

Nuclear Thallium Stress Test

For more information, visit the "Imaging & Diagnosis Section" at Angioplasty.Org (www.angioplasty.org/imaging)
-- Supported by Toshiba America Medical Systems --

Sometimes called a "Thallium scan" or "nuclear scintigraphy", this stress test is similar to an echo stress test, but it focuses in more on the coronary arteries and their ability to deliver blood to the heart under stress. A Thallium stress test may be indicated if the echo stress test was inconclusive, or it may be done instead, if there is a likelihood of coronary artery disease. Thallium scans are also done after a bypass or angioplasty to evaluate the success of the procedure. Sometimes technetium is used instead of thallium as the radiopharmaceutical agent.

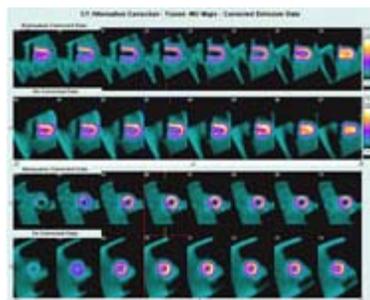
The Thallium stress test differs from the echo test in the following ways:

- an intravenous (IV) line is inserted in a vein in the arm to deliver the thallium;
- a longer period is needed between the rest and exercise testing, so the total time of the procedure is about 4-5 hours;
- instead of an ultrasound image being made with a hand-held transducer, the imaging is done with the patient lying inside of a "gamma camera".

Like the stress echo, the procedure is non-invasive and, while there is a radioactive tracer used, the amount of radiation exposure is extremely small.



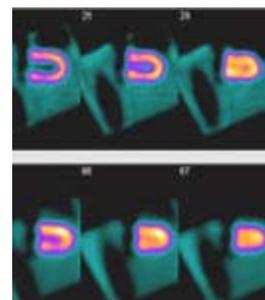
*Nuclear medicine -- t.cam™ gamma camera***



*nuclear medicine image, made with t.cam™ Cardio system***

Depending on the protocol, the rest section may be done before or after the exercise section. In this test, the gamma camera and interpretive system compare the amount of tracer in the blood at rest with that after exercise. Using color-coding, the cardiologist can see if there is a difference in blood flow.

No differences would indicate there is no blockage in the coronary arteries supplying the heart. But a change from rest to exercise would show what is known as a "perfusion defect" and would indicate a blockage.



*detail from nuclear medicine image***

If the nuclear stress test shows a definitive defect, the patient will most likely be scheduled for a cardiac catheterization, which is an invasive test and which may result in an angioplasty or stent. If the results are indeterminate, the patient may be referred for a MultiSlice CT Scan as the next step. As it evolves, it is possible that the MSCT angiogram may replace the nuclear thallium stress test altogether in certain patients.

Who Does the Procedure: The nuclear thallium stress test is performed by a cardiologist who specializes in nuclear medicine, and a technologist or nurse. The procedure is usually done in a hospital setting, or a specialized testing center.

Patient Preparation: Preparation for the nuclear thallium stress test is the same as for the echo stress test, except that the patient should avoid caffeine and smoking for 36-48 hours prior to the test, and not eat anything after midnight before the test. Additionally, women who are or might be pregnant or who are nursing should tell their doctors. The patient will experience an IV insertion. Because of the two-part nature of the test the process takes several hours and it's advisable to bring a book or other activity.

**** photo courtesy of Toshiba America Medical Systems**

Angioplasty.Org is an independent educational health site
The Imaging and Diagnosis Section of Angioplasty.Org is sponsored by
Toshiba America Medical Systems

Unless otherwise noted, all content, including text, photos and video
© Copyright Venture Digital LLC 1996-2007