

MUGA Scan

A MUGA Scan shows how well your heart is pumping blood to the rest of your body.

The **MUGA scan** (MUltiple Gated Acquisition scan) is an extremely useful noninvasive tool for assessing the function of the heart. The MUGA scan produces a moving image of the beating heart, and from this image several important features can be determined about the health of the cardiac ventricles (the heart's major pumping chambers).

How is the MUGA scan performed?

A MUGA scan is performed by attaching a radioactive substance, Technetium 99, to red blood cells, then injecting the red blood cells into the patient's bloodstream. The patient is then placed under a special camera (a gamma camera), which is able to detect the low-level radiation being given off by the Technetium-labelled red cells. Since the red blood cells (including those that are radio-labelled) fill the cardiac chambers, the image produced by the gamma camera is essentially an outline of those chambers. With some fancy computer manipulation, the the final product is a movie of the heart beating.

What can be learned from the MUGA scan?

Several important features of cardiac function can be measured from the MUGA scan. If a patient has had a heart attack, or any other disease that affects the heart muscle, the MUGA scan can localize the portion of the heart muscle that has sustained damage, and can assess the degree of damage. But more importantly, the MUGA scan gives an accurate and reproducible means of measuring and monitoring the ejection fraction of the cardiac ventricles.

The left ventricular ejection fraction (LVEF) is an excellent, and the most commonly used, measure of overall cardiac function. The ejection fraction is simply the proportion of blood that is expelled from the ventricle with each heart beat. So, for instance, if the left ventricle ejects 60% of its blood volume with each beat, the LVEF is 0.6. (A normal LVEF is 0.5 or greater.)

Procedure

This scan uses electrical signals of the heart to trigger the camera to take a series of pictures. Scanning will take one hour from start to finish.

The amount of radiation needed for the exam is minimal and the body eliminates the tracer material typically within twenty-four hours.

Tell the technologist if you have any allergies and if you are undergoing radiation therapy because these factors may require adjustments in how the examination is performed. Also, let the technologist know if you are pregnant or breastfeeding as nuclear medicine tests are usually not recommended for pregnant women.