Contrast-induced nephropathy after an acute coronary syndrome

António Gaspar, Sérgio Nabais, Sílvia Ribeiro, Sérgia Rocha, Pedro Azevedo, Miguel Alvares Pereira, Aida Brandão, Adelino Correia
Cardiology – Hospital São Marcos, Braga

Purpose

Contrast-induced nephropathy (CIN) is a form of hospital-acquired acute renal failure that sometimes develops after giving iodinated radiocontrast agents. The growing number of patients who undergo coronary angiography and percutaneous revascularization after acute coronary syndrome (ACS) brought more relevance to this entity. It's actually one of the most frequent forms of hospital-acquired acute renal failure. The purpose of this study was to define the predictors and prognostic value of CIN in a population of patients admitted with ACS.

Methods

A total of 558 patients consecutively admitted with ACS and submitted to cardiac catheterization procedure, from January 2004 to April 2006, were reviewed. CIN was defined as impairment of renal function occurring within 48 hours after administration of contrast media and manifested by an absolute increase in the serum creatinine level of at least 0.5 mg/dL or by a relative increase of at least 25% over the baseline value (in the absence of another cause). The patients were classified in 2 groups according to the occurrence of CIN. The primary endpoint was in-hospital mortality.

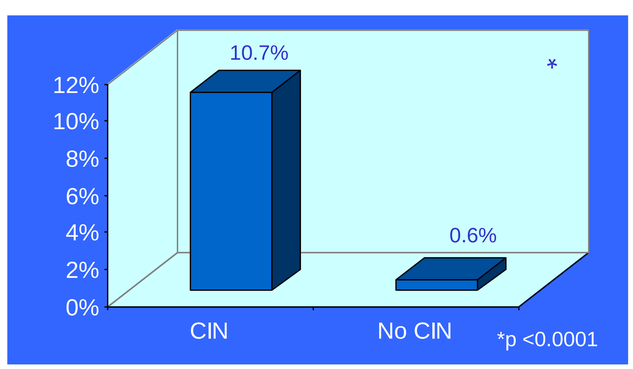
Results

Of the 558 patients reviewed, 5% (n=28) developed CIN.

Baseline characteristics

	CIN (n=28)	No CIN (n=530)	*p*
Age (years) ± SD	69.6 ± 10.6	61.5 ± 11,8	<0.0001
Male sex % (n)	71.4% (20)	78.9% (418)	NS
CV risk factors % (n)			
Diabetes Mellitus	42.9% (12)	24% (127)	0.02
Hypertension	75% (21)	59.8% (317)	NS
Hypercholesterolemia	46.4% (13)	47% (249)	NS
Previous renal insufficiency % (n)	42.9% (12)	14.9% (71)	<0.0001
CV history % (n)			
Previous AMI	28.6% (8)	17.4% (92)	NS
Previous angor	32.1% (9)	15.3% (81)	0.04
Previous PCI	7.1% (2)	4.3% (23)	NS
Previous CABG	10.7% (3)	4.0% (21)	NS
Peripheral arterial disease	3.6% (1)	1.7% (9)	NS
Previous stroke	7.1% (2)	5.1% (27)	NS
At admission			
Heart rate (bpm) ± SD	85 ± 22	75 ± 18	0.002
SAP (mmHg) ± SD	153 ± 29	139 ± 25	0.005
KK> 1 % (n)	42.9% (12)	15.5% (82)	<0.0001

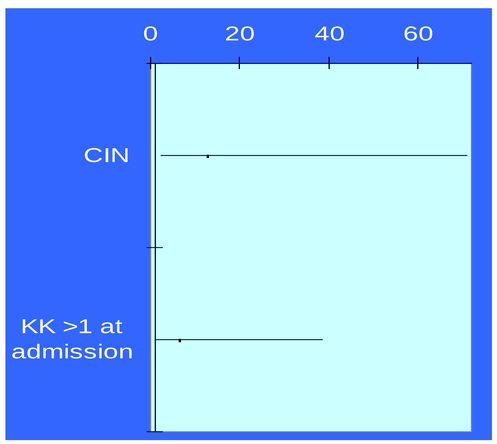
In-hospital mortality



Presentation and in-hospital medical treatment

	CIN (n=28)	No CIN (n=530)	*p*
STEMI % (n)	32.1% (9)	44% (233)	NS
Reperfusion therapy % (n)	28.6% (8)	25.7% (136)	NS
In-hospital medical therapy % (n)			
ASA	100% (28)	99.6% (528)	NS
Clopidogrel	89.3% (25)	75.5% (400)	NS
ASA + Clopidogrel	7.1% (2)	5.3% (28)	NS
LMWH	25% (7)	24% (117)	NS
UFH	92.8% (408)	93.4% (495)	NS
Ace inhibitor	96.4% (27)	92.3% (489)	NS
β-blocker	100% (28)	92.3% (489)	NS
Statin	100% (28)	98.9% (524)	NS
Nitrates	82.1% (23)	62.9% (489)	NS
Ca atg	21.4% (6)	11.1% (59)	NS
LVEF <50%	85.7% (24)	62.6% (332)	0.006
PCI % (n)	46.4% (13)	43.2% (229)	NS
Surgical revascularization % (n)	28.5% (8)	14.7% (78)	NS

In-hospital mortality predictors – Multivariate analysis



Covariates considered in the model: renal insufficiency, Killip class >1 at admission, heart rate at admission, systolic arterial pressure at admission and left ventricular ejection fraction <50%

Conclusion

CIN occurred in 5% of our patients admitted with ACS. Risk factors associated with CIN were advanced age, diabetes and pre-existing renal insufficiency. CIN was an independent predictor of in-hospital mortality.