

MUGA Ventriculography

Updated

9/8/2024

- **Indications**

- To assess left ventricular volume/function during chemotherapy, diagnosis of cardiotoxicity from chemotherapy, determination of the type and severity of cardiomyopathy, assessment of diastolic dysfunction, assessment of treatment effect and timing of surgery in valvular heart disease.

- **Radiopharmaceutical:**

- In Vivo Tagging - 15-30 mCi Tc-99m ultra-tagged RBCs administered IV
- In Vitro Tagging - 10 mg PP (pyrophosphate) administered IV and allowed to circulate 20-30 mins followed by 15-30 mCi Tc-99m sodium pertechnetate administered IV

- **Patient Preparation:**

- No specific preparation prior to radionuclide administration.
- EKG lead placement - left upper chest (left arm), right upper chest (right arm) and lower left chest (left leg).
- Lead placement should be optimized to emulate the lead from a recent 12-lead EKG that provides a high voltage monophasic R wave or reversed S wave QRS with relatively low amplitude P waves and T waves.

- **Conflicting Examinations/Medications:**

- No Nuclear Medicine exams within the previous 24 hrs.
- Recent blood transfusions can impair in vivo tagging of RBCs with pertechnetate.
- Additional causes of reduced RBC labeling efficiency include iodinated contrast, heparin, dextrose, doxorubicin, hydralazine, prazosin, digoxin, propranolol, methyldopa, excess/insufficient stannous chloride, penicillin, quinidine, anemia, leukemia/lymphoma and immune disorders.

- **Pregnancy/Lactation:**

- Pregnancy testing is only needed in potentially pregnant patients who state they could be pregnant. See Pregnant, Potentially Pregnant and Lactating Patients policy for specifics.
- Breast feeding mothers should discard breast milk for 12-24 hrs following Tc-99m RBC administration.

- **Imaging Technique:**

- Collimator - LEHR or LEAP
- Photopeak - 140 keV 20% window for Tc-99m
- Image Preset Counts - gated imaging 16-32 frames per R-R interval, approximately 20k counts/cm² (3-7 million counts total)
- Matrix Size - 64 x 64
- Patient Positioning - supine

- **Imaging Views:**

- Begin imaging 5 mins after radionuclide administration.
- Obtain LAO best septal images (usually 30-45° LAO).
- Process raw images as required by equipment software.

- **Notes:**

- A normal left ventricular EF is ≥50%.
- A 5% change in LVEF would imply a significant change between two exams.