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Frailty: Identifying and Aiding the Most Vulnerable

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Many patients have a long road to transplant and this road is not always smooth. Along the way, patients may become increasingly decompensated, weak, and depressed. In the midst of this decompensation, a large percentage of patients experience poor appetite, dysgeusia (altered taste sensation), early satiety, and fluid accumulation resulting in unintentional weight loss, sarcopenia (loss of muscle mass and strength), and frailty. Frailty is defined as the distinct clinical state of increased vulnerability to health stressors and decreased physiologic reserve that leads to adverse health outcomes including disability, short- and long-term institutionalization, and ultimately, death (Exterkate, L; et al.).

Frailty portends worse outcomes for patients with end-stage organ disease and patients undergoing solid organ transplantation. It has been identified to be the best predictor of 30-day postoperative complications independent of age. Frailty has

also been associated with increase mortality on the transplant waitlist and post-transplant, significantly increased length of stay and early hospital readmission death (Exterkate, L; et al.).

The importance of frailty assessment during the transplant evaluation has grown over the recent years as frailty has proven to be a predictor of mortality. Assessing for frailty in transplant candidates allows for early identification of potentially reversible components contributing to frailty. Thus, with lengthened wait times, frailty assessment has become essential.

Currently at UC San Diego, each patient being evaluated for transplantation is assessed for frailty. This assessment is documented and discussed with the transplant team. The patient is then re-evaluated every three months thereafter to monitor for decline, stability, or improvement. The Fried Frailty Test is used in each solid organ transplant program. This frailty assessment uses



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is a registered dietitian who has been with the UC San Diego transplant program since 2010. She works primarily in liver transplant, however, she has covered all organ transplants in the outpatient setting. Her goal is to optimize the nutrition status in both pre and post-transplant patients, focusing on malnutrition and frailty. She has been influential in initiating the use of a frailty assessment in the transplant population at UC San Diego.

5 metrics, each with its own range of desired results (Gandolfini, Ilaria; et al.). Those who test outside of the desired range are assigned 1 point per criteria. If a patient is assigned 3 points or more, that patient is classified as frail:

1. Weight change (>10 lbs or 5% in past year)

2. Physical activity (< 60 using Karnofsky Scale)

3. Exhaustion (> 3 days per week)

4. Grip Strength (Based on BMI category and gender)

5. Gait Speed (Based on height and gender)

The Fried Frailty Test includes both objective and subjective measurements to determine the patient's score. Objective data includes unintentional weight loss, hand grip strength measured using hand dynamometer, and gait speed measured by a timed walk. Subjective data used in this assessment are patient responses to a series of questions regarding exhaustion, as well as activity level/ performance using the Karnofsky scale, a standardized way of measuring a patient's ability to perform various tasks of daily life. Once these series of measurements are complete a score is calculated. The patient is classified as frail if they receive a score of 3 and greater (Gandolfini, Ilaria; et al.).

Once a patient is determined to be frail, a series of goals are set. Optimizing nutrition is at the forefront, along with increasing physical activity. The transplant dietitian meets with the patient to discuss optimizing nutrition by increasing daily protein and calorie intake through supplemental nutrition via oral or enteral feeding. A referral to physical therapy is made to facilitate improvement of muscle function and overall physical activity. If applicable, a referral to Cardiac or Pulmonary Rehabilitation will also be made. The patient is then reassessed in three months to evaluate for improvement.

Having frailty information at time of organ offer is useful in post-transplant rehabilitation and discharge planning. At time of transplantation, if the patient had been determined to be frail, it is strongly recommended that early enteral feeding be initiated within 24 hours of transplant. Enteral feeding should be received to ensure proper nutrition until >75% of nutritional needs are able to be met by oral intake. Patient will also participate in physical therapy during hospitalization and ideally go home with a referral for continued physical therapy at home. Sarcopenia may occur up to one year after transplant; therefore, physical activity and proper nutrition will be essential for recovery. The newly transplanted patient will continue to be followed by the outpatient Transplant Dietitian who will provide guidance in order to bolster their nutritional intake.

Frailty is a growing problem for solid organ transplant programs with longer waitlist times, as longer wait times places these patients at even greater risk. By providing more objective data, frailty assessment has improved risk prediction of waitlist mortality and allowed for targeted intervention and follow-up. Overall, frailty status serves as a compliment in decision-making for transplant eligibility and facilitates discussions with prospective transplant patients.

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