

SURVIVAL AND SAVINGS ON LOW-PROTEIN DIETS: A MULTIPLE CHOICE SIMPLIFIED APPROACH

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Objectives:

Concerns on the long-term safety of low-protein diets limits their use in Nephrology. In the discussion on the “best moment” to start dialysis, attention switched from slowing of the kidney function decline to the effects of delaying dialysis on survival. The aim of the study was to **analyse survival in a cohort of patients treated by low-protein diets, followed in the same setting in the period December 2007- September 2012, with regard to baseline clinical conditions and low-protein diet chosen.**

Methods:

Patients with **CKD stages 4-5 or progressive stage 3**, without contraindications (multiple comorbidity, malnutrition, short life expectancy), **were offered two main dietary options, both with a protein intake of 0.6 g/Kg/day:**

- A- simplified vegan supplemented diet (LPD-KA)**
- B- based on “aproteic” commercial food (LPD-ACF).**

Survival analysis employed Kaplan-Meier curves and Cox model; **renal death, patient death and combined outcome (death-dialysis) were analysed.** A separate analysis was performed for **GRF<15 mL/min**; in this group, a comparison with dialysis took into account standardized mortality rates, with respect to the Italian Dialysis Registry and the USRDS.

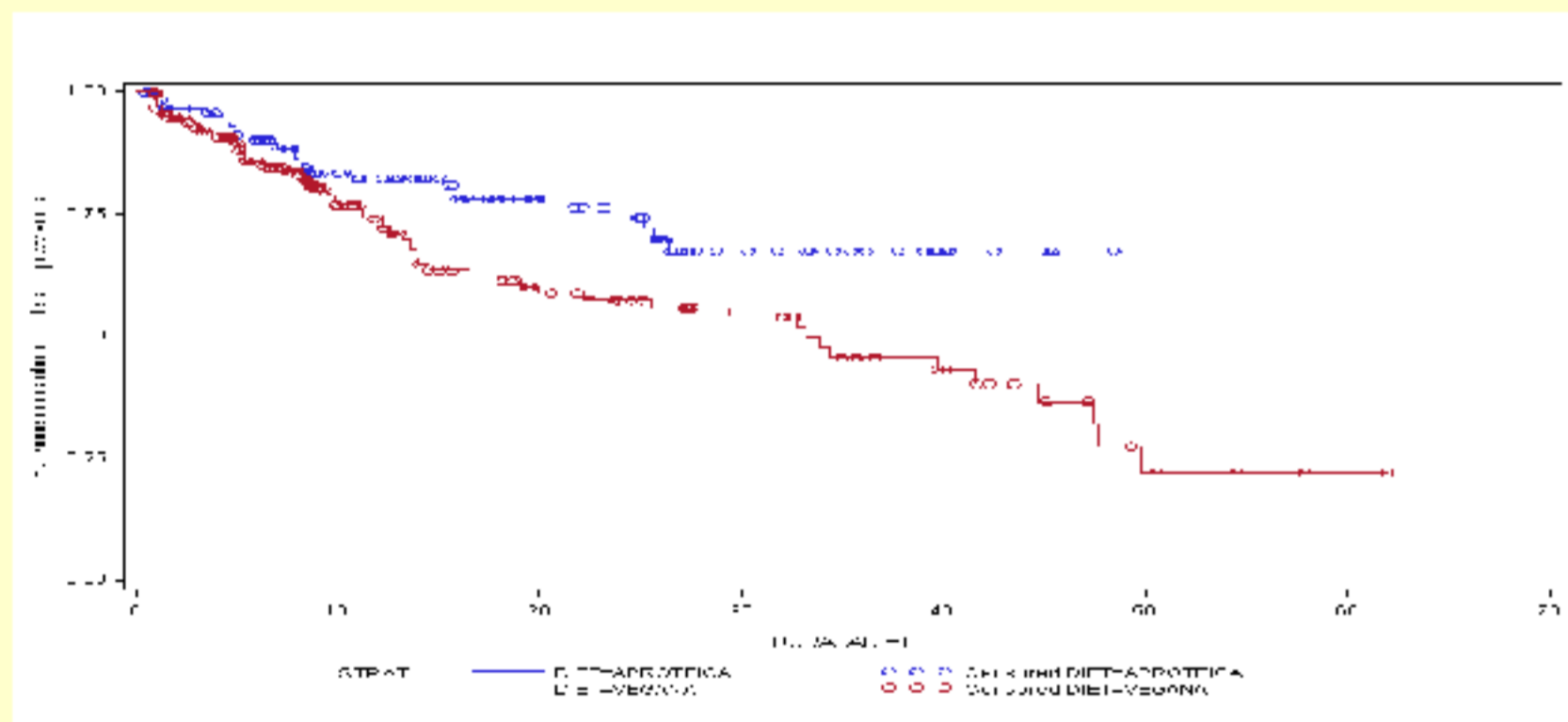
Results:

In the 5 years of the study, 307 patients started a LPD (LPD-KA: 185 patients, 222 patient-years; LPD-ACF: 122 patients, 177 patient-years).

Patients on LPD-KA were younger (63 vs 74 years p<0.0001), had lower GFR and comorbidity (17 vs 23 mL/min; no comorbidity 18% vs 28% p<0.001) and higher proteinuria (1.4 vs 0.7 g/day p<0.001).

The analysis of the separate outcomes (patient survival and renal survival) underlines an advantage for LPD-KA as for mortality and of LPD-ACF as for kidney survival; however, the two populations are different and death is an attrition bias with respect to start of dialysis. Thus in the multivariate analysis, death and combined outcomes (death or dialysis) were not influenced by the diet chosen.

SURVIVAL ANALYSIS (combined outcomes) K-M curves stratified by diet: LPD-KA- red line LPD-ACF blue line



MULTIVARIATE ANALYSIS (combined outcomes) COX

Parametro	DF	Stima dei parametri	Errore standard	Chi-quadrato	Pr> ChiQuadr	Rapporto rischio	Limiti di confidenza del rapporto di rischio al 95%
APROTEICA	1	-0.23614	0.27689	0.7273	0.3938	0.790	0.459 1.359
SEX	1	0.07861	0.23458	0.1123	0.7375	1.082	0.683 1.713
ETA1	1	0.44635	0.30643	2.1217	0.1452	1.563	0.857 2.849
ETA2	1	0.38990	0.28654	1.8515	0.1736	1.477	0.842 2.590
PROTO	1	-0.91425	0.29643	9.5124	0.0020	0.401	0.224 0.717
PROT1	1	-1.09372	0.32896	11.0539	0.0009	0.335	0.176 0.638
NESSUNA	1	-0.95535	0.39130	5.9609	0.0146	0.385	0.179 0.828
UNA	1	0.09837	0.26394	0.1389	0.7094	1.103	0.658 1.851
GFR2	1	-2.73092	0.60869	20.1291	<0.0001	0.065	0.020 0.215
GFR3	1	-0.83961	0.22878	13.4684	0.0002	0.432	0.276 0.676

0.5 with respect to the Italian Dialysis Registry and 0.4 with respect to the USRDS

	Mortalità per 100 aa pz (%)	Attivi	Osservati	RR
Apoteica	11,22%	33,56	21	0,62
Vegana	5,41%	29,42	12	0,41
Apoteica + Vegana	8,27%	62,98	33	0,52
Apoteica (GFR<15 CPE-EPO)	21,49%	6,29	6	0,95
Vegana (GFR<15 CPE-EPO)	5,94%	12,04	5	0,41
Apoteica + Vegana (GFR<15 CPE-EPO)	9,81%	18,33	11	0,60

	Mortalità per 100 aa pz (%)	Attivi	Osservati	RR
Apoteica	11,45%	36,38	17	0,47
Vegana	7,06%	28,85	9	0,32
Apoteica + Vegana	9,89%	64,45	26	0,40
Apoteica (GFR<15 CPE-EPO)	17,02%	2,88	2	0,69
Vegana (GFR<15 CPE-EPO)	8,16%	9,00	3	0,33
Apoteica + Vegana (GFR<15 CPE-EPO)	10,51%	11,88	5	0,42

The cost of one year of dialysis (rounded up at 50,000 Euros) corresponds to over 50 patient-years on LPD. We observed 127 patient-years with **GFR<15 mL/min**, roughly corresponding to saving 5 million Euros compared to “early dialysis”.

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Conclusions:

Our data support the safety of LPDs, suggesting at least survival equivalence and an economical advantage as compared to “early” dialysis. The substantial equivalence between the two LPD studied supports the policy of allowing patients choosing the preferred diet option.



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