

INFLAMMATION AND ATHEROSCLEROSIS ARE ASSOCIATED WITH HYPERTENSION IN KIDNEY TRANSPLANTS

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Introduccion:

Hypertension is more severe in kidney transplants recipients than in patients with chronic kidney disease (CKD) and similar renal function¹. The aim is to evaluate the association between low grade inflammation, subclinical atherosclerosis and hypertension in kidney transplants recipients.

Métodos:

Between June and September 2011, 92 consecutive kidney transplants with an estimated glomerular filtration rate (e-GFR) <60 ml/min/1.73m², and without previous history of cardiovascular events were included. At entry, 24h ambulatory blood pressure monitoring (ABPM), pulse wave velocity (PWV) and carotid ultrasound were performed. A serum sample to determinate interleukin 6 (IL-6), soluble tumor necrosis factor receptor 2 (sTNFR2) and intercellular adhesion molecule 1 (ICAM-1) levels was obtained. CKD patients (N=30) with similar characteristics were recruited at the same time as a control group.

Results :

	Transplant N=92	CKD N=30	p
Age (years)	52.5±11.3	53.8±10.3	0.567
Gender male (% of male)	68 (73.9)	19(63.3)	0.266
Time of renal disease (months)	199.4±119.8	160.2±159.0	0.022
Dialysis treatment, n (%)	86 (93.5)	-	
Dialysis vintage (months)	22.7±26.1	-	
Time since transplantation (months)	73.7±78.1	-	
Body mass index (kg/m ²)	26.8±4.7	26.4±4.1	0.663
Smoking status, yes (%)	14 (15.2)	8 (26.7)	0.157
Diabetes mellitus, yes (%)	18 (19.6)	7(23.3)	0.657
Total cholesterol (mg/dL)	189.4±34.6	189.4±28.2	0.995
Triglycerides (mg/dL)	169.8±95.6	166.7±142.6	0.890
Serum calcium mg/dL)	9.48±0.54	9.46±0.59	0.891
Serum phosphate (mg/dL)	3.41±0.72	3.65±0.73	0.120
PTH (pg/mL)	87.1±45.1	90.3±81.0	0.786
Serum creatinine (mg/dL)	1.8±0.6	1.8±0.6	0.824
Urinary P/C ratio (g/g)	0.50±0.85	0.49±0.90	0.999
Pulse wave velocity (m/s)	7.98±1.75	8.17±1.84	0.628
% of patients with carotid plaques	55.4	30	0.016
Total number of carotid plaques	1.17±1.48	0.53±1.07	0.013
Intima media thickness (mm)	0.768±0.139	0.761±0.126	0.134

Table 1. Characteristics of patients. CKD: chronic kidney disease; e-GFR, estimated glomerular filtration rate; PTH, parathyroid hormone; urinary P/C ratio, urinary protein/creatinine ratio.

	Trasplants N=92	CKD N=30	p
24 h SBP (mmHg)	133.9±14.3	120.5±14.6	0.0001
24 h DBP (mmHg)	79.8±10.4	73.8±10.2	0.007
% of fall of sleep SBP	-3.05±8.19	-8.13±7.54	0.003
Dipper, non dipper/riser	67/25	26/4	0.122
Antihypertensive drugs	1.6±1.1	1.4±1.0	0.539
ACEI/ARB (yes, %)	48 (52.2)	20 (66.7)	0.165

Tabla 2. Blood pressure characteristics. CKD: chronic kidney disease; SBP, systolic blood pressure; DBP, diastolic blood pressure; ACEI/ARB, angiotensine converting enzyme/angiotensin receptor blocker.

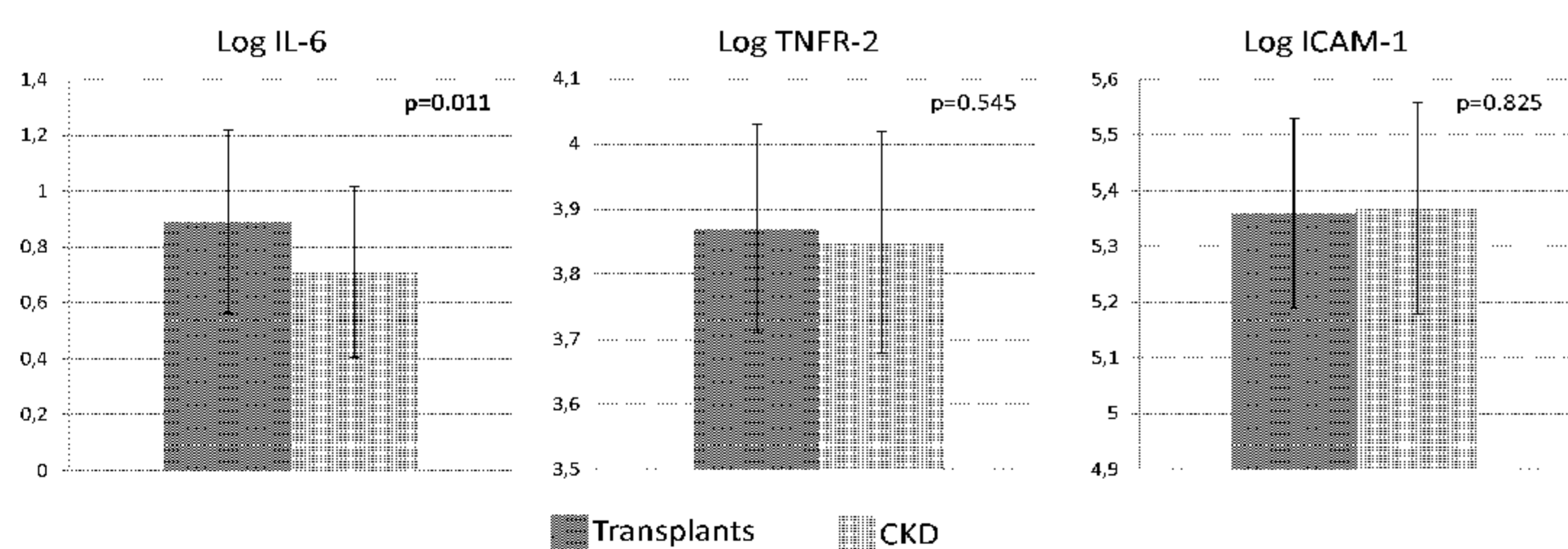


Figure 1.

Figure 1. Biomarkers of inflammation and endothelial activation in transplants and patients with chronic kidney disease. Log IL-6, log-transformed Interleukin 6; log sTNFR2, log-transformed soluble tumor necrosis factor receptor 2; log ICAM-1, log-transformed intercellular adhesion molecule 1; CKD, chronic kidney disease.

A.) Predictors of awake SBP

	R ²	p
Urinary P/C (g/g)		
PWV	0.170	0.0001

B.) Predictors of sleep SBP

	R ²	p
Log IL-6		
Urinary P/C (g/g)	0.138	0.001

C.) Predictors of percentage decline of SBP from day to night

	R ²	p
Log IL-6		
Serum creatinine (mg/dL)		
Total n° of carotid plaques	0.202	0.0001

Table 3. Independent predictors of awake, sleep systolic blood pressure and of percentage decline of systolic blood pressure from day to night in kidney transplants recipients. SBP, systolic blood pressure; Log IL-6, log-transformed interleukin-6; urinary P/C ratio, urinary protein/creatinine ratio .

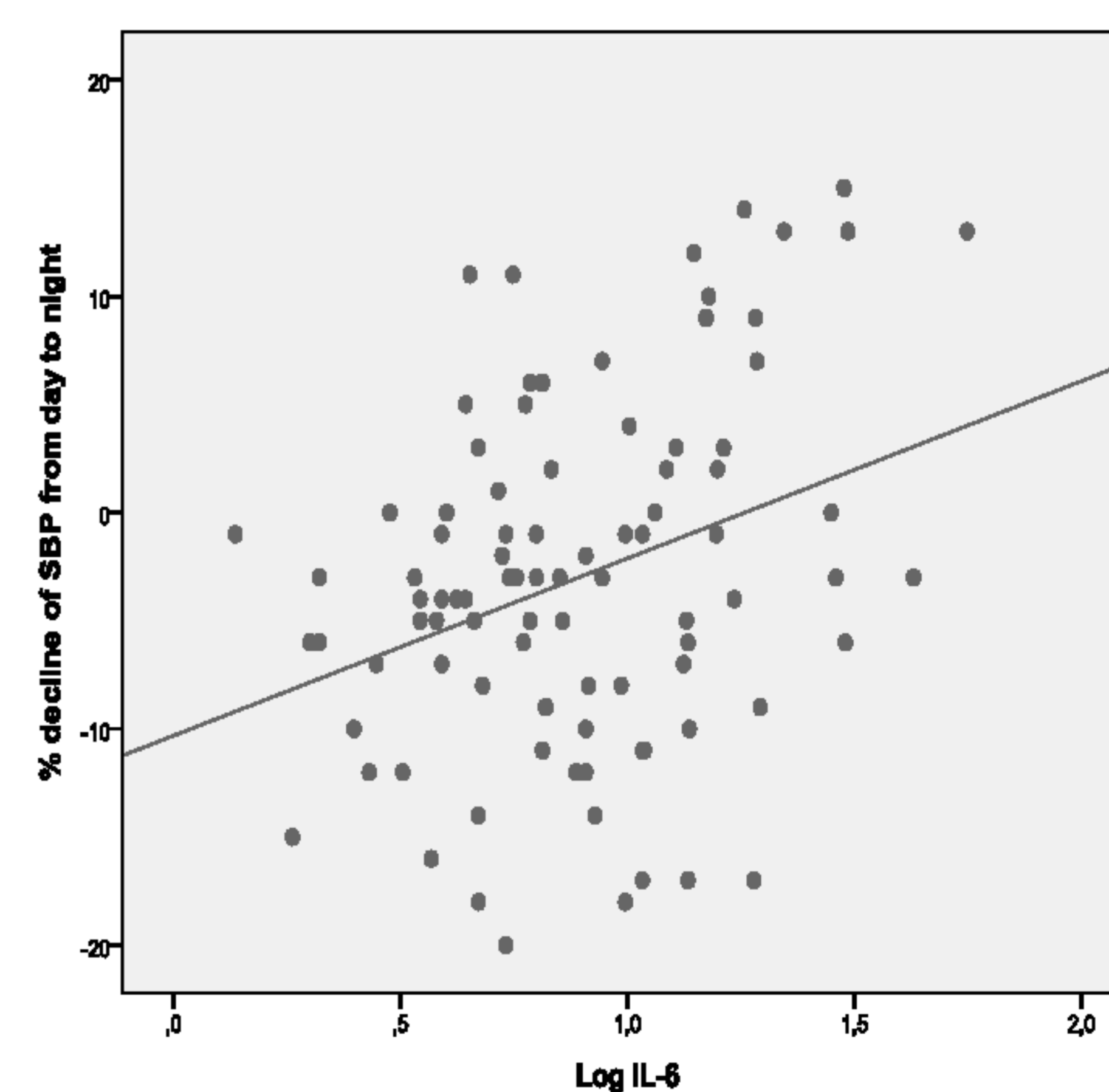


Figure 2. Correlation between percentage decline of SBP from day to night in relation to interleukin 6 (log-transformed). SBP, systolic blood pressure; Log IL-6, log-transformed Interleukin 6.

Conclusion:

Our results suggest that subclinical atherosclerosis and systemic inflammation are associated with hypertension after transplantation.

Reference:

1. Azancot MA, Ramos N, Moreso FJ, et al. Hypertension in Chronic Kidney Disease: The Influence of Renal Transplantation. Transplantation 2014.