MAG3 Renal Scan

Version History, Similar Studies & Variations

- v 1.1 - 08/01/04 - Added additional study labels
- v 1.0 - 07/30/04 - Added Version History Information
- Similar studies: Captopril Renal, Lasix Renal

Indications

- Qualitative and quantitative evaluation of the blood supply to the kidneys
- Evaluate the ability of each kidney to effectively process urea
- Evaluate patients with abnormal blood or urine levels of substances usually excreted or controlled by the kidneys
- Preoperative or postoperative evaluation of patients with renal tumors or vascular disease
- Evaluation of patients with suspected renovascular hypertension
- Evaluation for renal obstruction
- Evaluation of renal transplant to evaluate flow, function, rejection, obstruction, and leaks

Contraindications

- None

Equipment & Supplies

- 22 ga. or larger Hep Lock
- IV tubing
- 500 ml bag 0.45% Normal Saline
- Camera with LEAP collimator
- 10-20 mCi Tc99m MAG3

Preparation

- Verify location and number of patient kidney(s).
- Use a 22g or larger IV to produce a good bolus.
- Be aware of fluid and salt restrictions
- Run 450 ml 0.45% Normal Saline at 5-10 ml/kg beginning, if possible, 30-60 minutes prior to imaging or as soon as possible using a rapid drip
- Have the patient void prior to the scan
- Clamp off Foley catheters **except for transplant patients**.
- Acquire a "1 mCi image" labeled **PRE_SYR** or **1 MCI COUNT**
    - 128x128x16, 60 sec
    - 0.5 to 1.5 mCi of activity in the FOV

Administration

- Administer the MAG3 in bolus at the beginning of dynamic image acquisition

Acquisition

- Acquire dynamic images for 31 minutes labeled **DYNAMIC RENAL**
    - Phase One: 60 frames, 1 sec/fr, 128x128x16 matrix
    - Phase Two: 30 frames, 60 sec/fr, 128x128x16 matrix
- Measure the residual dose in the syringe post-injection. Record this amount.
- All static images are 60 sec, 128x128x16 matrix
- Acquire **MARKER** image with a 10cm lead marker positioned on the camera in the center FOV
- Acquire **POST VOID** image after patient has voided.
- Acquire **INJ SITE** image of the injection site, preferably without kidney or bladder in FOV.

Required History

- Prior renal disease, stones, renal failure, and transplant history
- Diabetes
- Creatinine and BUN levels in blood and urine
- CT, MR, and US reports as appropriate

Processing

- Select the renal study and click **Renal Analysis.**
- Fill in the following fields: kidney state, age, height, weight, injected dose (this is the calibrated dose minus the residual), and counted dose (the "1 mCi" dose amount). (see Fig. 1)
    - Leave all other fields at default settings.
- Click **OK** (or press **Return**), and follow the onscreen directions
    - "Iliac ROI" with transplant scans is the same as "Aorta ROI".
- If you need to modify ROIs, press **Modify** when prompted.
    - ROIs must be modified seperately for perfusion and function stages at this point
    - The background ROI is modified using sliders to state the start and end position in degrees. This can also be done by typing numbers in the boxes next to the sliders. Do not modify the last two variables unless absolutely necessary.
- Click **Proceed**.
- Press **Camera Based Clearance**.
- The syringe ROI should not be modified.
- If you need to modify the injection site ROI click **ReDraw**.
    - **Manual** gives you the option to physically draw the ROI
    - **Semi-Auto** allows you to define the area in which it will automatically draw the ROI (following the onscreen directions - see Fig 2.)
- Click the **Review** tab (it appears as a hand holding a sheet of film).
- Click **Clinical Summary**. Make all fields **Linear**. Print this sheet. (Fig 3.)
- Click **Dynamic Image Review**. Make all fields **Linear**. Print this sheet. (Fig 4)
- Calculate the normal ERPF for BSA (which is printed on the film) and age and write it on the film.
    - (300/ (BSA/1.73)) = Normal ERPF
    - If the patient is > 40 y/o, also subtract 3.5 for every year over 40
- NON-Xeleris processing is not addressed in this protocol.
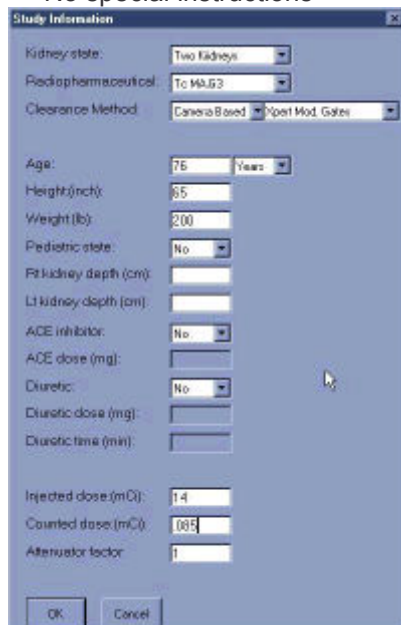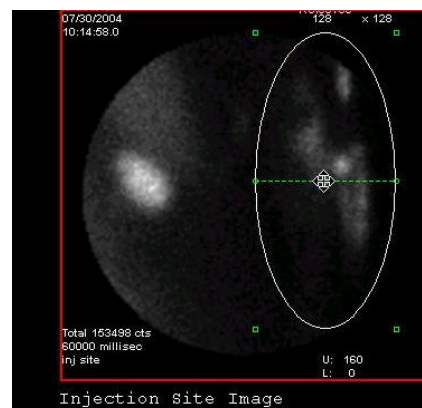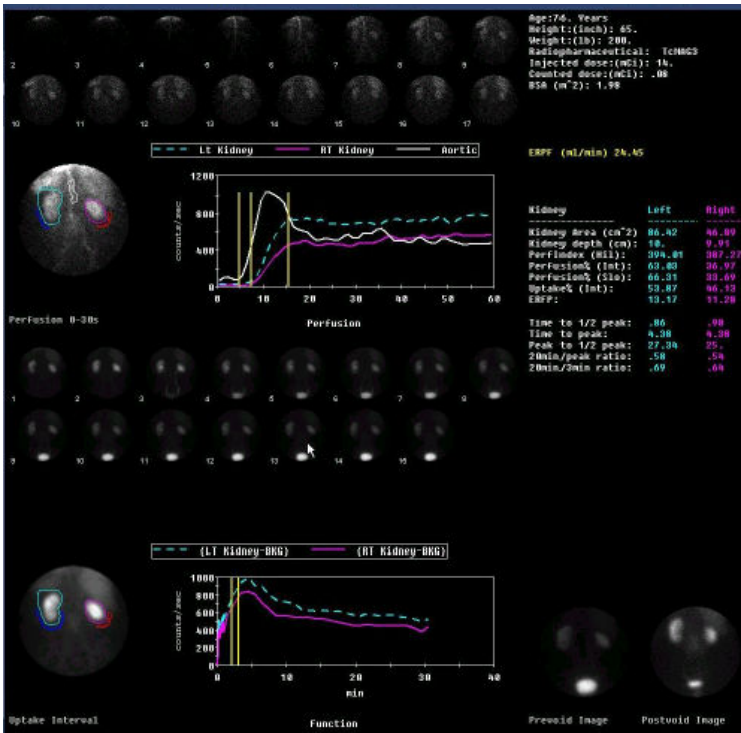
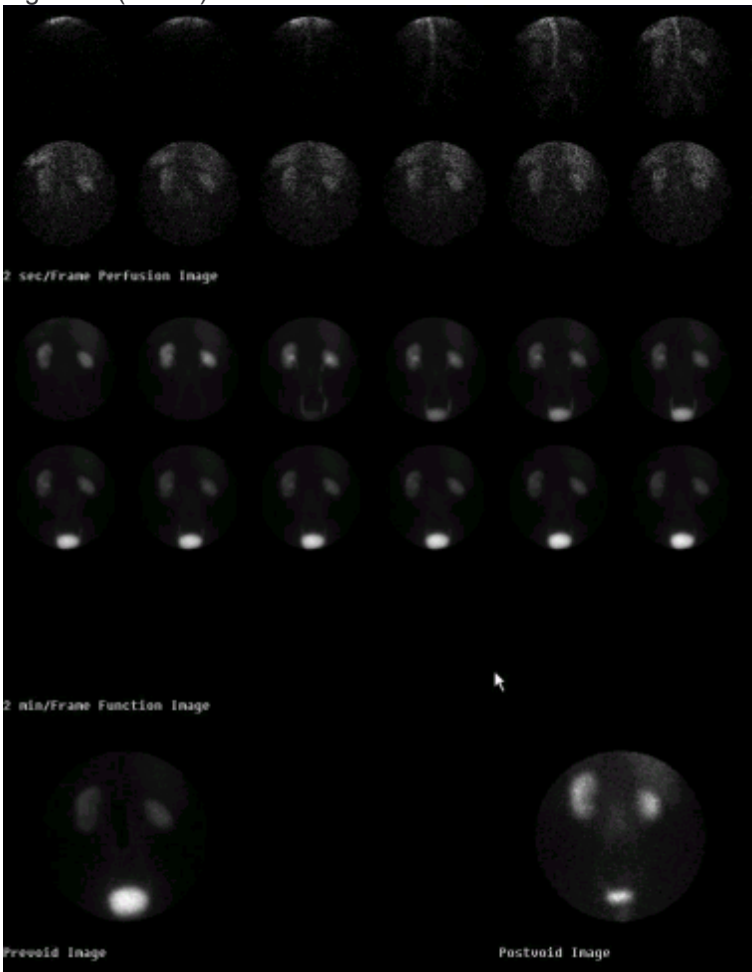## Hand in Study

- No special instructions

Figure 1

Figure 2

Figure 3 (above)

Figure 4 (above)