Beneficial effect of recommended dietary protein restriction for the progression of chronic kidney disease

A. Baragetti[1,2], I. Baragetti[3], C. Visinoni[1], C. Biazzi[3], K. Garlaschelli[1], L. Grigore[1], C. Pozzi[3], G.D. Norata[2,5], A.L. Catapano[2,4]

[1]Centro per lo Studio dell'Aterosclerosi, Ospedale Bassini Cinisello Balsamo, Milano
[2]Dip. di Scienze Farmacologiche e Biomolecolari – Università degli Studi di Milano
[3]U.O. Nefrologia e Dialisi, Ospedale Bassini, Cinisello Balsamo, Milano
[4]IRCCS Multimedica, Sesto San Giovanni, Milano
[5]The Blizard Institute, Barts and The London School of Medicine & Dentistry Queen's Mary University, London, United Kingdom

Introduction

Creatinine levels and proteinuria are essential parameters for the control of Chronic Kidney Disease (CKD) progression; for this purpose pharmacological interventions are considered, although their use is debated especially in end-stage renal disease (ESRD). On top of these approaches, dietary protein restriction could be useful. Up to date, only few randomized trials with low observational period evaluated the effect of protein intake control on the CKD progression in subjects with mild-to-moderate glomerular filtration rate (GFR) reduction. Therefore the aim of our study was to evaluate the association between recommended dietary protein restriction and the GFR progression.

Materials and Methods

For this purpose we evaluated the type of dietary protein consumption in 140 CKD patients (median basal GFR= 20.0 [15.0-25.0] mL/min/1.73 m^2; median age 68 [60-80] years-old). Protein dietary intake was evaluated by two independent dietists according to National Kidney Foundation's Kidney Disease Outcomes Quality Initiative (K/DOQI) guidelines; therefore patients were divided into three groups: free diet (no restriction), Low-Protein Diet (LPD) (0.8 g/Kg/daily) and Very Low Protein Diet (VLPD) (0.6 g/Kg/daily). Clinical and pharmacological history, anthropometric and biochemical parameters were also available. Subjects were followed for up to 7 years to evaluate the disease progression as dialysis entry.

Results

The evaluation of dietary habits classified 22 patients following a free diet, 87 with VLPD and 31 with LPD. Basal GFR was not significantly different between the three groups (16.2 $\pm$ 6.1 vs 16.8 $\pm$ 6.8 vs 20.9 $\pm$ 9.8 mL/min/1.73 m^2, for free-diet, VLPD and LPD respectively, P= 0.066).

After follow-up period, 64 entered in dialysis. Of these patients, 33 (51.5%) were on free-diet, 27 (42.8%) were of VLPD and 4 (6.2%) were of LPD. Overall, dietary protein intake control was associated with a higher events-free survival compared to free-diet (log-rank test, P< 0.001). Of note, Cox regression model showed that this association was independent from anti-hypertensive treatment.

Conclusion

This is the first non-randomized study showing that recommended dietary protein restriction is associated with a reduced CKD progression. Most importantly, dietary protein restriction was beneficial independently from the anti-hypertensive treatment, supporting the relevance of dietary protein control on CKD progression.