WHICH FACTORS HAVE INFLUENCE ON THE MORBIDITY, INITIATION OF DIALYSIS AND MORTALITY OF PATIENTS WITH CKD STAGE 4 AND 5 NOT ON DIALYSIS?

FINAL RESULTS FROM THE "PECERA STUDY" .

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INTRODUCTION

▪ There is little information available in the literature about the course of patients with Chronic Kidney Disease (CKD) Stage 4 and 5 not on dialysis, particularly regarding morbidity and mortality.

OBJECTIVE

▪ The aim of this study was to analyse hospitalization, risk factors for initiation of dialysis and mortality of the patients with CKD stage 4-5 not on dialysis

PATIENTS & METHODS

▪**PECERA** (**P**royecto de **E**studio **C**olaborativo en pacientes con **E**nfermedad **R**enal crónica **A**vanzada, Estadios K/DOQI 4 -5 no en diálisis) is a prospective, multicentre, observational study of patients with CKD stage 4-5 not on dialysis, who were followed-up for 3 years in the outpatient clinic.

▪ From May 2007 to March 2009 we included 1,022 consecutive patients seen in the outpatient clinics of 11 Nephrology centres from the Valencia Region. After exclusion of non-suitable patients the study consisted **of 995 patients** (806 CKD stage 4 – 81%-, and 189 stage 5 not on dialysis -19%-).

▪ INCLUSION CRITERIA:
- Age> 18 year.
- CKD stage 4-5 not on dialysis (eGFR < 30 ml/min/1.73 m²) by MDRD equation.
- Life expectancy >1 year
- Patients must be able to give consent.
- A systematic, consecutive sampling of patients was conducted during inclusion period until the desired number was reached.

• EXCLUSION CRITERIA :
- Acute renal failure.
- Wasting disease, malignancy, incapacitating disease, or active infection/inflammation.
- Inability to give oral or witnessed informed consent

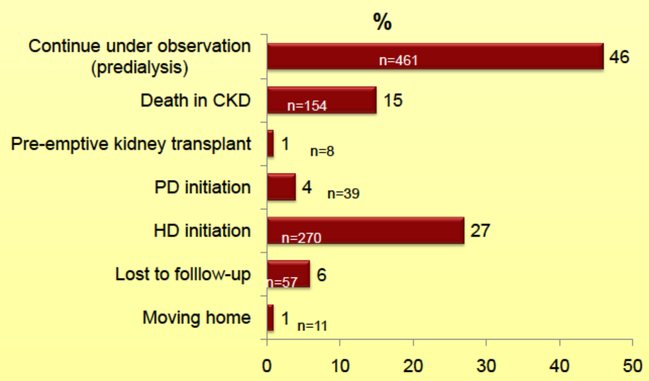
•In order to avoid lead-time bias, the analysis of risk factors for initiation of dialysis was calculated based on an initial eGFR of 30 ml/min/1,73. The multivariate analysis was conducted by means of Cox proportional hazards model.

CHARACTERISTICS OF THE PATIENTS AT BASELINE

N= 995 PATIENTS	n (%), x ± SD
Age, years (± SD)	69 ± 13 (r: 19-95)
Gendre (Male/ female)	60.2 % / 39.8 %
BMI, kg/m²	28.2 ± 5.1 (16-52)
Diabetes	359 (35.4 %)
Stage (MDRD): - 4 K/DOKI (15-29 ml/min/1.73 m²) - 5 K/DOQI (< 15 not on dialysis)	189 (19 %) 806 (81 %)
Etiology - Glomerular - Interstitial - Vascular - Polycystic renal disease - Diabetic nephropathy - Unknown - Other	 6.3 % 17.0 % 58.5 % 4.4 % 13.0 % 11.7 % 12.5 %
Congestive heart failure	20.1 %
Coronary heart disease	21.8 %
Cerebrovascular disease	13.3 %
Peripheral vascular disease	17.3 %
Current smoking	10.9 %
Former smoking	33.8 %
Serum creatinine, mg/dl	3.1 ± 1.1
eGFR (MDRD, ml/min/1.73 m²)	20 ± 5
Proteinuria (gr/day)	1.4 ± 2.6
Systolic blood pressure, mmHg	132 ± 17
Diastolic blood pressure, mmHg	72 ± 9
Pulse pressure	59 ± 15
Waist circumference, cm	100 ± 15

RESULTS

Causes of completion of the study at 5-year follow-up n= 542 (48 %)



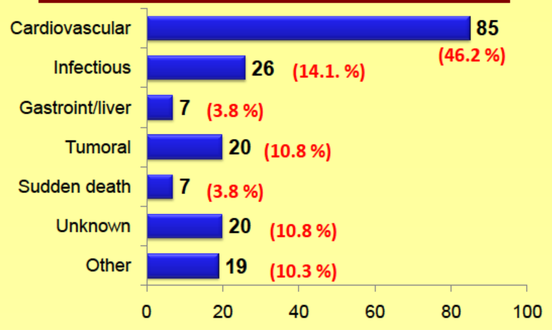
Hospitalization causes

		%	N=457*	
Cardiovascular (163)		**32.5 %**		
	Congestive heart failure	17.9	90	
	Angina	2.6	13	
	Acute myocardial infarction	1.6	8	
	Other cardiovascular	4.0	20	
	Coronary revascularization	1.8	9	
Transient ischaemic attack		**1.4 %**	7	
Cerebrovascular disease (stroke)		**1.6 %**	8	
Peripheral vasc disease (amputation included)		**1.6 %**	8	
Infectious		**16.3 %**	82	
Neoplasies		**5.2 %**	26	
Surgery		**7.8 %**	39	
Gastrointestinal / hepatic		**13.4 %**	67	
Vascular access		**4.4 %**	22	
Other		**20.5 %**	103	

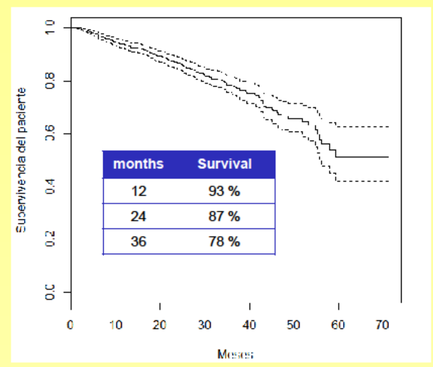
37 %

*457 hospitalizations in 305 patients (30.7 %),1 hospitalization in 198 patients, 2 in 57, 3 in 30 and ≥4 in 20 patients

Causes of death



Mortality during the series



Risk factors for initiating renal replacement therapy

Cox regression model adjusted by age
(Considering baseline when eGFR was 30 ml/min/1.73m²)

Factor	HR	95% CI	P
Age	0.96	0.95 – 0.98	0.001
Proteinuria	1.09	1.01 - 1.16	0.012
Serum phosphate	1.28	1.01 - 1.16	0.034
Unknown etiology	2.86	1.29 – 6.32	0.009

Risk for mortality (multivariate analysis)

Cox model, adusted by Age and eGFR)

Factor	OR	CI 95%	P
Age	1.03	1.01 – 1.06	0.006
Diabetes mellitus	1.58	1.06 - 2.35	0.0001

Risk factors for hospitalization

(Cox regression model adjusted by age)

Factor	HR	95% CI	P
Diabetes Mellitus	1.60	1.20 – 2.12	0.01
Previous congestive heart failure	2.12	1.53 – 2.95	0.001
Haemoglobin	0.86	0.77 – 0.95)	0.009

Risk for cardiovascular mortality

(Cox regression model adjusted by age)

Factor	OR	95% CI	P
Age	1.06	1.02 - 1.09	<0.001
Diabetes mellitus	1.77	1.09 – 3.20	0.045

CONCLUSIONS

In our series the principal factors influencing mortality in CKD 4-5 patients not on dialysis were non-modifiable factors (age and diabetes). In the case of hospitalization, non-modifiable factors were also the principal influence (diabetes and previous congestive heart failure). Nevertheless, the initiation of dialysis was correlated with modifiable factors (proteinuria and serum phosphate).

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