Chronic Kidney Disease in the Diabetic Patients in National Renal Healthcare Program in Uruguay

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INTRODUCTION

The National Renal Healthcare Program began in October 2004. Its activities included: to inform general population about healthy habits and vascular risk factors, through Primary Health Centres, radio and television and the Integration of renal care into the first level attention. The patients have been referred to the Nephrologists from the primary care physician or directly from the laboratory when the GFR < 60 ml/min or proteinuria > 0.3 g/l or microalbuminuria > 30 mg/l in diabetic patients. It has an electronic Registry that has included data of the initial and control visits of all patients with an alarm system to reduce the lost of patients in follow-up. So far, the Registry has accumulated data from 1365 patients.

OBJETIVE:

To analyze the clinical presentation and the outcome of DP.

METHODS:

This is a descriptive-prospective study. From October 2004 to January 31st, 2007, 501 of diabetics patients (DP) were included. The variables evaluated at the entry of the program were: demographic characteristics, nephropathy, CKD risk factors, cardiovascular comorbidities and stage of CKD. Outcome has been evaluated by GFR changes (ΔGFR), ESRD rate and mortality rate. The first, second and last control (1st, 2nd, LstC) data were compared.

STATISTICS: t- Tests to analyse quantitative variables, x^2-test was used to compare qualitative data, Cox proportional hazard model was used to identify independent predictors for ESRD and mortality. P value < 0.05 was considered statistically significant. All calculations were performed with SPSS 11.5

RESULT:

The median age was 65.0 (SD 12.3) years, 248 women (49.5 %); white race (96.2%). Type 2 diabetics were 95.2 % and required insulin 20.8 %. The most frequent diagnose were Diabetic (46.7%) and Vascular Nephropathy (35.9%). The 82% of the DP were referred in the early stages of CKD (Stages I, II, III) (Fig. 1). The most frequent renal risk factors were high blood pressure (HBP), dyslipidemia and obesity (Fig. 2).There was a high incidence of cardiovascular comorbidities which increase with the progression of the CKD (Fig. 3)

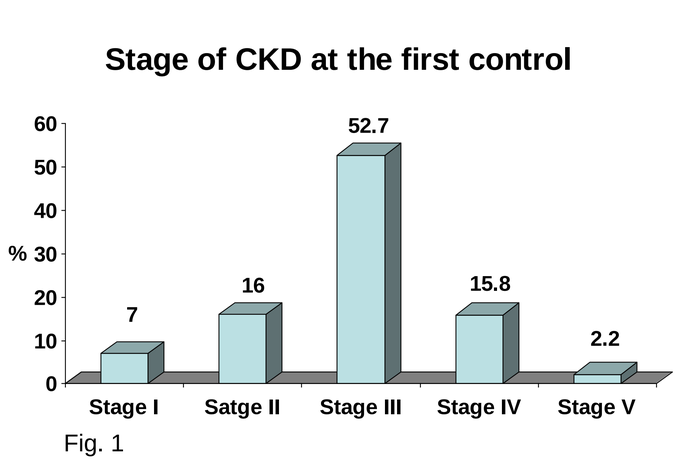

Fig. 1

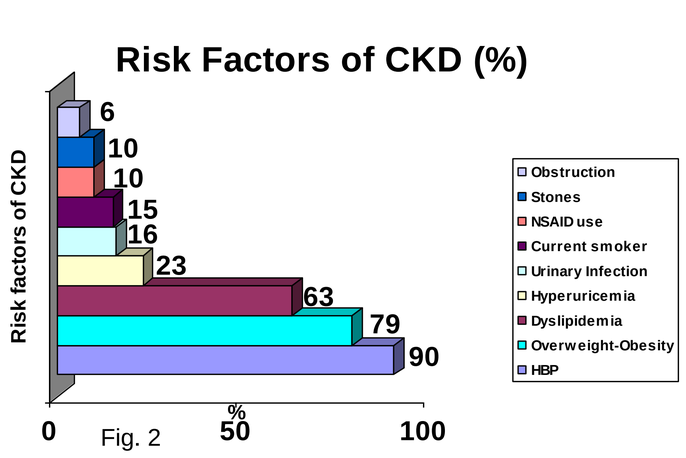

Fig. 2

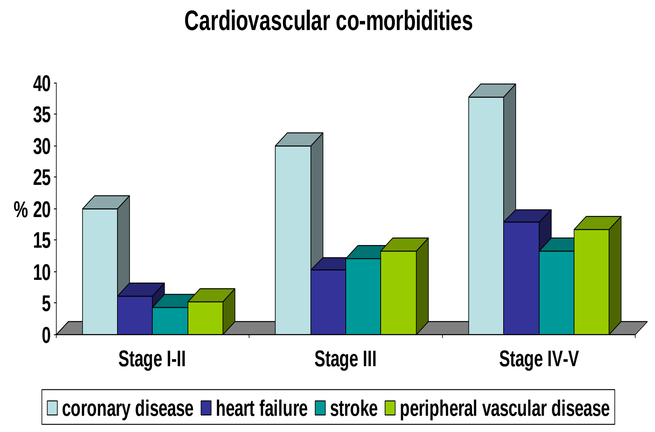

Fig. 3

RAA system blockers, statins, allopurinol, and antiplatelets drugs were significantly more prescribed in the follow-up (Table 1) . When compare the first and last control, the treatment targets were significantly improved in diastolic blood pressure, cholesterol, TG , cLDL, uric acid and proteinuria (Table 2). The paired analysis showed an impairment of the GFR rate before entering the program and an improvement after starting the nephrology care (Fig. 4).

MEDICATION

	PREVIOUS (%)	LAST CONTROL (%)	p
RAA SYSTEM BLOCKERS	81	89.7	<0.05
STATINS	22	56	<0.05
BETA BLOCKERS	22.6	25.6	NS
DIURETICS	46	50.1	NS
CALCIUM CHANELS BLOCKERS	17.2	21	NS
ALLOPURINOL	5.5	15	<0.05
ORAL ANTIDIABETIC DRUGS	44.3	44.4	NS
INSULIN	22	20.9	NS
ANTIPLATELETS	22.2	31.6	<0.05

Table 1

PERCENTAGE OF DP ARRIVING TREATMENT TARGETS

	n	First Control (%)	Last Control (%)	Chi2
SBP ≤ 130 mmHg	269	33	38	NS
DBP ≤ 80 mmHg	270	61	71	p<0.05
BMI ≤ 25 kg/m2	247	21	22	NS
Hb > 12 g/dl	119	65	68	NS
tCOL < 200 mg/dl	150	46	58	p<0.05
TG < 150 mg/dl	135	43	52	p<0.05
cHDL < 40 (M) - 50 (F) mg/dl	129	42	39	NS
cLDL < 100 mg/dl	99	32	46	p<0.05
Uric Acid < 6 (F) - 7 (M) mg/dl	144	51	60	p<0.05
Glyc < 1.20 g/l	193	34	40	NS
Proteinuria				
<0.3 g/l	165	63	71.9	NS
<1.0 g/l	165	80.5	88.2	p<0.05

Table 2

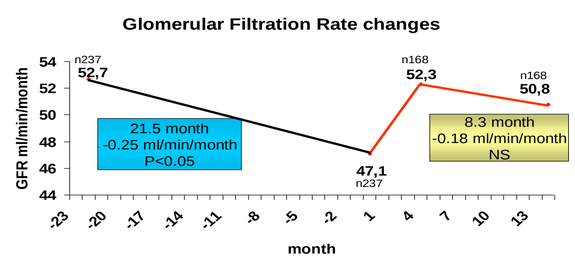

Fig. 4

The mortality rate increase with de progression of the CKD (Fig. 5). The independent risk predictors of mortality were age and neoplasia (Table 3) and those of ESRD were the advanced stage of CKD and the non-prescription of RAA blockers, age and gender (Table 4). The proteinuria increase the risk of ESRD (RR 4.7, p=0.08)

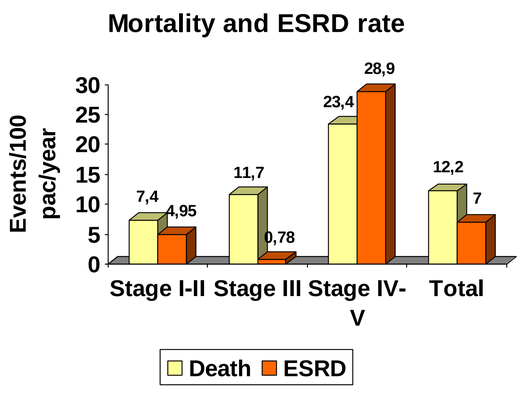

Fig.5

Risk of Death
(COX PROPORTIONAL HAZARD MODEL)
Events 24, n = 252

	Beta	RR	CI	Sig p
Age > 65 yr (ref. <65 yr)	2.20	2.77	2.6-29.8	<0.05
Neoplasia (ref. no)	1.01	9.02	2.6-31.0	<0.05
Age				Ns
Gender				Ns
Stage CKD				Ns
BBs				Ns

Table 3

Risk of ERDS
(COX PROPORTIONAL HAZARD MODEL)
(Events 14, n = 268)

	Beta	RR	CI	Sig p
Stage CKD IV-V (ref. I II III)	2.9	18.6	4.54-75.9	0.000
RAA Blockers at first control (ref. no)	-1.4	0.24	0.68-0.87	0.03
Age > 65 yr (ref. <65)	-1.76	0.17	0.045-0.65	0.01
Gender fem (ref. men)	-1.28	0.28	0.085-0.91	0.03

Table 4

CONCLUSION: The data analysis of the diabetic patients has shown the feasibility of delay the progression of CKD and the reduction in several cardiovascular and CKD risk factors of progression.