NUCLEAR STRESS TEST
Cardiac Perfusion Scan

Test Overview

A nuclear stress test uses a radioactive isotope to assess the blood flow to the heart muscle. Images of the heart are taken both at rest and after exercise. If a patient is unable to exercise on a treadmill, they are given a medication, by injection, intended to have a similar effect on the heart to that of exercise. This test enables doctors to identify areas of the heart that have reduced blood flow caused by coronary artery disease, as well as areas that have been damaged from a previous heart attack.

Nuclear stress tests are performed in the diagnostic laboratory of our Massaponax Medical Park office. All stress tests are performed by specially trained nurse practitioners or physician assistants. All testing is supervised by board certified cardiologists who are on-site with staff trained in emergency medical procedures to ensure the safety of patients during testing. It is important to follow testing preparation instructions carefully to avoid being rescheduled.

Why is it done?

A nuclear stress test may be done to determine the cause of symptoms such as chest pain and shortness of breath. It is also used to determine the severity of heart disease, the risk of heart attack, and to evaluate the results of a procedure such as cardiac catheterization or bypass surgery.

How is it done?

The procedure will be explained to you and you will be asked to sign a consent form. Then the nurse or technician will weigh you, review your medications, and ask you a few questions to assess your exercise ability and ensure proper test preparations. She will then clean and shave, if necessary, ten small areas on your chest and place the electrodes that will be used to monitor your heart during the test. An intravenous (IV) line will be inserted into a vein in your arm. It will remain in place throughout the entire test. A certified nuclear medicine technologist will then use the IV to inject a radioactive isotope, also known as a tracer.

> *This tracer will travel in the bloodstream to your heart muscle. Areas of the heart muscle that have good blood flow will pick up the tracer right away. If there are areas of your heart muscle that do not have good blood flow, the tracer will be picked up very slowly or not at all.*

You will then be escorted to the diagnostic laboratory waiting area. (Friends or family members that have accompanied you may wait in this area throughout your test.) Patients are then asked to drink a glass of water and wait for at least 30 minutes, before images are taken. At the appropriate time, you will be placed on one of the imaging cameras. You will need to lay flat on your back with your arms raised overhead (if possible). A large camera will then rotate around your chest very slowly, taking the rest images of your heart. This requires that you lay very still for approximately 15 to 20 minutes.

Patients with symptoms of claustrophobia should consult their physician regarding medication to help them complete this portion of the test.

Once the rest images are complete, you will proceed to the stressing room. You will be connected to the heart monitor using the electrodes that were placed earlier. A solution of normal saline will be connected to your IV line. Then one of the testing methods listed below will be performed under the direct supervision of one of our clinicians.

Treadmill

You will walk on a treadmill in order to increase your heart rate. The treadmill will start slowly at first, then the speed and incline are gradually increased. The staff will continuously monitor your heart and periodically check your blood pressure. Be sure to report any symptoms, such as chest pain, dizziness, or shortness of breath. The goal of the exercise is to reach a specified heart rate, based on your age, and to exercise until it begins to feel difficult. At that point, the nuclear medicine technologist will inject a second dose of the tracer into your IV line. You will need to walk at least one more minute to circulate the tracer. The average time spent on the treadmill is usually between 6 and 9 minutes. However, patients who exercise regularly may be on the treadmill longer, up to 21 minutes. When the exercise is complete, you will continue to be monitored until your heart rate and blood pressure return to pre-test levels. At this time you may have a drink and a snack and take any necessary medications. Next, you will return to the imaging camera for your stress images. This is done similar to the rest images and will take another 15 to 20 minutes.

Dipyridamole

If you are unable to walk on a treadmill, a medication called dipyridamole may be administered through your IV line. This will cause your blood vessels to dilate, having a similar effect as exercise. As the clinician injects the medication, you may feel flushed or experience chest pressure, headache, nausea, anxiety, dizziness, or shortness of breath. Be sure to report any symptoms to the staff. The staff will continuously monitor your heart and periodically check your blood pressure. In some cases, you may be asked to perform low-level exercise to help improve the quality of the images and lessen any side effects. After the nuclear medicine technologist injects the radioactive tracer, another medication is given to stop any side effects. This portion of the test usually lasts from 12 to 15 minutes. At this time you may have a drink and a snack and take any necessary medications. You must wait for at least 45 minutes before returning to the imaging camera for your stress images. This is done similar to the rest images and will take another 15 to 20 minutes.

Dobutamine

If you are unable to walk on a treadmill and have severe lung disease, a medication called dobutamine may be administered through your IV line. This will cause your heart to beat faster and stronger, having a similar effect as exercise. As the medication is slowly injected, you may experience chest pressure, headache, dizziness, nausea, and shortness of breath. Be sure to report any symptoms to the staff. The staff will continuously monitor your heart and periodically check your blood pressure. The goal of this procedure is to raise your heart rate to a specified level, based on your age. At that point, the nuclear medicine technologist will inject a second dose of the tracer into your IV line. You will then be monitored until your heart rate and blood pressure return to pre-test levels. At this time you may have a drink and a snack and take any necessary medications. You must wait for at least 45 minutes before returning to the imaging camera for your stress images. This is done similar to the rest images and will take another 15 to 20 minutes.

How long does it take?

The entire test usually takes from 3 to 4 hours.

Depending on the availability of the radioactive isotope from our supplier, the order of the stress and rest images may be reversed. This could extend the total test time to 5 hours, but you will be permitted to leave the premises for a period of that time.

Is the test safe?

The radiation exposure from the tracer is small. It is similar to the exposure during an x-ray. However, if you are pregnant or nursing, be sure to inform your doctor.

The stress test is safe. However, there is a small amount of risk depending on the condition of your heart and your general health. Possible rare complications include low blood pressure, abnormal heart rhythms, and heart attack. Trained personnel are present during the test to handle any emergency.

Results

A physician, specially trained in nuclear cardiology, will interpret your imaging scans. If the tracer is evenly distributed throughout your heart muscle, this is considered a normal scan. If there are some areas of the heart muscle that are not getting enough blood, this may mean that the heart has been damaged or coronary artery disease is present. Results will be sent to the physician who ordered the test. This physician will then communicate the results to you. If your condition is felt to be unstable, you may be seen and evaluated the same day by one of our board certified cardiologists.