

MYOCARDIAL - RIGHT-TO-LEFT SHUNT
UPDATED: MARCH 2011

CPT CODE: 78428

Indications: Right to left shunt studies are performed in patients suspected or known right to left shunt. This may happen with some forms of congenital heart disease like Tetralogy of Fallot or with a late ASD. This technique can quantify right to left shunts.

Patient Prep: No patient preparation.

Scheduling: Allow 60 minutes; 30 min of imaging time, 30 min processing.

Radiopharmaceutical & Dose: 4.0 (+/- 20%) mCi Tc-99m-MAA: Dose will be adjusted for patient weight (refer to NMIS or nomogram). At least 98% radiopharmaceutical purity of Tc-99m MAA is required. Tag should be verified within 2 hours of injection.

Imaging Device: Gamma camera with LEHR collimation.

Imaging Procedure:

1. Inject the radiopharmaceutical IV using a 23 gauge or larger needle. Smaller needles will break down or filter out particles. Be careful not to draw blood into the syringe prior to injection of tracer.
2. **Make sure there is no air in the syringe before injection.**
3. Acquire anterior and posterior whole body views using GE protocol Bone/WholeBody/WB.
4. Whole body and lung ROI's are drawn.

Calculating R-L Shunt Ratio:

$$\% \text{ shunt} = \frac{\text{Total body counts} - \text{Lung counts}}{\text{Total body counts}} \times 100\%$$

PACS: Send whole body images and images of ROIs and ratio.

Interpretation: The total body image should be evaluated for non-pulmonary activity and a decision must be made whether this is due to free TcO₄ (thyroid, stomach, bladder, salivary glands), labeled albumin stabilizer (blood pool, major vessels, kidneys, liver), or systemic flow (brain, muscle).

This is a good method of quantifying right to left shunt. However, false positive studies may occur if the label is not adequate. Such studies should be suspected if there appears to be renal excretion of the tracer rather than uptake in the organs receiving the major portion of the cardiac output (cerebrum, thyroid, spleen)

Comments: A Nuclear Medicine staff or resident physician should be consulted to determine if additional views are indicated.

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