

# Produits de Contraste Iodés et IRC

Prevention de la  
Néphropathie Induite  
par les produits de  
Contraste Iodés (NICI)

# Pharmacologie des PCI

- Petite taille, faible poids moléculaire
- Traversent l'endothélium vasculaire
- Naturellement lipophiles ils sont rendus hydrosolubles par l'adjonction d'agents anioniques
- Osm : hyper, hypo ou Iso-osmolaires.

Les PCI Hypo et Iso osmolaires bénéficient d'une meilleure tolérance

# Néphropathie Induite/Contraste Iodé

## Définition :

Baisse du DFG dans les 48-72h suivant l'injection de PCI

Augmentation de Creat d'au moins 25% (ou au moins 44  $\mu\text{mol/l}$ )

Modifications hémodynamiques intra rénale + hypoxie rénale et toxicité tubulaire directe de l'iode conduisant à une Nécrose Tubulaire Aiguë

# Néphropathie Induite/Contraste Iodé

-La survenue d'une IR induite est rare en l'absence de FdR, mais concerne 20% des patients à risque.

-Facteur de surmorbidité

## Facteurs de risque

Facteurs de risque (FR) de NICI	
Liés au patient	Liés à l'examen radiologique
<p><u>FR à éliminer, si possible, avant l'administration de PCI :</u></p> <ul style="list-style-type: none"><li>- Anémie et pertes sanguines</li><li>- Déshydratation et Hypovolémie</li><li>- Médicaments néphrotoxiques ou influant sur l'hémodynamie intrarénale</li><li>- Déshydratation</li><li>- Hypoalbuminémie</li></ul>	<ul style="list-style-type: none"><li>- Osmolarité et viscosité du PCI</li><li>- Volume important de PCI</li><li>- Injection intra artérielle de PCI</li></ul>
<p><u>Autres FR :</u></p> <ul style="list-style-type: none"><li>- IR préexistante (DFG &lt; 60 ml/min)</li><li>- Age &gt; 65 ans</li><li>- Diabète avec IR</li><li>- Myélome Multiple avec hypercalcémie</li><li>- Chirurgie récente ou prévue</li><li>- Introduction d'un diurétique</li></ul>	<ul style="list-style-type: none"><li>- Administrations rapprochées</li></ul>

## HER : Protocole de préparation à l'injection de produit de contraste iodé

**Hydrater** : Bicarbonate de Sodium 1,4%, bolus 3ml/Kg en une heure avant l'examen et perfusion de 1ml/kg/h pendant 6h apres

**Eviter** : FdR, Medicaments (Metformine, IEC/ARA2, AINS, platine...)

**Respecter** : 48h d'intervalle, PCI iso ou hypo osmolaire

07/02/2017

# THE LANCET 2017, April 1

## AMACING Study

**Prophylactic hydration to protect renal function from intravascular iodinated contrast material in patients at high risk of contrast-induced nephropathy (AMACING): a prospective, randomised, phase 3, controlled, open-label, non-inferiority trial**

**Maastricht University Medical Center, The Netherlands**

efficacité clinique? efficacité en terme de coût de santé?

# THE LANCET 2017, April 1

## AMACING Study

660 Patients

GFR 30-59 ml/min

Hydratation IV NaCl 0,9% vs No Hydratation

**Non Infériorité de l'absence de prophylaxie sur la survenue d'une NCI.**

## Meta-analysis of prophylactic hydration versus no hydration on contrast-induced acute kidney injury.

Jiang Y<sup>1</sup>, Chen M, Zhang Y, Zhang N, Yang H, Yao J, Zhou Y.

### ⊕ Author information

#### Abstract

**BACKGROUND:** Guidelines recommend prophylactic hydration for all patients with compromised renal function undergoing contrast exposure. However, the AMACING study published recently showed a noninferior result of hydration compared with no prophylaxis in high-risk patients and led to a heat discussion. This study aimed to validate the effectiveness of prophylactic hydration in different subsets of patients undergoing a contrast procedure.

**METHODS:** We carried out a meta-analysis of randomized-controlled trials to assess pooled estimates of relative risk (RR) and 95% confidence intervals (CIs) for incidences of contrast-induced acute kidney injury (CI-AKI), in-hospital all-cause mortality, and need for dialysis.

**RESULTS:** Compared with no prophylaxis, patients receiving prophylactic hydration had a lower risk of CI-AKI [RR: 0.66 (95% CI: 0.55-0.79);  $P \leq 0.001$ ; Pheterogeneity=0.42] and a lower risk of deaths of all-cause [RR: 0.57 (95% CI: 0.33-0.98);  $P=0.04$ ; Pheterogeneity=0.47], but did not have a decreased risk of need for dialysis [RR: 0.39 (95% CI: 0.12-1.23);  $P=0.11$ ; Pheterogeneity=0.31]. In subgroup analyses on the incidence of CI-AKI by baseline estimated glomerular filtration rate (eGFR), no benefit from prophylactic hydration was indicated in patients with a baseline eGFR ranging from 30 to 60 ml/min/1.73 m [RR: 1.02 (95% CI: 0.66-1.60); Pheterogeneity=0.66; Pinteraction=0.03].

**CONCLUSION:** Our analysis indicated that prophylactic hydration was associated with a lower risk of CI-AKI and all-cause deaths, but not with the need for dialysis in the overall population. However, no prophylactic hydration is noninferior to intravenous hydration on the incidence of CI-AKI in patients with a baseline eGFR ranging from 30 to 60 ml/min/1.73 m.

OPEN

# How Strong Is the Evidence for Sodium Bicarbonate to Prevent Contrast-Induced Acute Kidney Injury After Coronary Angiography and Percutaneous Coronary Intervention?

*Yuhao Dong, MD, Bin Zhang, MD, Long Liang, MD, Zhouyang Lian, MD, Jing Liu, MD, Changhong Liang, PhD, and Shuixing Zhang, PhD*

# Hydratation $\text{HCO}_3\text{Na}$ vs $\text{NaCl}$

16 essais contrôlés randomisés (3537 patients)

$\text{HCO}_3\text{Na}$  : bénéfique préventif NICKI (Creat/GFR)

Pas de différence en terme de dialyse, mortalité ou durée de séjour hospitalier

Mais TSA non atteint (RIS = 6614)/ Incidence NICKI. Idem pour la nécessité de dialyse et la mortalité

## Contrast-induced kidney injury: how does it affect long-term cardiac mortality?

Andreis A<sup>1</sup>, Budano C, Levis M, Garrone P, Usmiani T, D'Ascenzo F, De Filippo O, D'Amico M, Bergamasco L, Biancone L, Marra S, Colombo A, Gaita F.

### ⊕ Author information

#### Abstract

**AIMS:** Contrast-induced acute kidney injury (CIAKI) is a common complication after coronary angiography or percutaneous revascularization (PCI). This study aimed to investigate the association of CIAKI with long-term cardiovascular adverse events.

**METHODS:** In total, 980 patients undergoing coronary angiography/PCI were assessed in this prospective cohort study. The primary endpoint was major adverse cardiac and cerebrovascular events (MACCE) and cardiac death (CVD) during an 8-year follow-up. Glomerular filtration rate change during the follow-up was the secondary endpoint. CIAKI was defined as a serum creatinine increase at least 0.3mg/dl in 48h or at least 50% in 7 days.

**RESULTS:** CIAKI was observed in 69 patients (7%). Chronic kidney disease [relative risk (RR)=4, P<0.01], reduced ejection fraction (RR=2.88, P<0.01), CIAKI risk score at least 4 (RR=2.64, P=0.02), and emergency coronary angiography/PCI (RR=3.87, P<0.01) increased CIAKI risk, whereas statins were protective (RR=0.32, P<0.01). Patients with CIAKI had higher rates of 8-year cardiovascular adverse events: 54 versus 15% MACCE (RR=6.67, P<0.01), 38 versus 4% CVD (RR=15.73, P<0.01). Among other factors, CIAKI was the strongest predictor of 8-year MACCE (RR=3.16, P<0.01) and CVD (RR=7.34, P<0.01). During the follow-up, glomerular filtration rate declined drastically in CIAKI patients: 70 versus 39% had chronic kidney disease stage worsening (P<0.01) and 8 versus 0.3% started hemodialysis (P<0.01).

**CONCLUSION:** We found a strong correlation between CIAKI and poor long-term cardiac outcomes. Apparently showing up as a transient, functional impairment of kidney function, CIAKI implies an organic damage with structural modifications leading to significant kidney deterioration over time, responsible for an increased risk of long-term cardiac events. Statins significantly reduced CIAKI occurrence. A careful management of high-risk patients is needed to limit long-term complications of coronary angiography/PCI.



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*REVIEW*

## **Contrast-induced acute kidney injury: A review of practical points**

Sercin Ozkok, Abdullah Ozkok

**N acetylcysteine ?** Pas de preuve, pas de consensus... pas d'interet

**HD/Hemofiltration ?** Non recommandées

**Arrêt IEC/ARA2 ?** Discussion

**Arrêt Metformine?** Risque d'acidose lactique faible mais Oui dans le contexte d'IRC

Diagnostic différentiel Syndrome des Embols de Cholesterol (+ tardif, + grave)



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*REVIEW*

## **Contrast-induced acute kidney injury: A review of practical points**

Sercin Ozkok, Abdullah Ozkok

La meilleure prévention /NICI est d'éviter les injections de PCI inutiles, d'évaluer les indications et les facteurs de risques.