewhat, quite a bit, very much).
Anorexia Questionnaire	At the moment it is completed	4 questions on the presence of early satiety, taste/smell alterations, meat aversion, and nausea/vomiting.

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