

REHABILITATION AND NUTRITIONAL INTERVENTION IN PATIENTS ON CHRONIC HEMODIALYSIS

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Given the growing number of patients on chronic hemodialysis who suffer from sarcopenia, the concept of renal rehabilitation has become an increasingly common subject of research in recent years. In dialysis patients, there is more severe deterioration of muscles compared to patients in the 4th stage of chronic kidney disease (1).

The prevalence of sarcopenia is also significantly higher in hemodialysis (HD) patients, and it varies from 9.5 - 37.1% (2,3). Rehabilitation is defined by the World Health Organisation as "a set of interventions designed to optimize functioning and reduce disability in individuals with health conditions in interaction with their environment". Renal rehabilitation was defined as "a long-term comprehensive program consisting of exercise therapy, diet therapy and water management, drug therapy, education, psychological/mental support, etc., to alleviate physical/mental effects based on kidney disease and dialysis therapy, prolong the life expectancy, and improve psychosocial and occupational circumstances". Therefore it is a multidisciplinary and comprehensive concept led by nephrologists, rehabilitation specialists and nutritionists, also supported by nurses and physiotherapists. In 2018, Japanese Society for Renal Rehabilitation (JSRR) established clinical practice guidelines for renal rehabilitation (4).

A scoping review by Lambert et al. from 2022, processed 19 publications regarding exercise and physical activity guidelines. They concluded that there is a lot of publication recommendations on aerobic exercise, progressive resistance training and flexibility, but mostly without explicit guidance, with inconsistency in exercise definitions as well as recommendations for frequency, intensity, type of exercise, timing, progression of effort, and safety aspects of exercise (5). Very important aspect of renal rehabilitation is adequate nutrient intervention. Chronic HD patients often tend to have skeletal muscle atrophy caused by chronic inflammation, insufficient nutritional intake, catabolic effects of dialysis therapy, hormonal abnormalities of anabolic hormones (e.g., testosterone, growth hormone, insulin-like growth factor-1), catabolic hormones (e.g., cortisol), or thyroid hormone, metabolic acidosis, and comorbidities (6). Furthermore, it is known that during the dialysis session, there is a 6-13 g amino acid loss. Therefore, it is usually suggested to ingest 1.0 to 1.2 g/kg/day of protein, which is 1.2 times higher than general recommendations for healthy individuals. In order to obtain muscle mass, it is important to provide adequate daily energy intake, because one dialysis session with duration of 4h, causes energy leak of approximately 300 kcal.

Guided by that, the estimated energy intake should state 30-35 kcal/kg/day. It is important to emphasize sufficient intake of vitamin D and iron in order to prevent muscle protein catabolism (7). Considering the severe chronic condition of

patients on HD, the aforementioned renal rehabilitation interventions are of great importance in improving the quality of life and reducing the mortality of patients on chronic HD.

Keywords: renal rehabilitation, hemodialysis, nutrition, exercises, sarcopenia

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