Intravenous Contrast: Safety

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RISKS

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

CLASSIFICATION

Mild: nausea, vomiting, mild urticaria
Moderate: severe vomiting, extensive urticaria, laryngeal edema, dyspnea, rigors
Severe: pulmonary edema, cardiac arrhythmia, cardiac arrest, circulatory collapse, unconsciousness
INCIDENCE: NONIONIC

Mild: 3%
Moderate: 0.2 – 0.4%
Severe: 0.04%
DEATHS

More common in (Four “Ws”):

- Women
- Wrinkled (elderly)
- Whites
- Weakened (debilitated)
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
CONTRAST REACTIONS

Not allergic as no antibodies found

“Anaphylactoid”
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

10 X high osmolarity contrast

6 X low osmolarity contrast
OUR POLICY

- Pre-treat with steroids, benadryl
- Any type of prior contrast reaction
- Recent severe asthma attack
- Prior severe anaphylactic reaction to anything: peanuts, drugs, etc
INCIDENCE OF CIN

- Controversial!
- Much of literature: cardiac pts
- Studies of IV contrast limited
CONTRAST INDUCED NEPHROPATHY

IA administration: over 3000 studies
IV administration: 40 studies
only 2 studies with controls

Katzberg: Radiology 2007
Renal function

Normal renal function: < 1%
Pre-existing renal impairment: 12-27%
Diabetic nephropathy: up to 50%
CIN RISK?

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

Newhouse: AJR August 2008
CIN RISK?

- Over half: sCr > 25%
- Two in five: sCr $\geq 0.4mg/dL$

Newhouse: Colombia-Presbyterian
E-GFR vs CREATININE

- Creatinine: partially dependent on muscle mass
- E-GFR: factors in age and race
HYDRATION

Retrospective studies suggest benefit
No randomized controlled trial
CONCLUSION

- Contrast nephropathy: over-diagnosed, incidence?
- eGFR better than Creatinine
- Avoid IV contrast if e-GFR under 45
- **DO NOT** keep pts NPO
- Hydrate when possible