Nutrition and Heart Failure

Beslenme ve Kalp Yetmezliği

Heart failure is a major health problem worldwide leading to high mortality, hospitalization rates, and a big burden on healthcare systems. Malnutrition is one of the correctable risk factors for morbidity and mortality in heart failure patients.[1,2] Cardiac cachexia is defined as a multifactorial syndrome characterized by severe body weight, fat, and muscle loss and increased protein catabolism due to heart failure.[3] The term sarcopenia indicates an age-related loss of skeletal muscle quantity or quality and a decline in muscle strength and/or physical performance not necessarily associated with weight loss.[4] While sarcopenia is age-related and predominantly affects postural muscles, cachexia leads to a loss of fat tissue and weight loss. With aging, in the heart failure population cachexia is followed by sarcopenia.[5] Malnutrition is a state of nutrition in which a deficiency or excess (or imbalance) of energy, protein, and other nutrients causes measurable adverse effects on tissue/body form and function and clinical outcome.[6] While not all malnourished patients are cachectic, all cachectic patients are invariably malnourished.[3]

The incidence of heart failure–related malnutrition may vary due to the used definition criteria. However, malnutrition may be seen up to 50% in these patients.[7] Recipients undergoing orthotopic heart transplantation are generally patients who had long-standing heart failure with reduced ejection fraction (HFrEF) with multiple co-morbidities. It will not be surprising to see higher complication and mortality rates in post-transplant and post-left ventricular assist device (LVAD) patients.

In this issue of *Archives of Turkish Society of Cardiology*, Bayram et al[8] reported the results of prognostic impact of nutritional indices in heart transplantation candidates. It is a single-center, retrospective study. The investigators enrolled 195 patients who were evaluated for heart transplantation between 2015 and 2020. Researchers defined nutrition status according to the CONUT score, which includes serum albumin, total cholesterol levels, total lymphocyte count, and prognostic nutritional index (PNI), which is based on serum albumin concentration and total lymphocyte count. All patients underwent detailed transthoracic echocardiography and right heart catheterization index during hospitalization. The primary outcome was cardiac-related mortality during follow-up. Primary outcomes observed in a total of 74 (37.7%) patients occurred during the follow-up period. Malnourished patients who were defined according to CONUT and PNI scores demonstrated higher mortality. The investigators showed while the CONUT-defined malnutrition was an independent predictor of mortality, the PNI-defined malnutrition was not a predictor of mortality.

This study has multiple strengths and weaknesses. It represents a well-defined patient group that includes only patients with HFrEF between the ages of 35 and 55 years. Furthermore, the investigators excluded patients who were on inotrope and cholesterol-lowering treatment, need for the intra-aortic balloon pump, had a multiorgan failure, and comorbidities causing contraindication to heart transplant. Probably this very refined patient population caused different results from current literature. As the investigators stated in the discussion, the prevalence of CONUT-defined malnutrition and PNI-defined malnutrition was very low (27.1% and 10.7%, respectively). These aspects of the study limit the interpretation of the results and raise the following questions.

Özlem Yıldırımtürk [ID]

Department of Cardiology, Dr. Siyami Ersek Thoracic and Cardiovascular Surgery Training and Research Hospital, Health Sciences University, Istanbul, Turkey

Corresponding author:
Özlem Yıldırımtürk
✉ ozlemyt@gmail.com

Is the mortality outcome just related to the malnutrition status since some patients underwent heart transplantation while others underwent LVAD and unluckily third part was treated medically? The difference between the PNI score and CONUT score is total cholesterol, and both may theoretically represent malabsorption and chronic inflammation in heart failure. The current study only revealed a relationship between mortality and CONUT-defined malnutrition. Is cholesterol level may be the only important variable to predict mortality? Age may be another important factor for the current study since the patient cohort is very young in contrast to the similar studies including elder patients who probably may be more malnourished.[9]

Malnutrition is not a static condition, and the diagnosis of impaired nutrition might be identified with laboratory parameters in addition to a careful history of weight loss and physical examination findings of muscle loss.[10] The investigators calculated malnutrition scores only once and did not repeat the calculation. Patients were followed for 500 days, and the change in malnutrition status in time may have resulted differently.

The current study failed to show a relation between HF severity and indices of malnutrition; however, both scores were not related to cardiac output and mean pulmonary artery pressure. Malnutrition, defined as deficiency of energy, protein, and nutrients, may not be explained only by the severity of heart failure but may be explained by the proinflammatory status of the disease.

Although there are some limitations, this study demonstrates important data about malnourishment in patients waiting for heart transplantation and increases awareness of the importance of the nutritional status of heart failure patients.

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