

Appendix G

MRI Gadolinium Contrast Usage in Patients with Renal Insufficiency

Plan for Reducing Patient Risk for Nephrotoxicity

WHO – Needs Alteration of Routine Contrast Administration Procedure:

1. Patients on Dialysis
2. Patients with a GFR of less than 50.

GADOLINIUM – Chelate MRI CONTRAST Administration

PLAN FOR GADOLINIUM SAFETY/USE

1. Schedulers will ask all patients scheduled for contrasted exams if they have known kidney/renal disease. If the answer is “yes” a creatinine value must be available from the past 60 days to calculate a GFR. If the patient is unaware, the screening form can be utilized as a guide.
2. All patients will fill out the usual screening form upon arrival for radiology exams with IV contrast. If the patient has positive answers on the screening form, a creatinine value must be available from the past 60 days to calculate the GFR.
3. For patients on dialysis, discussions should occur between the radiologist and ordering physician regarding potential alternative exams. If proceeding with the exam, the Gadolinium contrast should only be administered if the patient is scheduled for HEMODIALYSIS immediately after the MRI exam and a 2nd time within 24 hours after that. (Peritoneal Dialysis does not remove the Gadolinium effectively).
4. If GFR is less than 30, a consult must occur with the ordering physician to discuss an alternative exam. (A Nephrologist can be consulted by the referring M.D. as needed.) If GFR is between 30 and 50, then the contrast dose should be no greater than 0.1mmol/kg. If GFR is greater than 50, proceed with the exam, but with dose not to exceed 0.2mmol/kg.
5. Pregnant women should not knowingly be given Gadolinium contrast unless the benefit is thought to outweigh the potential risk (there are no known problems

with fetal development related to exposure to Gadolinium in-utero, but the potential exists). If contrast is given, avoid the use of Omniscan and Optimark brands.

6. Women who have severe renal insufficiency (on dialysis or GFR <30) and are breast feeding should refrain from doing so for ~24hrs following Gd administration. (These patients should be informed in advance of the exam date.)

Additional Information Concerning Gadolinium Contrast Use in Patients with Renal Insufficiency

1. Gadolinium contrast is thought to be roughly 20X less toxic to kidneys compared to iodinated contrast used in most x-ray exams (although this may not be true comparing intra-arterial injections of Gadolinium vs. low-osmolar iodinated contrast)
2. Nearly all reported instances of significant reduction in renal function following Gadolinium contrast injection were in patients with injection of greater than 2X standard dose (the vast majority had >3X dose, many during intra-arterial rather than venous injection). I have only found one exception (1.4X dose in patient with SCr >2.5, diabetes, heart failure, and dehydration)
3. Patient demographics/conditions that increase the likelihood of renal dysfunction following Gd-Contrast injection include (A) Older age, (B) Worse pre-existing Renal Function, (C) Diabetes, (D) Dehydration, (E) Increasing Contrast volume injected, (F) Intra-Arterial injection (unproven association at this point)

Possible Association - Nephrogenic Systemic Fibrosis and Gadolinium Contrast Injection (also known as Nephrogenic Fibrosing Dermopathy)

1. No proof yet that there is an association (~200 cases reported, 25 of which had Gd-contrast)
2. Strong association with patients on Dialysis (>90% patients on or soon needing dialysis)
3. Apparent association with Acidosis (great majority of 25 Gd-associated patients were acidotic)
4. All Gd-“associated” patients received more than standard contrast dose (most > 3X standard)