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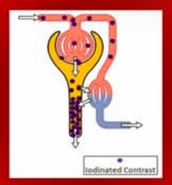
ESC CONGRESS
BARCELONA 2014
30 August – 3 September

AKIGUARD (Acute Kidney Injury GUARding Device) independent, randomized and controlled trial on contrast-induced acute kidney injury prevention in the cath lab: in-hospital and one year outcomes.

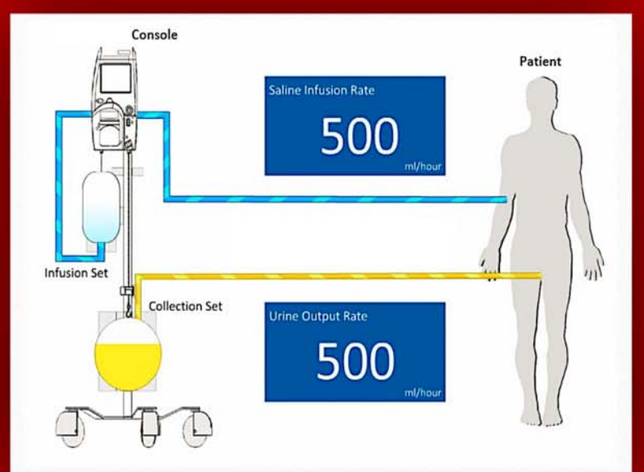


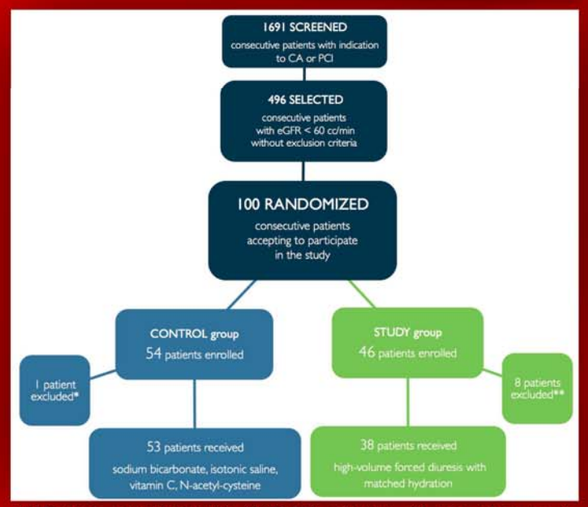
PURPOSE

Contrast-induced acute kidney injury (CIAKI) in chronic kidney disease (CKD) patients (pts) undergoing coronary angiography (CA) or percutaneous intervention (PCI) is a common iatrogenic complication associated with increased cardiovascular morbidity/mortality. !

METHODS

- 100 consecutive pts undergoing CA or PCI with an estimated baseline glomerular filtration rate (eGFR) < 60 cc/min were enrolled between October 2011 and October 2013. Exclusion criteria: primary PCI (emergency procedure), cardiogenic shock, acute heart failure, end-stage renal disease on haemodialysis. !
- Enrolled pts were randomized to the Study Group (SG) receiving high-volume forced diuresis with matched hydration (MH), or to the Control Group (CG), receiving traditional sodium bicarbonate/ isotonic saline/N-acetyl-cysteine/vitamin C prophylaxis (BS-NAC). !
- SG protocol: in vein (i.v.) 250 cc isotonic saline (IS) bolus, followed at 30 minutes by a 0.5 mg/kg furosemide i.v. bolus. A dedicated device automatically matched the IS i.v. infusion rate to the urinary output for 1 hour before and 4 hours after procedure. !
- CG protocol: 1000 cc IS i.v. infusion 12 hours before procedure; 3 cc/kg/h 1.4% sodium bicarbonate solution (SBS) i.v. infusion for 1 hour before procedure; 1 cc/kg/h 1.4% SBS i.v. infusion for 6 hours after procedure; peri-procedural vitamin C (10 g), N-Acetyl-Cysteine (2.4 g). !
- Primary END-POINT: Post-procedural CIAKI, defined according to 2012 KDIGO guidelines: serum creatinine increase ≥ 0.3 mg/dl within 48 hours or ≥ 50% within 7 days. !
- Secondary END-POINTS: eGFR at 3 months, readmissions to cardiology or nephrology departments (RCN), Major-Adverse-Cardiovascular-and-Cerebrovascular-Events (MACCE)

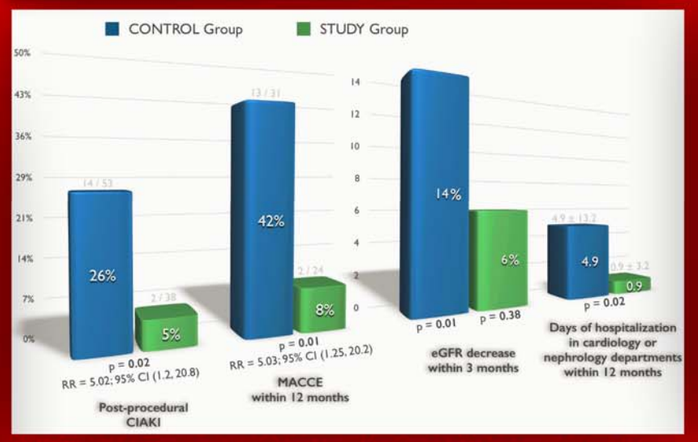




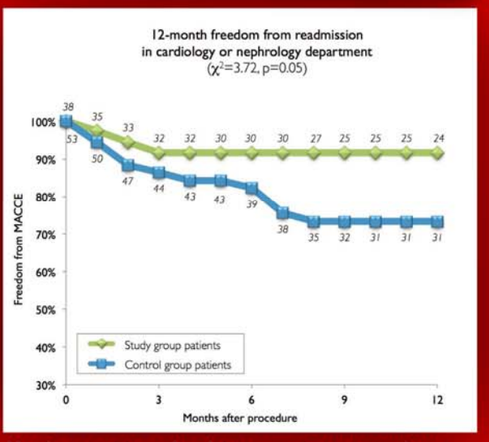
eGFR was computed with CKD-EPI equation. *1 pts asked to be discharged before CA **8 pts withdrew consent: 3 due to discomfort/ pain during urinary catheterization and 5 became uneasy about receiving an experimental treatment.

Baseline data	Study Group (n=38)	Control Group (n=53)	p-value
Age (years)	76 ± 9	76 ± 7	0.79
Female gender	9 (24%)	17 (32%)	0.52
LVEF on admission (%)	54 ± 11	50 ± 15	0.28
Hypertension	31 (82%)	48 (91%)	0.35
Diabetes	16 (42%)	19 (36%)	0.70
Baseline eGFR (cc/min)	42 ± 10	42 ± 11	0.88
Contrast volume (ml) [iodixanol]	153 ± 99	159 ± 68	0.30
CIAKI Mehran Risk Score	8.9 ± 3.9	9.8 ± 4.5	0.34

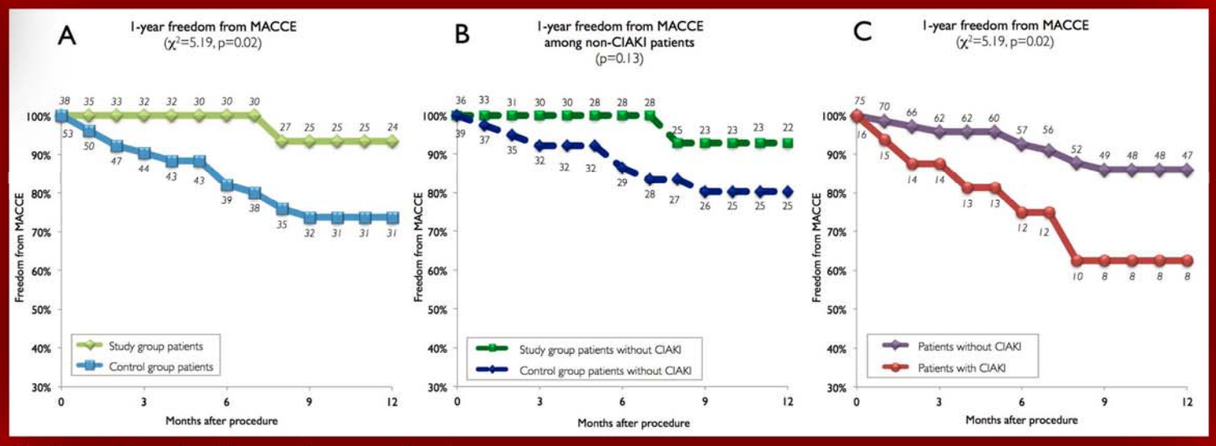
RESULTS



MACCE were defined as: Acute Coronary Syndrome, PCI, coronary artery bypass grafting surgery, acute pulmonary oedema, cardiogenic shock, transient ischemic attack, stroke, cardiovascular or cerebrovascular death.



Numbers next to each point represent group members. !



Numbers next to each point represent group members. !

CONCLUSIONS

MH is safe and can effectively reduce CIAKI incidence in CKD pts undergoing CA or PCI, compared to BS-NAC. !
Furthermore, in a 1 year follow-up, MH is associated with: !

- limited CKD progression !
- lower MACCE incidence !
- less and shorter hospitalizations

The Authors have no conflict of interest to declare, be they financial or of other nature.