

COMPARISON OF CREATININE-BASED EGFR EQUATIONS AS PREDICTORS OF RENAL EVENTS IN A PORTUGUESE COHORT OF CKD PATIENTS

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INTRODUCTION

Glomerular filtration rate (GFR) is considered the best measure of kidney function. Its correct assessment is crucial for therapy guidance and decision-making in patients with chronic kidney disease (CKD).

Renal event (E) was defined by an increase of 30% in creatinine serum.

We compare the ability of creatinine-based MDRD and CKD-EPI equations as predictors of renal events in a cohort of patients with CKD 1-4.

METHODS

- A random cohort of **234 patients** followed in our Nephrology ambulatory unit was selected.
- For each one, eGFR was calculated using MDRD and EPI equation at the admission.
- Patients were followed until last consultation appointment with a serum creatinine evaluation.
- Category-free net reclassification index (cfNRI) was calculated for EPI in comparison with MDRD equation.

RESULTS

Variable	Total (n=234)	Without Event (n=169, 72.2%)	Event (n=65, 27.8%)	P
Female Gender	44.4%	43.8%	46.2%	0.744
Age	63.2±18.7	61.1±19.4	68.6±15.5	0.006
BMI	27.1±4.5	27.0±4.7	27.2±3.9	0.765
CKD Etiology				0.170
- Chronic GN	20.1%	21.3%	16.9%	
- Diabetic nephropathy	20.5%	16.6%	30.8%	
- ADPKD	7.7%	7.7%	7.7%	
- TIN	12.8%	14.8%	7.7%	
- Ischemic	19.7%	18.9%	21.5%	
- Unknown	19.2%	20.7%	15.4%	
Diabetes	38%	33.1%	50.8%	0.013
Hypertension	84.6%	81.1%	93.8%	0.015
Dyslipidemia	70.5%	69.8%	72.3%	0.709
Hyperuricemia	61.5%	55.6%	76.9%	0.003
Anemia	15.4%	10.7%	27.7%	0.001
Cardiovascular disease	26.3%	25.1%	29.2%	0.526
ProtU>0.3g/g	46.2%	36.1%	72.3%	<0.001
PTH	103±79	93±66	126±99	0.003
Ca	2.33±0.14	2.35±0.15	2.30±0.12	0.003
PO	1.11±0.22	1.10±0.22	1.14±0.21	0.130
Albumin, mg/dl	4.34±0.41	4.38±0.40	4.26±0.44	0.053
Follow up, median years	5.0 (3.3-5.6)	5.0 (3.0-5.5)	5.0 (3.5-5.7)	0.302
eGFR MDRD	42.3 (29.5-62.0)	49.2 (34.1-70.4)	33.9 (23.3-44.2)	<0.001
eGFR EPI	44.0 (29.1-64.6)	50.8 (34.7-76.4)	34.3 (22.2-45.7)	<0.001

234 patients		EPI				
		1	2	3a	3b	4
MDRD	CKD stage					
	1	30	2			
	2	4	23	1		
	3a		8	41	0	
	3b			6	55	2
4				3	59	

EPI reclassified:

- 9% (n=21) to less advanced GFR categories
- 2,1% (n=5) to more advanced ones

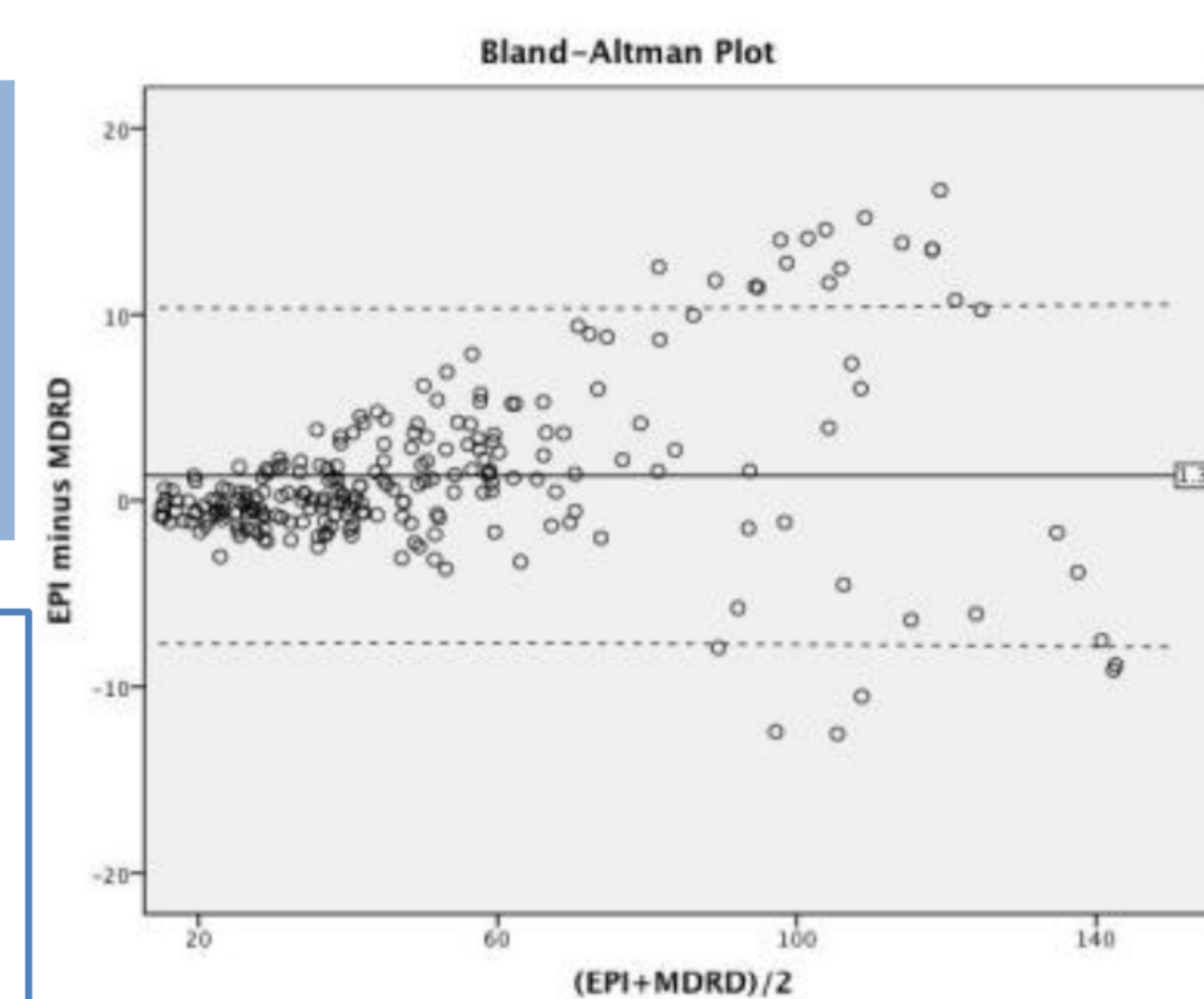
When EPI equation was compared with MDRD:

Event cfNRI was +20% (IC95%11-29)

Non-event (NE) cfNRI was +24% (IC95%18-31)

Annual Event Rate (AER) was 6,4% patient/year (IC 95% 4.9-8.1)

↑ diabetes → 8,2%
 hypertension → 6,9%
 proteinuria → 9,8%



Incidence renal Event (% patient-year)

Considering patients classified as stage 3a by MDRD, those reclassified by EPI to stage 2 had an AER reduction from 5.2 to 0.35 patient/year (p0.004), in comparison with those not reclassified.

CKD stage	MDRD	P<0.05	EPI	P<0.05
1	1.73		1.55	
2	3.66	P>0.05	2.24	P= 0,041
3a	4.27		6.32	
3b	6.87		6.64	
4	10.21		10.21	

CONCLUSIONS

In these cohort, EPI equation was a better predictor of E and NE.

Reclassification by EPI, particularly within stage 2-3 was clinically meaningful as those patients reclassified had a lower incidence of E.

Use of EPI alternatively to MDRD in mild-to-moderate CKD may allow a more adequate referral to a nephrology evaluation, with improvement in means allocation.