NEFROLOGIA. 2017;xxx(xx):xxx–xxx

Revista de la Sociedad Española de Nefrología

www.revistanefrologia.com

Original article

Protein-energy wasting syndrome in advanced chronic kidney disease: Prevalence and specific clinical characteristics☆

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ARTICLE INFO

Article history:
Received 25 November 2015
Accepted 6 June 2017
Available online xxx

Keywords:
Nutritional status
Malnutrition
Wasting
Advanced chronic kidney disease
Body composition
Diet
Nutrition

ABSTRACT

Introduction: Protein-energy wasting (PEW) is associated with increased mortality and differs depending on the chronic kidney disease (CKD) stage and the dialysis technique. The prevalence in non-dialysis patients is understudied and ranges from 0 to 40.8%.
Objective: To evaluate the nutritional status of a group of Spanish advanced CKD patients by PEW criteria and subjective global assessment (SGA).
Patients and methods: Cross-sectional study of 186 patients (101 men) with a mean age of 66.1 ± 16 years. The nutritional assessment consisted of: SGA, PEW criteria, 3-day dietary records, anthropometric parameters and bioelectrical impedance vector analysis.
Results: The prevalence of PEW was 30.1%, with significant differences between men and women (22.8 vs. 33.8%, $p < 0.005$), while 27.9% of SGA values were within the range of malnutrition. No differences were found between the 2 methods. Men had higher proteinuria, percentage of muscle mass and nutrient intake. Women had higher levels of total cholesterol, HDL and a higher body fat percentage. The characteristics of patients with PEW were low albumin levels and a low total lymphocyte count, high proteinuria, low fat and muscle mass and a high Na/K ratio.

The multivariate analysis found PEW to be associated with: proteinuria (OR: 1.257; 95% CI: 1.084–1.457, $p = 0.002$), percentage of fat intake (OR: 0.903; 95% CI: 0.893–0.983, $p = 0.008$), total lymphocyte count (OR: 0.999; 95% CI: 0.998–0.999, $p = 0.001$) and cell mass index (OR: 0.995; 95% CI: 0.992–0.998).

☆ Please cite this article as: Pérez-Torres A, González Garcia ME, San José-Valiente B, Bajo Rubio MA, Celadilla Diez O, López-Sobaler AM, et al. Síndrome de desgaste proteico energético en la enfermedad renal crónica avanzada: prevalencia y características clínicas específicas. Nefrologia. 2017. https://doi.org/10.1016/j.nefro.2017.06.004

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Conclusion: Malnutrition was identified in Spanish advanced CKD patients measured by different tools. We consider it appropriate to adapt new diagnostic elements to PEW criteria.

Síndrome de desgaste proteico energético en la enfermedad renal crónica avanzada: prevalencia y características clínicas específicas

Palabras clave:
Estado nutricional
Malnutrición
Desgaste
Enfermedad renal crónica avanzada
Composición corporal
Dieta
Nutrición

RESUMEN

Introducción: El desgaste proteico energético (DPE) se asocia a mayor mortalidad y difiere dependiendo del estadio de la enfermedad renal y de la técnica de diálisis. Su prevalencia en pacientes sin diálisis se encuentra poco estudiada y oscila entre el 0 y el 40,8%.

Objetivo: Evaluar el estado nutricional según criterios de DPE y por valoración global subjetiva (VGS) de un colectivo de pacientes españoles con enfermedad renal crónica avanzada (ERCA).

Pacientes y métodos: Estudio transversal de 186 pacientes (101 hombres) con edad media de 66,1 ± 16 años. Se realizó evaluación nutricional mediante: VGS, criterios de DPE, registro dietético de 3 días, parámetros antropométricos y bioimpedancia vectorial.

Resultados: Un 30,1% presentaba DPE, con diferencias significativas entre hombres y mujeres (22,8 vs. 33,8%; p < 0,005) y un 27,9% tenía valores de VGS en rangos de desnutrición. Sin diferencia entre los 2 métodos estudiados. Los hombres presentaron mayores niveles de proteinuria, porcentaje de masa muscular e ingesta de nutrientes. Las mujeres tuvieron mayores niveles de colesterol total, HDL y porcentaje de masa grasa. Las características de los pacientes con DPE fueron: bajos valores de albúmina y recuento total de linfocitos, elevada proteinuria, baja masa grasa, baja masa muscular y cociente Na/K elevado.

El análisis multivariante mostró asociación de DPE con proteinuria (OR: 1,257; IC 95%: 1,084-1,457; p = 0,002), porcentaje de ingesta lipídica (OR: 0,903; IC 95%: 0,893-0,983; p = 0,008), recuento total de linfocitos (OR: 0,999; IC 95%: 0,998-0,999; p = 0,001) y el índice de masa celular (OR: 0,995; IC 95%: 0,992-0,998).

Conclusión: Existe malnutrición en población española con ERCA, medida por diferentes herramientas. Consideramos conveniente adecuar nuevos elementos diagnósticos a los criterios de DPE.

Introduction

Protein wasting (PEW) is defined as a pathological state in which there is a decrease in protein and energy stores.[1] Gracia et al. translates this term into Castilian as "*desgaste proteico energético* (DPE)" emphasizing that this term gives equal importance to malnutrition and increased catabolism.[2]

The PEW increases the risk of cardiovascular mortality. This has been demonstrated in patients on maintenance hemodialysis and in patients who initiate dialysis techniques.[3,4] In patients with chronic renal disease (CKD) not on dialysis, the decrease in serum albumin levels and total lymphocyte counts (TLC) are associated with an increase the risk of mortality.[5]

The prevalence of malnutrition varies according to the renal disease stage, the dialysis technique and the methodology used for its diagnosis. Thus, in hemodialysis patients using the subjective global assessment (SGA), the prevalence of malnutrition is 28–80%.[6,7] In Spain, using the criteria of the International Society of Renal Nutrition and Metabolism (ISRNM) the prevalence is 37.7%[8] and in peritoneal dialysis (PD), using SGA, the figures are between 11.3 and 71.5.[9,10] In chronic kidney disease not in dialysis, there are very few studies evaluating the presence of malnutrition, and most of them use SGA and the malnutrition-inflammation scale (MIS); none have been performed in the patient population in Spain but their prevalence ranges from 0 to 40.8%.[5,11–13]

The nutritional status of the renal patient may be assessed using different methods. For this reason, the ISRNM has proposed one method for the diagnostic for PEWs, which include 4 categories (biochemistry, body mass, muscle mass and intake), as well as the possibility to include other additional measurements such as inflammatory markers or bioimpedance parameters.[1]

Given the fact that there is no study evaluating the presence of PWE in advanced CKD in Spain and knowing that advanced CKD has an impact on subsequent stages of renal replacement therapy (RRT), it was decided to perform the present study under the hypothesis that in advanced CKD patients