Clinical update no. 563
23 September 2020

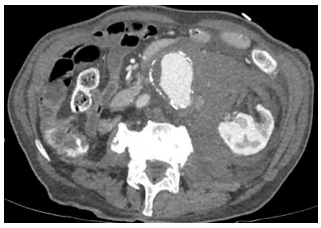
Despite what radiographers think, IV contrast is not as bad as the Black Death

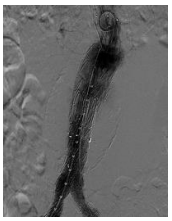
Some reason has established itself and should be followed. In short, if a patient needs IV contrast to diagnose and life threatening condition then give it.

85yr-M; known AAA. CT for abdominal pain. Non contrast re eGFR 34. Reported as constipation.

Represented the same day shocked.

Successful emergency stenting, lots more contrast.





No deterioration in renal function over next 3 days

Creatinine	154H	164H	162H	145H

ORIGINAL RESEARCH • STATEMENTS AND GUIDELINES

Radiology

Use of Intravenous Iodinated Contrast Media in Patients with Kidney Disease: Consensus Statements from the American College of Radiology and the National Kidney Foundation

https://pubs.rsna.org/doi/pdf/10.1148/radiol.2019192094 Radiology 2020; 294:660–668

Use of Intravenous Iodinated Contrast Media in Patients with Kidney Disease: Consensus Statements from the American College of Radiology and the National Kidney Foundation

- The risk of contrast-induced acute kidney injury has been estimated to be near 0% at eGFR greater than or equal to 45, 0%–2% at eGFR of 30–44, and 0%–17% at eGFR less than 30 mL/min/1.73 m^2.
- Prophylaxis for contrast-induced acute kidney injury with IV normal saline is indicated for patients with an eGFR less than 30 mL/min/1.73 m^2 who are not undergoing maintenance dialysis, or in high-risk patients with an eGFR of 30–44 mL/min/1.73 m^2.

CIN: creatinine increase of >45 µmol/L or >25% from baseline at 48-72hr.

IMAGING/EDITORIAL

Evidence and Patient Safety Prevail Over Myth and Dogma: Consensus Guidelines on the Use of Intravenous Contrast Media

Volume 76, no. 2 : August 2020 Annals of Emergency Medicine

17,934 ED visits, compared patients

Exposed to IV contrast, 7,201

V

No IV contrast, 10,733

IV contrast not associated with AKI

In all subgroup analyses, including impaired baseline renal function

Underpowered for baseline eGFR < 30 mL/min

No measurable risk if baseline eGFR > 45

IODINATED CONTRAST MEDIA GUIDELINE, 2016 VERSION

THE ROYAL AUSTRALIAN AND NEW ZEALAND COLLEGE OF RADIOLOGISTS®

The RANZCR concur – give contrast if needed.

R4. Intravascular iodinated contrast media should be given to any patient regardless of renal function status if the perceived diagnostic benefit to the patient, in the opinion of the radiologist and the referrer, justifies this administration.

eGFR <30 is NOT an absolute C/I to "medically indicated IV contrast"

Nomenclature and Definitions

Contrast-*associated* acute kidney injury (CA-AKI): *any* AKI occurring within 48 hours after the administration of contrast media.

Contrast-*induced* acute kidney injury (CI-AKI): the subset causally linked to contrast.

Summary

Risk has been overstated.

Prophylaxis with IV saline is indicated for patients without contraindication (e.g. CCF) who have

AKI or eGFR <30 (not on dialysis)

considered for eGFR of 30–44

Solitary kidney should not independently influence decision making

Ad hoc lowering of contrast media dose should be avoided to maintain diagnostic accuracy

Withhold nephrotoxic medications if high risk

RRT should not be initiated or altered solely based on contrast media administration

Prospective controlled data are needed

Should Screening Be Used to Identify Patients at Risk for CI-AKI?

What patient risk factors should be used to trigger eGFR measurement?

History kidney disease/surgery

albuminuria

Diabetes an optional factor for screening

Age, untreated hypertension

uncertain utility as independent triggers

poor specificity

Which Patients Should Undergo Prophylaxis to Prevent AKI prior to Intravenous Iodinated Contrast Media Administration?

eGFR <30 and not on dialysis

limited data

diabetes doesn't alter threshold
based on n = 1112 study of diabetic patients with stable eGFR 30–44 mL

If emergency indication precludes pre-procedural prophylaxis

consider post-procedural prophylaxis

no evidence to support any benefit of this

Prophylaxis

normal saline

timing, volume, and rate uncertain

start 1 hr before and continue 3–12 hr after contrast media administration

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

www.thelancet.com Vol 389 April 1, 2017

Interpretation We found no prophylaxis to be non-inferior and cost-saving

eGFR 30–59 mL/min, randomised to

IV 0·9% saline or no prophylaxis

prophylactic intravenous hydration might not be necessary in patients with eGFR higher than 29

Bicarbonate

likely similar to normal saline

not preferred

N-acetylcysteine

not effective

v placebo, randomized trial

not recommended

Cease non essential nephrotoxic medications (e.g., NSAIDs) if eGFR <30

may decrease CA-AKI

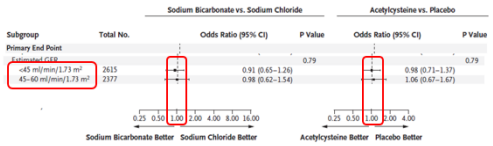
The NEW ENGLAND JOURNAL of MEDICINE

ORIGINAL ARTICLE

Outcomes after Angiography with Sodium Bicarbonate and Acetylcysteine

for the PRESERVE Trial Group*

An Australian trial, showing no benefit from NaHCO3, or N-AC in eGFR <45 or 45-60.



Should Intravenous Iodinated Contrast Media Be Withheld in Patients with CKD Stages 4 or 5 Not Undergoing Maintenance Hemodialysis?

eGFR 15–29, not on dialysis

NNH

CI-AKI

estimates range from 6 – infinity (no harm)

There is no absolute C/I to contrast media

proceed with imaging for life threatening condition and no alternative

0.9% saline IV if no C/I

If IV contrast given, should patient be dialysed ?

No benefit

risks, cost,

Do not start dialysis or continuous RRT *solely* based on contrast administration

regardless of residual kidney function

Do Patients Undergoing Maintenance Dialysis with Residual Kidney Function Require Different Treatment than Do Those without Residual Kidney Function?

Manage similar to eGFR <30 not undergoing dialysis

Are Patients with a Single Kidney at Increased Risk for CA-AKI or CI-AKI Beyond That Associated with Their eGFR?

Decide based on eGFR, NOT whether single kidney

Should Any of the Above Recommendations Be Altered in Patients Receiving Certain Nephrotoxic Medications or Undergoing Chemotherapy, Especially If They Have Normal Kidney Function?

No, monitor eGFR

Withhold nonessential potentially nephrotoxic medications 24-48hr prior, 48hr after

ACE-I, ARBs

controversial, conflicting data

Consider withholding; *no evidence of benefit in continuing*

Metformin does not increase risk of CA-AKI.

Would generally withhold anyway if eGFR <30.

Lactic acidosis is a risk from metformin and renal impairment. Metformin should be discontinued in acutely unwell patients regardless of contrast administration.

Should Any of the Above Be Altered in Infants and Children?

No; there is minimal data for children

These updates are a review of current literature at the time of writing. They do not replace local treatment protocols and policy. Treating doctors are individually responsible for following standard of care.