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Protein Energy Wasting in Chronic Kidney Disease

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The syndrome of protein-energy wasting (PEW) was proposed in 2007 by the International Society of Renal Nutrition and Metabolism as a state of nutritional and metabolic derangements in patients with chronic kidney disease (CKD). It was characterized by simultaneous loss of systematic body protein and energy stores, leading ultimately to loss of muscle and fat mass. PEW affects clinical outcome and quality of life in addition to a specific disease itself. Despite its importance, PEW is often undetected and not considered a clinical priority. Lack of awareness as well as insufficient understanding of major pathophysiology are major obstacles.

A recent meta-analysis by worldwide collaboration reported that PEW prevalence ranging from 11% to 54% in 5 studies including 1,776 patients with CKD stages 3-5. In 90 studies including 16,434 patients on maintenance dialysis, the 25th-75th percentiles range in PEW prevalence was 28-54%. Large variation in PEW prevalence across studies remained, and geographical region was the only significant moderator explaining 23% of the observed data heterogeneity (figure).

PEW needs to be distinguished from malnutrition. Inadequate nutrient intake is an important factor. PEW, however, is caused by multiple CKD-related factors. Hypercatabolic state, anabolic abnormality, dialysis-related factors and physical inactivity have been proposed possible pathophysiology. But our knowledge is still insufficient. Recent molecular and animal researches for myostatin are interesting. They may let us know biologic process for muscle homeostasis better.

PEW is a common phenomenon in CKD. There are many well-documented evidences for PEW on poor CKD outcomes. These can justify need for increased medical attention and active intervention although pathophysiology of PEW has been not fully understood yet. Nutritional counseling, nutrition supplements (oral/parenteral), individualized exercise program and optimizing the dialysis regimen are essential.

Figure. PEW prevalence in dialysis patients

