

Body composition and mortality in hemodialysis patients

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Introduction and aims:

In contrast to the general population, obesity has generally been associated with improved survival among chronic hemodialysis patients¹. We still don't know which component of body composition (fat or lean) is more associated with the observed obesity paradox.

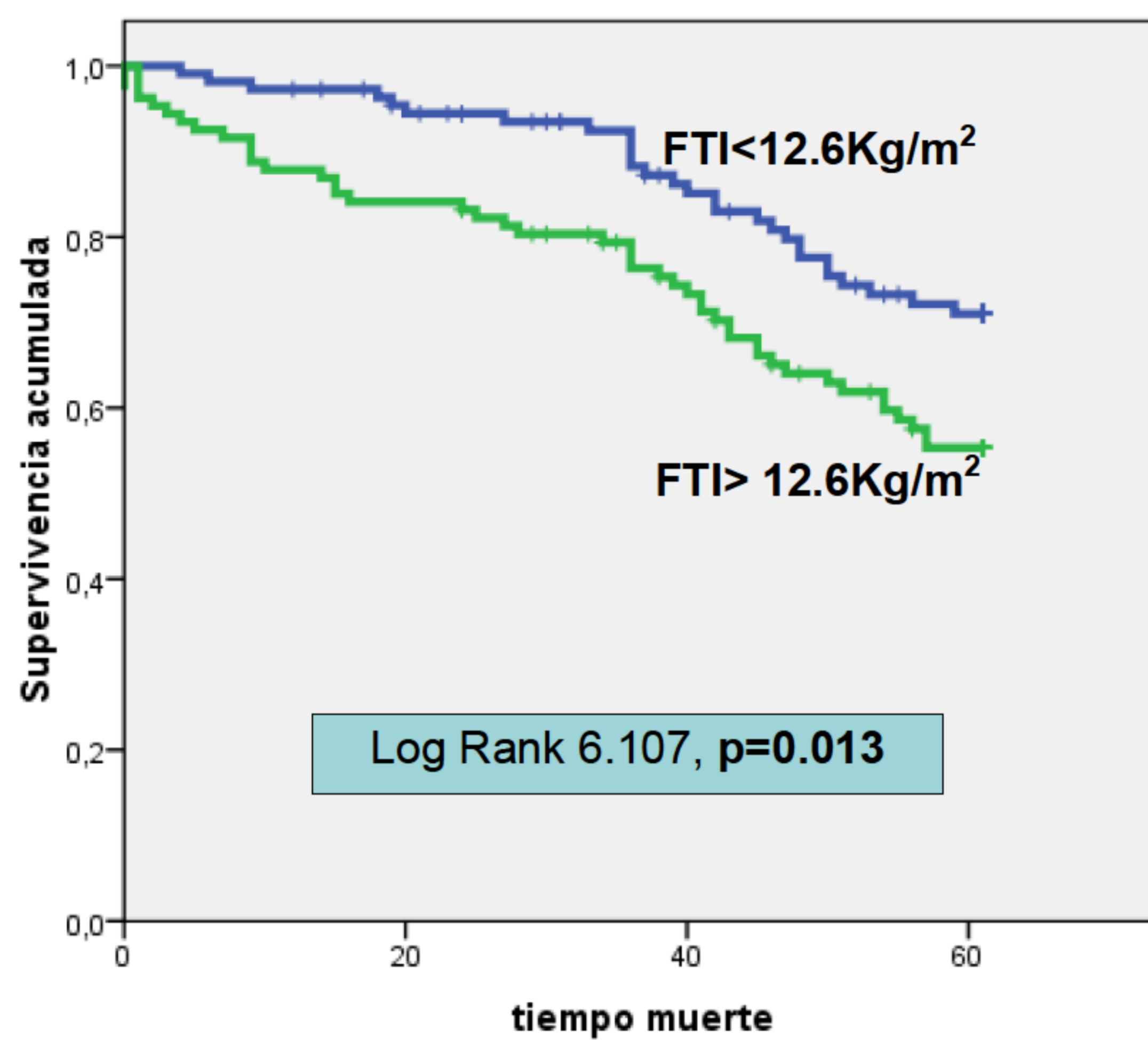
The aim of the study is to determine whether muscle mass (LTI: lean tissue index), fat tissue (FTI: fat tissue index) or both are associated with longer survival among hemodialysis patients.

Patients and Methods:

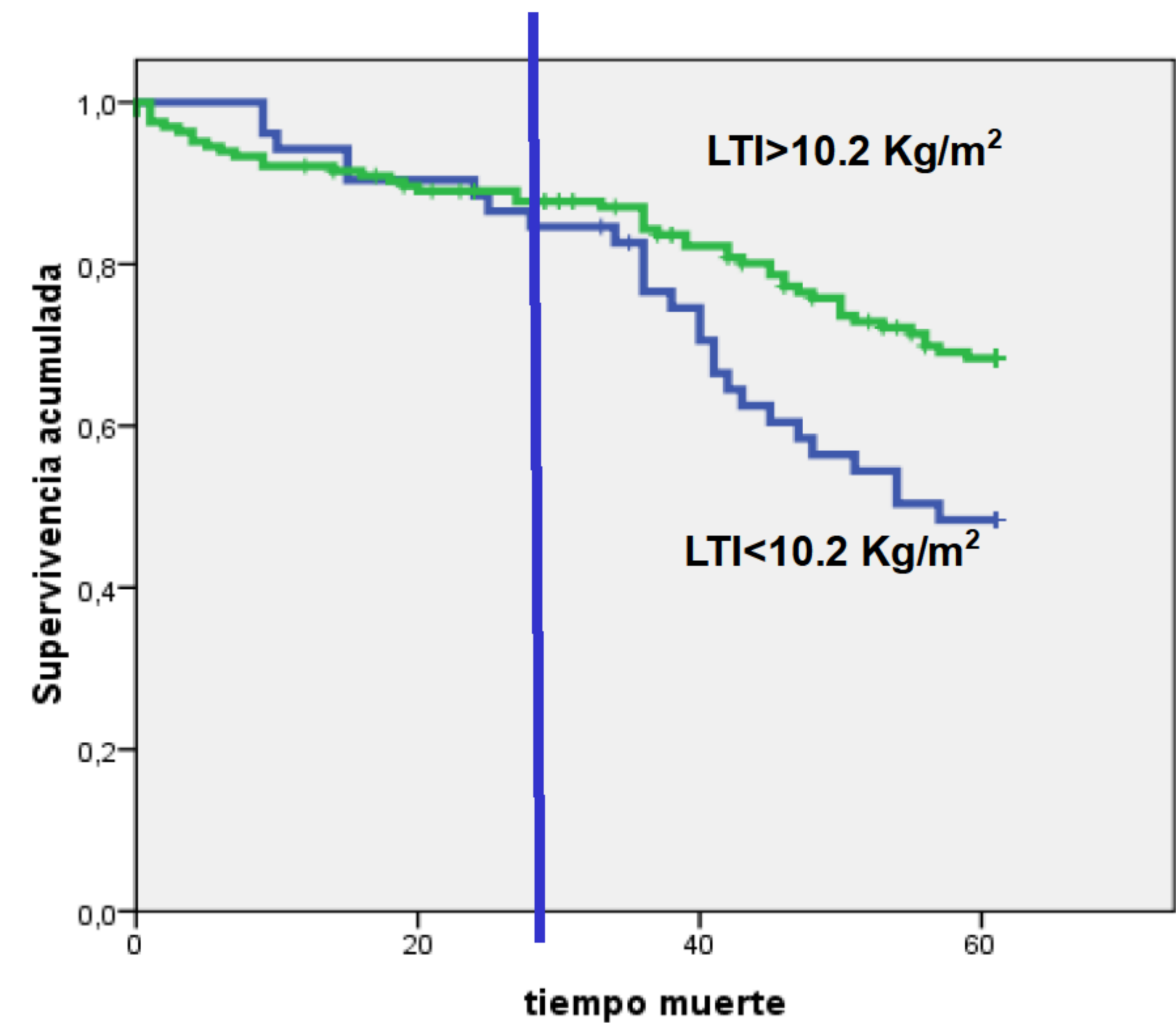
The study group consisted of 217 patients on maintenance haemodialysis. Patients were prospectively followed-up for 5 years. Demographic data and mortality were prospectively collected. Body composition was assessed by bioimpedance spectroscopy (BIS).

Kaplan Meier test was performed to analyze the influence of body composition on mortality and ANOVA test to determine the cutoff point beyond which increases mortality. Cox regression models were used to evaluate the relationship between measures of body composition with mortality after adjustments for demographic data.

Kaplan Meier Mortality FTI



Kaplan Meier Mortality LTI



Multivariable logistic regression: Mortality FTI

	B	SE	Wald	df	Sig.	Exp(B)	95,0% CI for Exp(B)	
							Lower	Upper
FTIp50	,551	,251	4,801	1	,028	1,735	1,060	2,840
Edad2	,014	,008	2,684	1	,101	1,014	,997	1,031
Sexo	,070	,249	,079	1	,778	1,073	,658	1,749

Multivariable logistic regression: Mortality LTI

tiempo muerte	LTI	B	SE	Wald	df	Sig.	Exp(B)	95,0% CI for Exp(B)	
								Lower	Upper
<36	LTI10.2	-,188	,459	,168	1	,682	,828	,337	2,038
	Edad2	,020	,014	1,931	1	,165	1,020	,992	1,049
	Sexo	,096	,410	,055	1	,814	1,101	,493	2,459
≥36	LTI10.2	,679	,345	3,881	1	,049	1,972	1,003	3,874
	Edad2	,010	,011	,789	1	,375	1,010	,988	1,031
	Sexo	,093	,333	,077	1	,781	1,097	,571	2,109

Results:

In Kaplan Meier analysis mortality at 5 years followed-up is associated with higher FTI (log rank $p < 0.013$) and lower LTI (log rank $p = 0.013$). Mortality is increased in patients with $FTI > 12.6 \text{ Kg/m}^2$ and $LTI < 10.2 \text{ Kg/m}^2$.

In the multivariate Cox model, adjusted for age and sex, FTI is an independent predictor of mortality (HR 1.735, 95% CI 1.060-2.840, $p = 0.028$). The Cox regression model for LTI does not meet criteria of proportionality of risk, so it is broken into 2 models one for less than 3 years of follow-up in which there are no significant differences and one for the patients with more than 3 years follow-up in which the group with $LTI < 10.2 \text{ Kg/m}^2$ have higher mortality (HR 2.267, 95% CI 1.230-2.267).

Conclusions:

- 1- FTI determined by bioimpedance is an early and independent predictor of mortality in hemodialysis patients at 5 years followed-up.
- 2- LTI is an independent predictor of mortality from the 3 years follow-up in the studied hemodialysis.

References:

1- Kalantar-Zadeh. Reverse epidemiology of cardiovascular risk factors in maintenance dialysis patients. *Kidney Int*, 2003.

