CONTROVERSIES
IN CONTRAST: 2011

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I do not have any relevant financial relationships with any commercial interests
TWO-FOLD RISK
IODINATED CONTRAST

1. Anaphylactoid reaction
2. Contrast-induced-nephropathy
DEATH RATE

Death from iodinated contrast = with nonionic or ionic
1 in 170,000

Katayama 1990 Radiology
Relative annual risk of death in UK:

1. Smoke 10 cigarettes/day 1 in 200
2. Age of 40 1 in 700
3. All cancer (in UK) 1 in 400
4. Iodinated contrast 1 in 170,000

RISK of CONTRAST REACTION

Prior reaction to contrast: 5 x
Asthma: 6 x
Allergic history: 3 x

Ref: Morcos SK, Thomsen HS. Adverse reactions to iodinated contrast media. European Radiology 2001; 11:1267-1275.
HISTORY of ASTHMA

Asthma ↑ risk of severe reaction

6 X with low osmolality contrast
PRINCIPLE

- Taught in medical school
- The public knows this principle
- Radiologists have forgotten?
If a patient is allergic to a medication, then

DO NOT give him the same agent!
“Change Agent”

- Management term: “He who gets things done”
- Remember that the allergy is to the molecule, not the iodine
- Radiologist mantra: “Change the agent!”
CONTRAST MEDIA DEATHS

Review of 48 deaths:

- Renal failure: 58%
- Anaphylaxis and allergy: 19%
- Cardiopulmonary arrest: 10%
- Respiratory failure: 8%
- Stroke, cerebral hypoxia: 4%

Ref: Wysowski DK, Nourjah P. Deaths attributed to X-ray contrast media on U.S. death certificates. AJR 2006; 186:613-615
TIP of the ICEBURG?
TWO RISKS: CIN

Temporary risks: Increased complications esp in-pts
- Arrythmias, MI’s, death

Long term risk: impaired renal function
TWO TYPES OF CIN

- Mild, non-oliguric condition
  - Transient: peaks in 2 days
  - Returns to baseline 10-14 days
TWO TYPES OF CIN

- Severe oliguria
  - Develops within 24 hours
  - Oliguria persists 2-5 days
  - Creatinine peaks 5-10 days
  - Creatinine may not return to baseline
INCIDENCE OF CIN

- Controversial!
- Much of literature: cardiac pts
INTRA-ARTERIAL RISKS

- More vascular disease, diabetes
- Higher renal concentration of contrast in renal blood
- Higher doses of contrast media
- Cholesterol emboli: 50%?
CIN Studies with Controls

- Compared CT patients
  - Without and with IV contrast
  - Developed CIN
  - Relative risk of CIN 3-6 fold
  - No statistical difference!
IMPACT STUDY: IA vs IV

- Incidence of CIN

Patients with renal impairment:

Intra-arterial: 12.2%

Intravenous: 5.5%

Relative risk: 2.2 times IA vs IV
CIN INCIDENCE?

- 32,161 patients over 10 years
- Radiology and Cardiology patients
- No: IV contrast
- Yes: Imaging

Newhouse: AJR August 2008
CIN INCIDENCE?

- Over half: sCr > 25%
- Two in five: sCr ↑ ≥ 0.4mg/dL

Newhouse: Colombia-Presbyterian
CIN does exist!
CIN Can Be Fatal

- MCVH ED trauma patient
- 88 y/o male in MVA
- IV contrast for CT
- CR 1.6 rose to 3.4
- Refused dialysis, died of CIN
POINT OF CARE TESTING

- Our policy: not everyone needs labs
- Labs required if:
  - Over 65 years old
  - History of diabetes
  - History of kidney problems
POINT OF CARE TESTING

- 2010: POCT 1004 CT patients
- eGFR under 45: 9.1%
- Changed contrast agent: 20.2%
- Changed to non-contrast: 5.6%
- Study canceled: 1 %
POINT OF CARE TESTING

- POCT device now "waived" test,
  - Not subject to CLIA regs
  - Requires 1 cc blood
  - Obtain from IV line pre CT or MR
Steroid Pre-treatment

- Previous contrast reaction
- Prior anaphylaxis to anything
- Recent severe asthma attack
Prior Reactors

If risk factor was a previous reaction to contrast media

DO NOT FORGET TO CHANGE the **TYPE** of CONTRAST
Thank You!