Nutrition as a New Treatment Target in Chronic Heart Failure

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The growing prevalence and incidence of heart failure (HF) with preserved ejection fraction (HFpEF) is an important problem in a society with an aging population, because the condition is seen predominantly in the elderly. As treatments for hypertension and coronary artery disease have advanced and lifespan has increased, there are increasing numbers of patients with this syndrome. Patients with HFpEF have a similar mortality risk and equally high rates of rehospitalization as those with HF with reduced ejection fraction (HFrEF), which may be related to a lack of an effective treatment strategy for patients with HFpEF.

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The low-GNRI group had significantly reduced ADL compared with the high-GNRI group and the GNRI score could act as an independent predictor for all-cause mortality in HFpEF patients. Most reports concerning the evaluation of the nutritional status of patients with HF using the NRI and its association with prognosis have targeted HFrEF. The results of the study by Kinugasa et al are meaningful because they show the possibility that an evaluation using the NRI could be beneficial for the management of HF and improve the prognosis of elderly patients with HFpEF who are at high risk of malnutrition. In addition, the GNRI has also been shown to be a superior prognostic factor compared with body mass index and albumin levels, both of which have been used as nutritional indices for patients with HF. This result suggests the importance of nutritional assessment using the NRI as a routine clinical practice in patients with HF.

The GNRI is an extremely simple, accurate, and practicable method of evaluating nutritional status using routinely measurable data: serum albumin and usual body weight (%). There are numerous indices for nutritional evaluation, and each has advantages and disadvantages. To determine whether GNRI is an appropriate assessment tool for patients with HF, comparisons with other NRIs need to be verified, while taking into account both accuracy and the convenience of its use in routine clinical practice. In a previous study of hemodialysis patients, a comparative analysis of the prognosis predictive ability of the GNRI and other NRIs was conducted, and the cutoff value of GNRI was also examined. Those results showed that the GNRI was the most accurate NRI for identifying hemodialysis patients and an appropriate cutoff value for these patients was 91.2, which is close to the cutoff value in the present study.

Kinugasa et al evaluated the ADL in patients with HFpEF and found that a low nutritional level was associated with decreased ADL. The impairment of functional capacity in patients with HF not only affects quality of life but also plays an important role in predicting the prognosis. Therefore, determining functional capacity is indispensable for patients with HF. Exercise capacity, an important component of functional capacity, is determined by several factors. Among these factors, quantitative loss of skeletal muscle, such as sarcopenia, or qualitative abnormalities of the skeletal muscles’ energy metabolism play an important role in the exercise intolerance of HF patients. Deconditioning, peripheral circulatory insufficiency, inflammation, oxidative stress, and neurohormonal factors have been reported as reasons for these abnormalities in the skeletal muscles of patients with HF. Malnutrition could be closely associated with skeletal muscle atrophy and energy metabolism, and cause skeletal muscle abnormalities. To complement the findings of the study by Kinugasa et al, further studies of nutritional status and functional capacity, as

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well as the evaluation of abnormalities in the skeletal muscle of patients with HF should be undertaken. In addition, most studies focusing on exercise tolerance and skeletal muscle abnormalities in patients with HF have targeted HFrEF patients. Given that exercise capacity has not been associated with left ventricular ejection fraction, most findings on these issues from HFrEF patients would be applicable for HFpEF. However, further studies are also needed to determine the associations among functional capacity, skeletal muscle abnormalities and nutritional status in patients with HFpEF. \(^\text{31}\)

New tools for assessing the nutritional status of HF patients may be needed, because nutritional status is influenced primarily by diet and Japanese people have a characteristic diet that differs from those living in Western countries. Furthermore, other lifestyle and psychosocial factors, including exercise habit and mental state, are believed to be associated with the nutritional status of patients with HF. Therefore, a prospective study that focuses on the association between the nutritional status, taking diet and other factors into consideration, and adverse outcomes will need to be performed in Japanese patients with HF.

Although it is clear that nutrition is an important therapeutic target in HF, a number of challenges still remain to be solved. An effective intervention to improve the nutritional status of patients with HF has not been established. Although there are numerous reports on supplementation trials using amino acids, fatty acids, coenzyme Q10, L-carnitine, and thiamine, which are key micronutrients in cardiac metabolism in patient with HF, a consensus has not been reached.\(^\text{12}\) Our clinical goal will be to verify the effects of nutritional intervention on the mortality or morbidity of patients with HFpEF, as well as in those with HFrEF. The present report by Kinugasa et al has shed light on the nutritional status in patients with HFpEF and we get a hint of a crucial problem.

**References**