EQUILIBRIUM GATED RADIONUCLIDE VENTRICULOGRAPHY

What is MUGA?

Red blood cells, providing that a patient isn’t bleeding internally should be limited to the intravascular compartment. By labelling them with Tc-99m one can image this blood pool and more specifically the internal chamber of the left ventricle. Using edge-detection software, and breaking down the cardiac cycle into multiple segments (called gates) one can calculate the various functional parameters of the cardiac cycle and more specifically the left ventricular ejection fraction.

The test is robust and doesn’t suffer the user-dependant discrepancies of echocardiogram. Nor is it as expensive as gated CT or MRI. It is particularly useful in following up oncology patients when assessing for cardiotoxicity where an objective and precise LVEF measurement is needed.

Other functional parameters of interest are:

- End systolic volumes
- End diastolic volumes
- Ejection rate
- Relaxation rate
- Regional ejection fraction
- Synchronicity
- Cardiac motion assessment

Specialized first pass imaging can be used to calculate right ventricular ejection fraction especially in patients with RHF or cor pulmonale.

What are the indications for MUGA scan?

- To evaluate left ventricular (LV) function at baseline before chemotherapy or cardiotoxic therapy; may be repeated prior to subsequent chemotherapy cycles until a total cardiotoxic dose has been reached.
- To evaluate ejection fraction in a patient with congestive heart failure (CHF).
- To evaluate patient, who is obese or who has chronic obstructive pulmonary disease (COPD), for coronary artery disease (CAD).
- RV Ejection fraction determination (plus LVEF) if 1st pass injection and imaging method is used.

What does the patient need to know?

- The scan consists of injecting a low-dose radiotracer, which will stay in the vascular compartment.
- Imaging is quick – usually complete within 10-15 minutes.
- No special preparation is needed.
- The radiation risks are significantly less than conventional radiological procedures.
- The patient should please inform us if pregnant or suspicious that she may be.
- The patient should inform us if she is breastfeeding so that arrangements can be made to express breastmilk prior to imaging to give to the infant after the investigation.

Please refer your patient to theramednuclear.co.za for detailed information regarding the scan, preparation therefor, radiation safety et cetera.
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