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CYSTATIN/CREATININE RATIO: A PROGNOSTIC MARKER AFTER ACUTE KIDNEY INJURY

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BACKGROUND

New filtration markers enable a stronger prediction of mortality compared to serum creatinine-based estimated glomerular filtration rate (eGFRCr).

OBJECTIVES

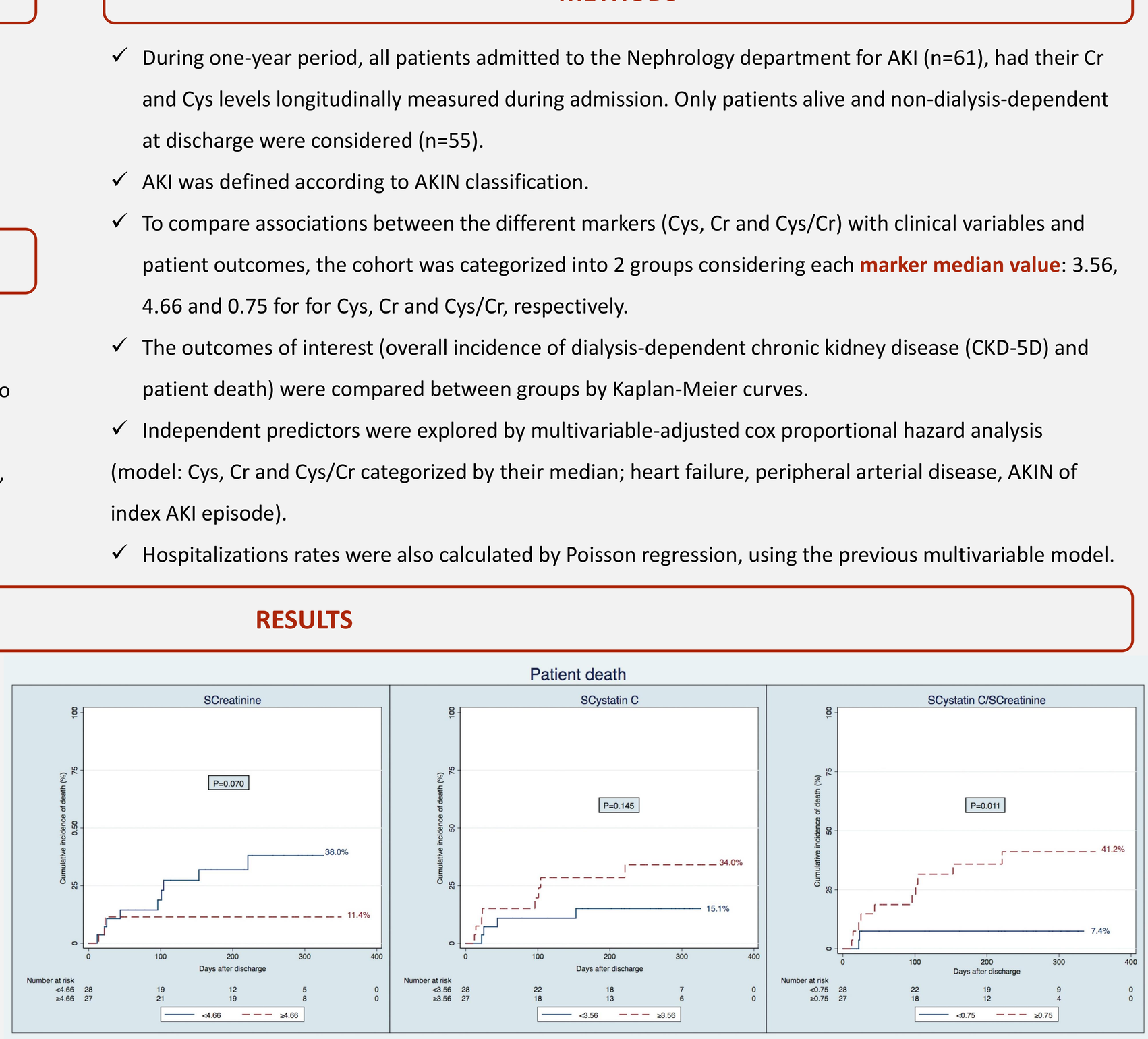
Our aim was to determine if renal markers (Cr, serum creatinine; Cys, serum cystatin C) peak values or their ratio (Cys/Cr), observed in the setting of an episode of acute kidney injury (AKI), had an impact on mid-term outcomes, after hospital discharge.

METHODS

- ✓ During one-year period, all patients admitted to the Nephrology department for AKI (n=61), had their Cr and Cys levels longitudinally measured during admission. Only patients alive and non-dialysis-dependent at discharge were considered (n=55).
- ✓ AKI was defined according to AKIN classification.
- ✓ To compare associations between the different markers (Cys, Cr and Cys/Cr) with clinical variables and patient outcomes, the cohort was categorized into 2 groups considering each **marker median value**: 3.56, 4.66 and 0.75 for for Cys, Cr and Cys/Cr, respectively.
- ✓ The outcomes of interest (overall incidence of dialysis-dependent chronic kidney disease (CKD-5D) and patient death) were compared between groups by Kaplan-Meier curves.
- ✓ Independent predictors were explored by multivariable-adjusted cox proportional hazard analysis (model: Cys, Cr and Cys/Cr categorized by their median; heart failure, peripheral arterial disease, AKIN of index AKI episode).
- ✓ Hospitalizations rates were also calculated by Poisson regression, using the previous multivariable model.

RESULTS

- ✓ Median age: 74.1 years
- ✓ 56% were male
- ✓ Median days of hospitalization: 7 (5-12) days
- ✓ Median follow up after discharge: 252 (170-304) days
- ✓ Median baseline renal function (MDRD):
  34.8 (21.8-56.1)ml/min/1.73m 2
  76% being staged as CKD 3-5



- ✓ **Patient death and CKD-5D stage incidence curves, considering each renal marker analyzed** are shown Fig. 1 and 2, respectively.

- ✓ Cys/Cr (≥0.75) was the sole **independent predictor of patient death**

Cys/Cr			vs	Cr	vs	Cys
HR	95% CI	p		p		p
5.72	1.25-26.13	0.024		0.575		0.524

- ✓ Cys/Cr (≥0.75) was the **strongest predictor of CKD-5D occurrence** though not significant

Cys/Cr			vs	Cr	vs	Cys
HR	95% CI	p		p		p
6.74	0.81-56.02	0.078		0.328		0.929

- ✓ Cys/Cr was also associated with significantly **higher re-admission rates**

Cys/Cr				vs	Cr	vs	Cys
	Re admission rate	95% CI	p		p		p
Cys/Cr ≥ 0.75	1.22	0.60-2.50	0.041		0.466		0.108
Cys/Cr < 0.75	0.32	0.12-0.88					

- ✓ This group had **more congestive heart failure** (p=0.010).
- ✓ Cys/Cr ≥ 0.75 patients, were more likely to have AKI related with sepsis (p=0.042) and more severe AKI according to AKIN criteria (p=0.003).
- ✓ No difference between the groups were detected for: age, sex, BMI, coronary heart disease, cerebrovascular disease, vascular disease and diabetes.

CONCLUSION

Cyst/Cr ratio is independently associated with the incidence of CKD 5D, mortality and higher hospital re-admissions rate after an episode of AKI, when compared with creatinine or cystatin C.

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