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ESTIMATION OF THE PREVALENCE OF CKD IN HEALTHY SUBJECTS BY FOUR DIFFERENT EQUATIONS

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INTRODUCTION AND AIMS:

To calculate the prevalence of CKD in a sample of healthy spanish individuals, we compared the 24h creatinine clearance rate corrected by body surface area (CCr), Chronic Kidney Disease Epidemiology Collaboration (CKD-EPI) equation, Cockroft-Gault formula corrected by body surface area (CG), the abbreviated Modification of Diet in Renal Disease (MDRDa) equation and the Mayo Quadratic (MQ) formula to determine glomerular filtration rate (GFR) in patients from a nephrolithiasis consultation.

METHODS:

1067 healthy patients were enrolled in the present study. Patients were carefully instructed about the 24h urine output collection by the same nurse. GFR was estimated using five methods: CCr, CKD-EPI, CG, MDRDa and MQ equations. The statistical analysis was performed using SPSS Statistics 19.

Analytical and anthropometric data		
	Avg	StDev
Age(y)	53,3	14,2
Height(cm)	163,7	9,5
Weight(kg)	72	13,2
Hb(g/dl)	13,9	3,9
Urea*	37,7	12,5
SCr*	0,93	0,24
Uric*	4,8	1,3
PTH(pg/ml)	53,9	52,5
24hDiu(ml)	2464	1036
CCr**	96,3	37,5
MDRDa**	85,5	20,8
CG**	90,7	24,2
MQ**	96,1	22
CKD-EPI**	85,6	19

* (mg/dl), ** (ml/min), SCr: Serum creatinine

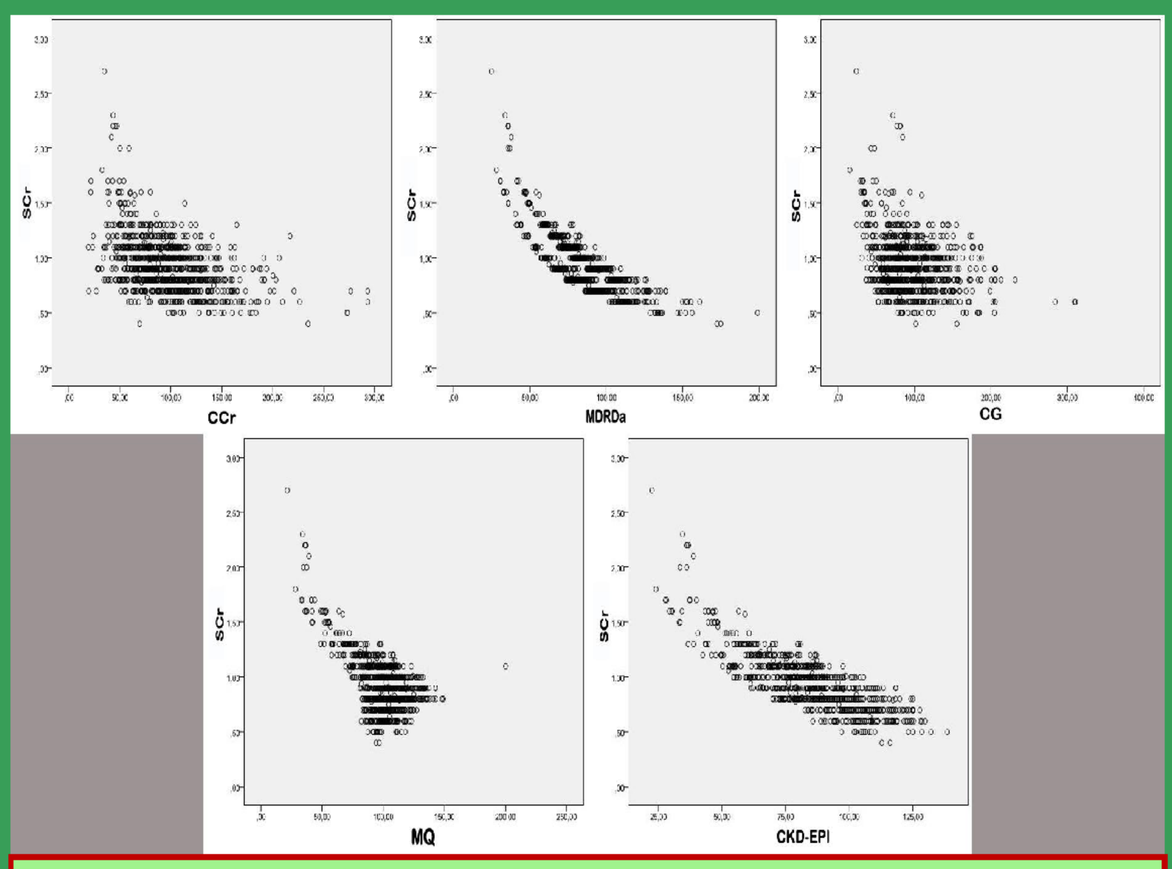

Fig.1: Correlation between Scr, CCr and the eGFR equations.

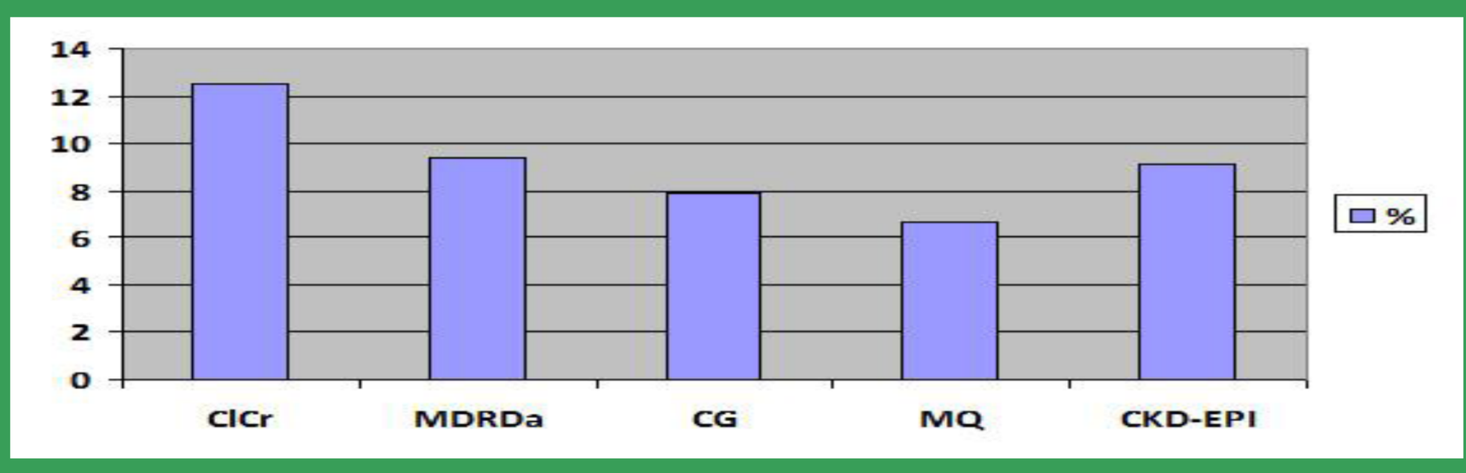

Fig.2: % of individuals with GFR<60 ml/min according to the different equations:

We found a positive correlation (p=0,03) between urinary Na, Mg, P and Ca and GFR measured by all equations, and a negative correlation (p=0,02) between all equations and SCr, serum glucose and age.

CONCLUSIONS:

The prevalence of CKD in the spanish population is 6.8%, according to the results of the EPIRCE study. In our sample the percentage of patients classified as CKD varies widely depending on the method of evaluation used. ClCr provides the highest average eGFR value, probably due to mistakes in the 24h urine recollection, followed by MQ equation, CG-BSA, CKD-EPI and MDRD. These differences are statistically significant (p <0.001). GFR equations are a useful tool in clinical practice, although they should be carefully considered, especially in patients with extreme weights or age. MQ equation seems the most precise equation to assess GFR in healthy patients, although neither method has an accuracy of 100%.

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