RESEARCH BRIEF

Use of the Subjective Global Assessment to Predict Health-Related Quality of Life in Chronic Kidney Disease Stage 5 Patients on Maintenance Hemodialysis

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Objective: The purpose of this study was to determine whether a subjective global assessment (SGA) score was predictive of health-related quality of life (HRQoL) in stage 5 chronic kidney disease patients on maintenance hemodialysis (MHD).

Design and Setting: This was a cross-sectional secondary data analysis of MHD patients receiving therapy 3 times a week at dialysis centers located in the United States, Canada, and New Zealand. Nutritional status was assessed using the 7-point SGA. HRQoL was determined using the Medical Outcomes Study 36-item Short Form (SF-36).

Results: The study sample consisted of 94 men (n = 47, 50%) and women (n = 47, 50%), with a mean age of 64.9 ± 12.9 years. The mean SGA score at the end point of the study (6 months) was 5.8 ± 1.1. Participants had a mean HRQoL physical health score of 36.5 ± 9.3 at 6 months, indicating a worse physical health state. The HRQoL mental health summary score was within the normal range (50.5 ± 11.1). After controlling for confounders in the hierarchical regression models, the SGA score significantly predicted HRQoL physical health (R^2 change = 0.124; P = .012). No association was found between the SGA score and HRQoL mental health (P = .925).

Conclusions: The SGA score is a significant predictor of HRQoL physical health. Given that nutritional status impacts HRQoL and that decreased HRQoL in patients on MHD is associated with mortality, complications, and reduced compliance with treatment, using the SGA to measure nutritional status can be a tool to help identify dialysis patients with a lower HRQoL in terms of physical health.

STAGE 5 CHRONIC kidney disease (CKD) is associated with increased morbidity and mortality, protein–energy wasting (PEW), and decreased health-related quality of life (HRQoL).[1-6] PEW, "the state of decreased body protein and fat mass," occurs in 18% to 75% of individuals on maintenance hemodialysis (MHD).[5] Unlike malnutrition, which is caused by an inadequate diet, PEW results from an increased production of inflammatory cytokines, leading to protein catabolism, loss of protein stores, and anorexia.[5]

In individuals with stage 5 CKD, the impact of the disease condition, poor nutritional status, and diminished functional capacity have been linked with a negative effect on HRQoL outcomes.[7-13] HRQoL is an important indicator of how a disease affects patients' lives and focuses specifically on factors that are affected by or can be changed by the disease.[14,15] In addition to other clinical outcomes, HRQoL can also be used to assess the effectiveness of treatment and predict risk for adverse outcomes.[16] In dialysis patients, low HRQoL scores are associated with hospitalization and death.[17] In the Dialysis Outcomes and Practice Patterns Study, reduced HRQoL scores (<25) on the Medical Outcomes Study 36-item Short Form (SF-36) Health Survey were associated with an almost 2-fold greater chance of death and a 60% greater chance of hospitalization than patients with scores >46.[18]

PEW in CKD patients on MHD is associated with a diminished functional capacity related to metabolic stress and decreased HRQoL.[7,19] Despite advances in dialysis treatment and management, PEW persists.[2,20-22] Nutrition assessment tools are designed to assist health care professionals in detecting malnutrition.[23] Identifying malnutrition and early nutrition interventions may help improve patient outcomes and assist in reducing further deterioration and decline in nutritional status.[3] The subjective global assessment (SGA) is a type of nutritional assessment tool that can be used to detect malnutrition in a clinical setting, which may help identify dialysis patients with a lower HRQoL. Present clinical practice guidelines recommend using the 7-point SGA as a valid and clinically useful measure of detecting malnutrition in individuals on dialysis.[20]

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Nutritional status and comorbid conditions can affect HRQoL in CKD patients. A decline in nutritional status appears to have the greatest impact on the HRQoL physical health domain, which incorporates general health (GH), physical functioning (PF), role physical (RP), and bodily pain (BP).[24–26] In CKD, a close relationship exists between HRQoL, morbidity, and mortality.[4,17,18]

To date, studies investigating the relationship between nutritional status and HRQoL in CKD are limited.[27–31] Currently, there are a limited number of studies investigating whether SGA using the 7-point scale predicts HRQoL in stage 5 CKD patients on dialysis.[28] Thus, the aim of this cross-sectional secondary analysis was to determine whether an overall SGA score predicts HRQoL in individuals on MHD and whether nutritional status may serve as an indicator for HRQoL.

Methods

Study Design and Settings

Institutional review board approval was obtained from the University of Medicine and Dentistry of New Jersey (Newark, NJ) and the MetroHealth Medical Center (Cleveland, OH). The original 6-month study by Steiber et al.[32] included 154 adult men and women with stage 5 CKD, aged ≥18 years, on MHD 3 times a week at dialysis centers located in the United States, Canada, and New Zealand. Because of incomplete data for SGA and HRQoL analysis, study attrition, and changes in dialytic treatment over the course of the 6-month study period, the total sample for this secondary data analysis was reduced to 94 participants.

The Original Study

The original study published by Steiber et al.[32] examined the intrarater and interrater reliability and validity of the SGA using the same core components as described by Detsky et al. and the 7-point scale developed during the Canada–USA Peritoneal Dialysis (CANUSA) study.[33,34] Steiber et al. found the 7-point SGA had a fair interrater reliability (as assessed by a weighted κ score of 0.52; 95% confidence interval, 0.39 to 0.66), good intrarater reliability (weighted κ score of 0.68; 95% confidence interval, 0.58 to 0.78), and both concurrent and predictive validity when used in a diverse stage 5 CKD population on MHD. In this study, data were collected from each participant at baseline and at 6 months by registered dietitians using the 7-point SGA rating form to determine the overall SGA score and the SF-36 for HRQoL assessment. Data obtained from the SF-36 and its relationship to the overall SGA score were not analyzed in the original study because this was beyond the scope of the study.

Study Methods

This study explored the relationship between HRQoL physical health and mental health as the dependent variables and the overall SGA score as the main independent variable at the end point of the study (6 months). In addition, the relationship between the dependent variables and other possible factors (patient demographics, comorbid conditions, and treatment characteristics) was explored statistically to identify possible confounders.

Definition of Study Variables

Health-Related Quality of Life

HRQoL was determined based on the participants' response to the 36 questions on the SF-36. Each question on the SF-36 form represents 1 of the 8 HRQoL scales and is coded with a numeric score and calibrated. Each scale represents 1 of 2 domains: physical health or mental health. Of the 8 scales, 4 (PF, RP, BP, and GH) correlate with the physical health domain and contribute to the scoring of the physical component summary (PCS) measure. The mental health domain correlates with mental health, role emotional, social functioning, and vitality (VT), which contributes to the scoring of the mental component summary (MCS) measure.[35] The PCS and MCS scores are evaluated separately and used to determine either physical health or mental health. These summary measures are developed in a way that a score of 50 represents the mean or standard reference score of the general United States population, with a standard deviation of 10. Scores >50 are better than the general population average for all scales and summary measures, whereas scores <50 are worse. A higher score signals a more favorable health state or better HRQoL. The PCS and MCS scores are computed as weighted means from each of the 4 scales within its domain.[35]

Overall SGA Score

The overall SGA score was determined based on a combined subjective and objective score using a 7-point Likert scale for each of the SGA subcomponents (weight change, dietary intake, gastrointestinal symptoms, functional capacity, nutritional needs, and physical examination). Each SGA subcomponent was scored between 1 and 7 and was used to determine the final overall SGA score. This 7-point scale was used to designate the level of malnutrition and shows an increase in the severity of malnutrition as the score decreases. An overall score of 6 or 7 represents very mild malnutrition risk to well-nourished; scores of 3, 4, or 5 represent mild-to-moderate malnutrition; and scores of 1 or 2 represent severe malnutrition.[34]

Possible Factors (Patient Demographics)

Demographic variables included age, gender, and race. Comorbid conditions included type 1 diabetes mellitus, type 2 diabetes mellitus, hypertension (HTN), cardiovascular disease (CVD), left ventricular hypertrophy, cancer (CA), infections, Crohn disease, ulcerative colitis, systemic lupus erythematosus, and acquired immune deficiency syndrome/human immunodeficiency virus. Treatment characteristics included dialysis vintage and the number of days and times hospitalized. The number of times a participant is hospitalized was defined as the frequency of admissions to the hospital within a 6-month period.