

LOW PROTEIN DIET SUPPLEMENTED WITH KETOANALOGUES IN PATIENTS WITH ADVANCED DIABETIC KIDNEY DISEASE AND SEVERE PROTEINURIA

Liliana Garneata^{1,2}, Tudor Simionescu², Alexandra Stancu², Paula Luca², Ioana Nicolae², Gabriel Mircescu^{1,2}

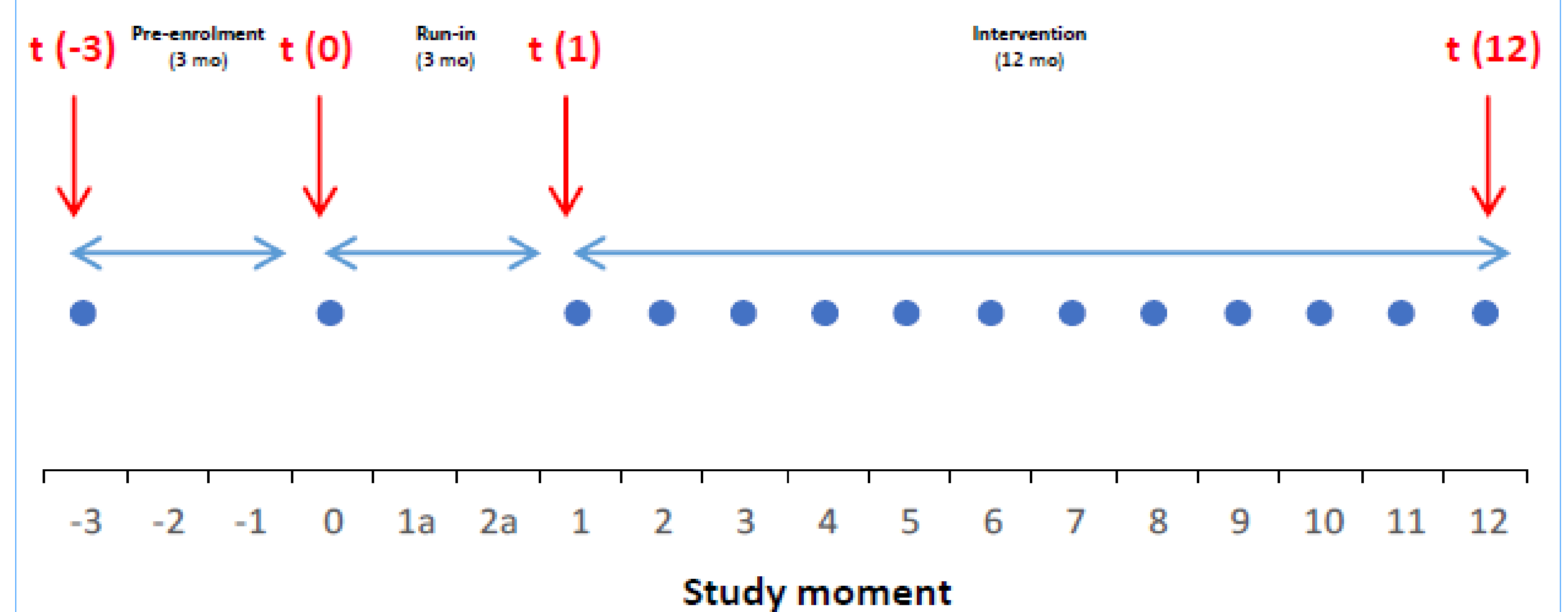
1 "Carol Davila" University of Medicine and Pharmacy, Bucharest; 2 "Dr Carol Davila" Teaching Hospital of Nephrology, Bucharest, Romania

BACKGROUND AND OBJECTIVE

- Recent studies suggest that hypoproteic diets supplemented with ketoanalogues of essential aminoacids (sLPD) postpone dialysis, mainly by better metabolic and blood pressure (BP) control, and by reduction in proteinuria. However, few included diabetic patients [1-8].
- We aimed to evaluate the effects of sLPD on the rate of decline in renal function and on proteinuria in diabetic patients with CKD stage 4+.

STUDY DESIGN

- Type:** Prospective, single-center, interventional
- Parameters:**
 - Efficacy:
 - Primary parameters:
 - rate of decline in eGFR during intervention as compared to the pre-enrolment period (logistic regression, mL/min per mo)
 - variation in proteinuria during intervention
 - Secondary parameters: glucose metabolism, blood pressure (BP) control
 - Safety:
 - Nutritional and inflammation markers (SGA, BMI, serum albumin, C reactive protein, CRP)
 - Compliance



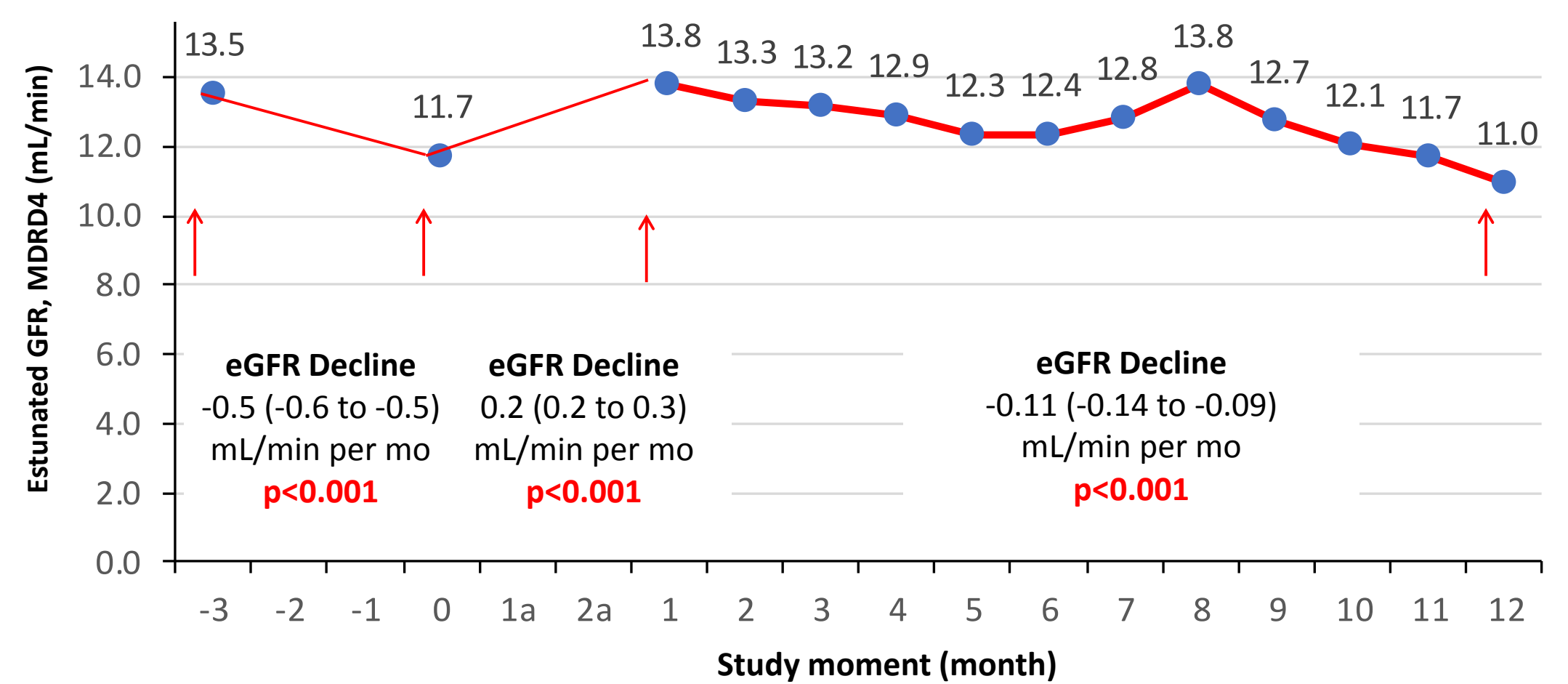
SUBJECTS. METHODS. INTERVENTION

- 276 adult diabetic patients with CKD stage 4+, with stable renal function, proteinuria > 3g/g creatininuria and good nutritional status (SGA A) were enrolled in a run-in phase (3 mo), when low protein diet (0.6g/kg dry ideal bw) was initiated.
- Those who proved adherent (n=92, 64% males, median age 55.7 yrs, 65% on insulin therapy) were included in the study and received ketoanalogues supplemented (Ketosteril®, 1 tablet/10 kg dry ideal bw) low protein diet (sLPD).
- Monitoring and treatment continued according to the National Best Practice Guidelines [9].

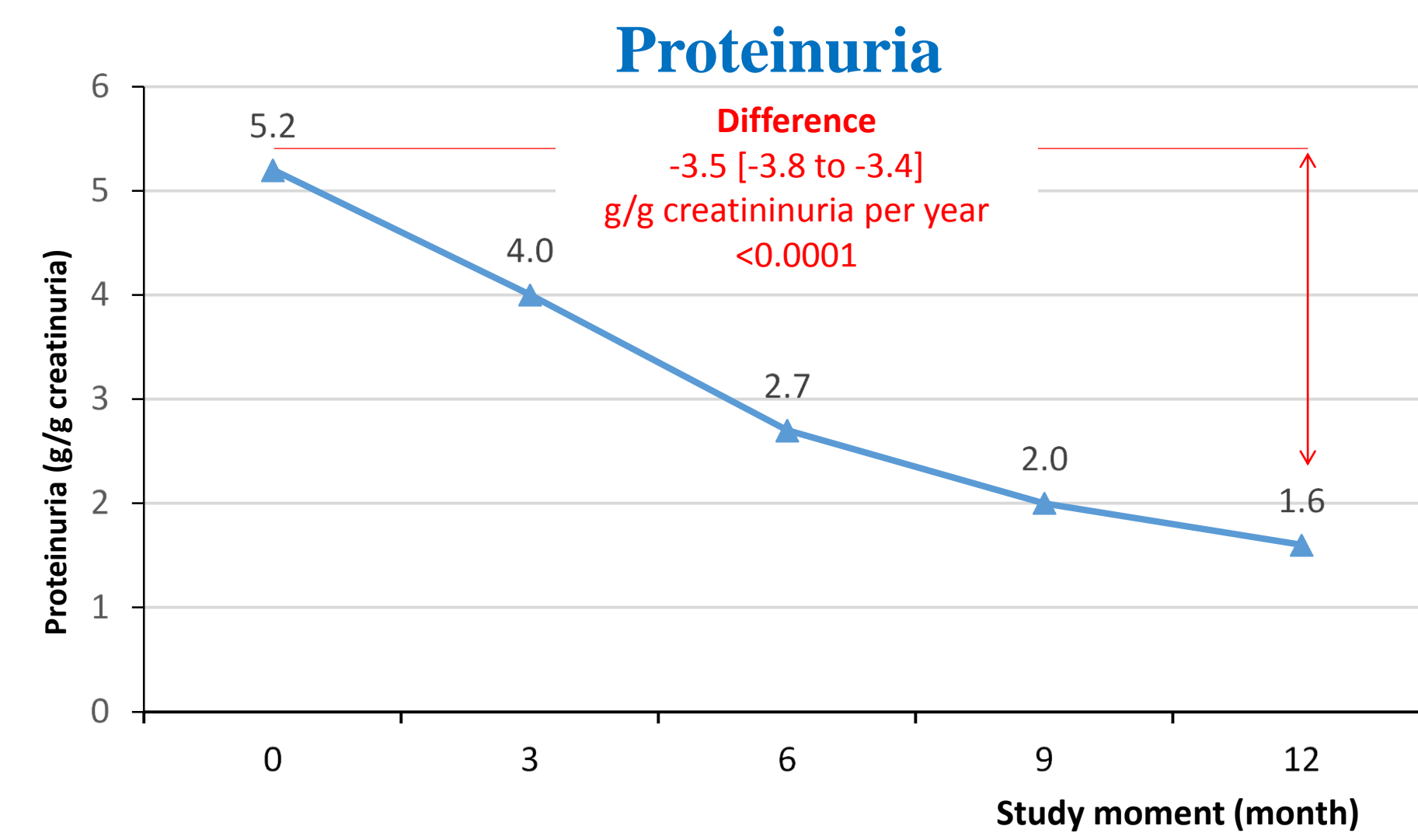
RESULTS

Progression of Chronic Kidney Disease, Proteinuria and Blood Pressure Control

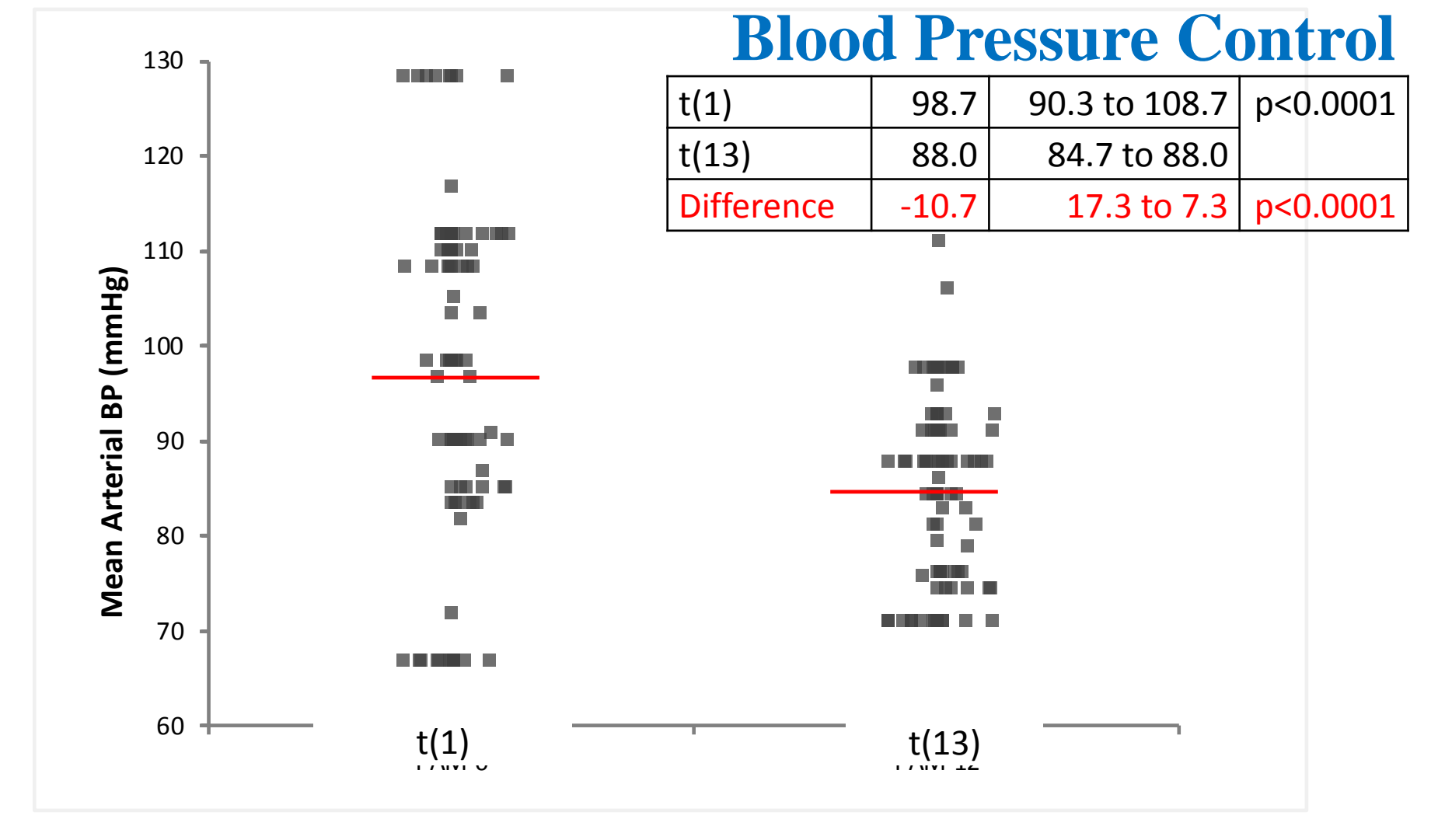
The Decline in eGFR



- No patient required renal replacement therapy during the study.
- The rate of decline in eGFR decreased almost 5 times during sLPD



- Proteinuria significantly decreased (by 3.5g/g creatininuria).



- Blood pressure control was ameliorated (by 11 mm Hg).

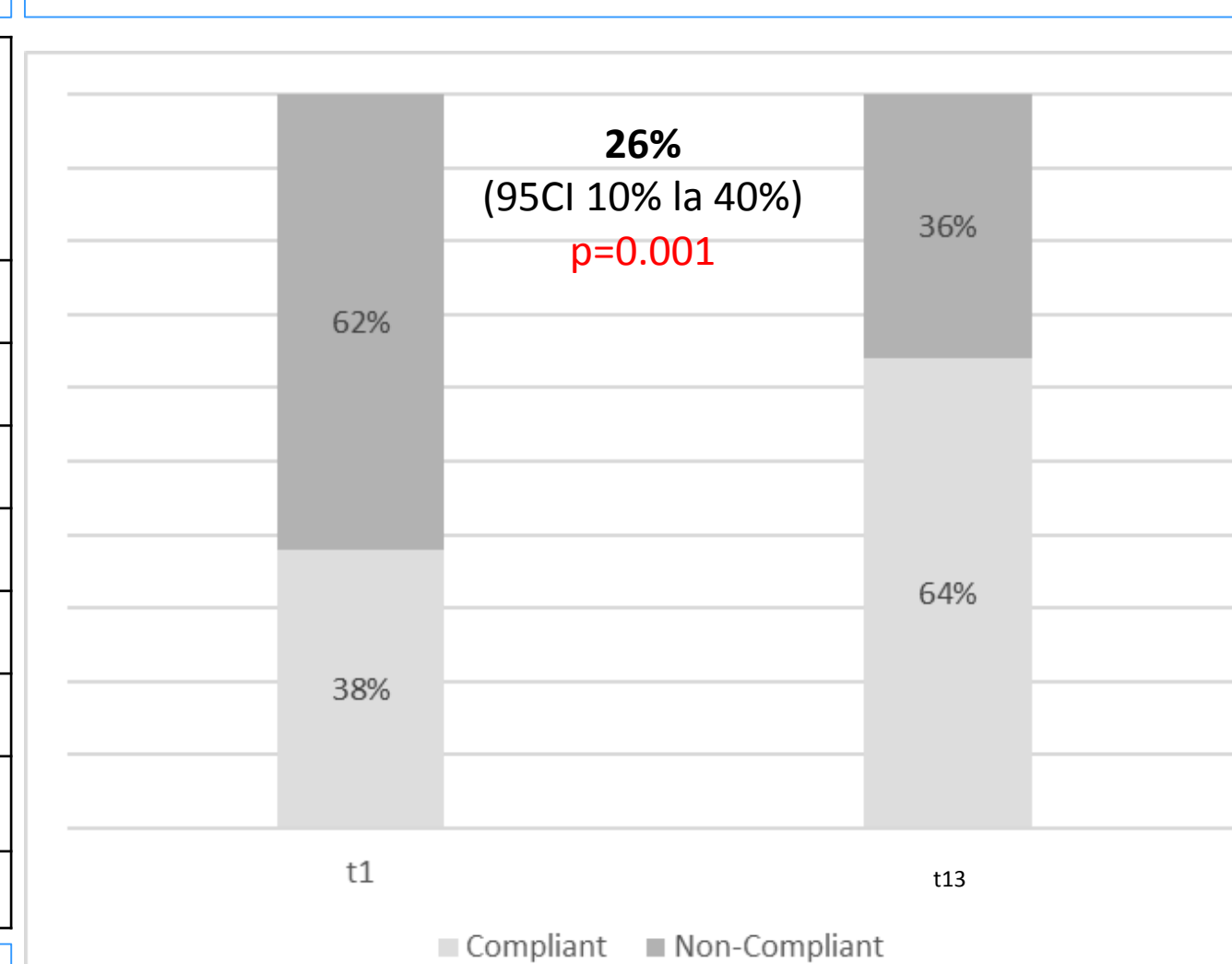
Glucose Metabolism, Nutritional Status and Inflammation

Parameter	Inclusion (I)	End of study (EOS)	Difference EOS-I
eGFR (mL/min)	12.6 (11.7-13.1)	10.9 (10.3-11.5) *	-1.3 (-1.7 to -1.1)
Proteinuria (g/g creatininuria)	5.2 (5.0-5.2)	1.6 (1.4 - 1.7) *	-3.5 (-3.8 to -3.4)
Serum albumin (g/dL)	3.9 (3.9-4.0)	4.1 (4.1-4.2) *	0.2 (0.1-0.3)
C Reactive Protein (mg/L)	14 (13-14)	9 (8-9) *	-4 (-4 to -6)
Mean BP (mmHg)	98.7 (90.3-108.7)	88.0 (84.7-88.0) *	-10.7 (-17.3 to -7.3)
Pts with HbA1c<7.5(%)	19	25	6
BMI (kg/m ²)	27.1 (26.3-28.0)	26.0 (25.1-26.8) *	-1.2 (-0.7 to -1.6)

Data presented as median and 95% CI; * p<0.005 EOS vs I

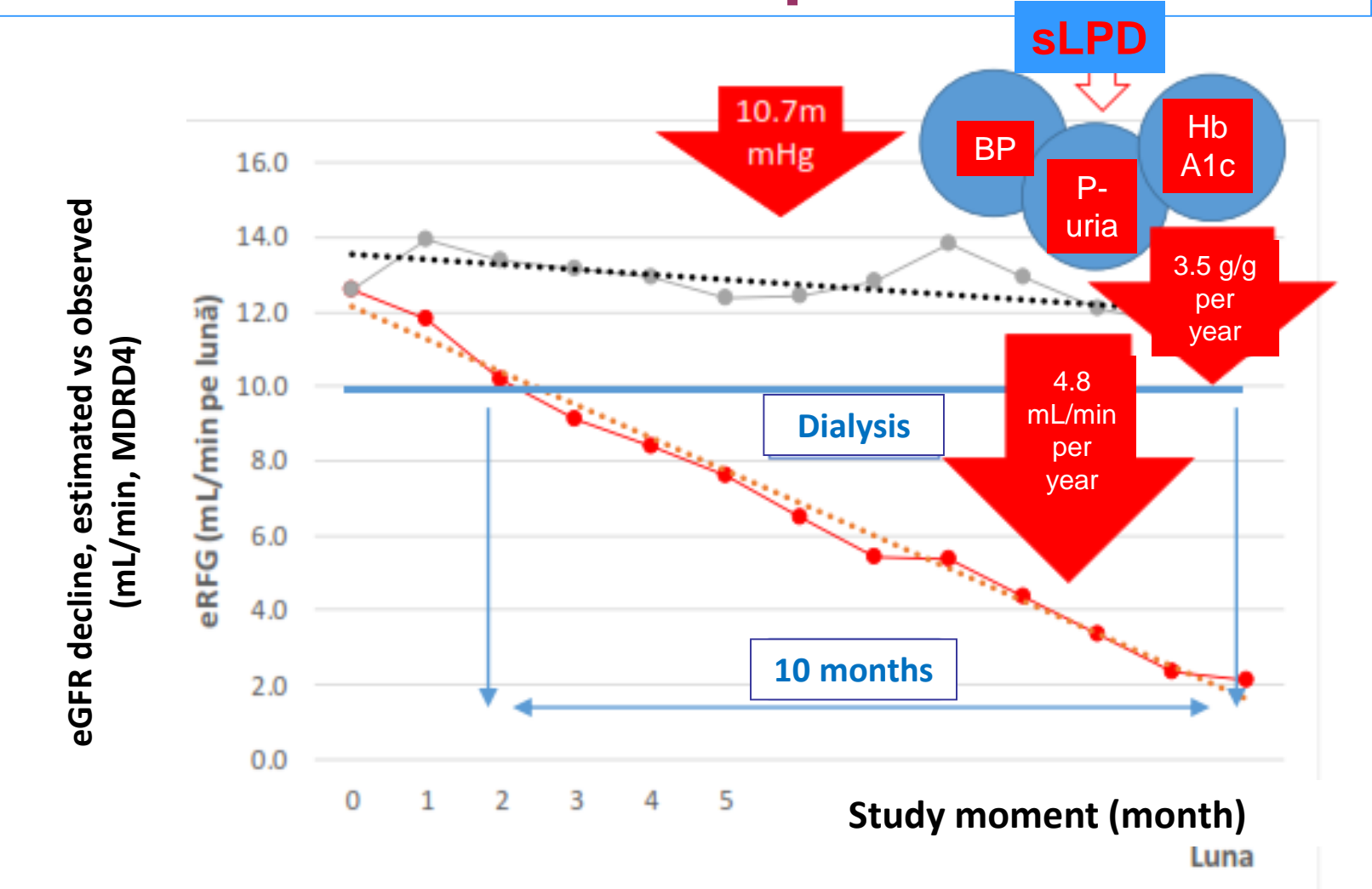
- No influence of sLPD on glucose metabolism was noted.
- Nutritional status was improved: BMI decreased, with no change in SGA.
- Serum albumin significantly increased, while CRP decreased.

Adherence to the sLPD



- Initially low, adherence significantly improved.

Impact of the sLPD



- Neither BP control, nor proteinuria, BMI or CRP appeared to be directly related to renal function.

CONCLUSIONS

- In patients with advanced Diabetic Kidney Disease and severe proteinuria, ketoanalogue-supplemented low protein diet was associated with significant (5 times) reduction in the rate of decline in eGFR and of proteinuria (by 3.5g/g creatininuria). Blood pressure control, proteinuria, BMI and inflammation were ameliorated. However, none of them appeared to be directly related to renal function, supporting the role of plurifactorial intervention.

REFERENCES:

- Mitch WE: J Am Soc Nephrol 2:823-831, 1991
- Combe C et al: Nephrol Dial Transplant 8:412-8, 1993
- Walser M, Hill S: J Am Soc Nephrol 10:110-116, 1999
- Fouque D et al: Low protein diets for CKD in non diabetic adults. Cochrane Database Syst Rev 3:CD001892, 2009
- Bellizzi V, Di Iorio BR, De Nicola L, et al, on behalf of the ERIKA Study-group. Kidney Int 71(3):245-251, 2007
- Mircescu G., Gârneață L., Stancu Hildegard S., Căpușă C. Journal of Renal Nutrition, vol 17, No 3, 2007: pp 179-188.
- Garneata L, Stancu A, Dragomir D, Stefan G, Mircescu G. J Am Soc Nephrol. 2016 Jul;27(7):2164-76
- Piccoli GB et al: Nephrol Dial Transplant 28:2295-2305, 2013
- Mircescu G, Covic A, Gluhovschi G, Schiller A et al: Romanian Best Practice Guidelines – Nutrition and nutritional intervention in Chronic Kidney Disease, Curtea Veche Publishing House, 2010

