Scintimammography



Scintimammography uses small amounts of radioactive material, a special camera and a computer to help investigate a breast abnormality. Scintimammography can detect cancer even when dense breast tissue and breast implants are present. It can reduce unnecessary procedures by helping determine whether a biopsy is needed.

This exam requires little to no special preparation. Tell your doctor if there is any chance you are pregnant or you are breastfeeding. List any recent illnesses, medical conditions, allergies and medications you are taking, including vitamins and herbal supplements. Leave jewelry at home and wear loose, comfortable clothing. You may need to wear a gown.

What is scintimammography?

Scintimammography is also known as nuclear medicine breast imaging, Breast Specific Gamma Imaging (BSGI) and Molecular Breast Imaging (MBI). Your doctor may use this exam to investigate a breast abnormality found with mammography.

Nuclear medicine uses small amounts of radioactive (http://www.radiologyinfo.org) material called radiotracers. Doctors use nuclear medicine to diagnose, evaluate, and treat various diseases. These include cancer, heart disease, gastrointestinal, endocrine, or neurological disorders, and other conditions. Nuclear medicine exams pinpoint molecular activity. This gives them the potential to find disease in its earliest stages. They can also show whether you are responding to treatment.

This exam is noninvasive (http://www.radiologyinfo.org) . It uses an injection of a radiotracer (http://www.radiologyinfo.org) , a drug that emits radioactivity. The radiotracer accumulates differently in different kinds of tissue. This can help your doctor determine whether cancer could be present. It also helps your doctor to determine whether a biopsy or additional follow-up is necessary.

After injection, the radiotracer eventually accumulates in the breast, where it gives off energy in the form of gamma rays (http://www.radiologyinfo.org) . This energy is detected by a device called a gamma camera (http://www.radiologyinfo.org) . The camera and a computer measure the amount of radiotracer absorbed by the body and produce pictures that detail organ and tissue structure and function.

What are some common uses of the procedure?

Doctors use scintimammography as a follow-up to physical breast exams, mammograms, and/or ultrasounds. It helps doctors decide whether a breast abnormality requires biopsy. Scintimammography can detect breast cancer even when dense breast tissue or breast implants are present.

Scintimammography is not a primary screening tool. It does not replace mammography. Some doctors use it as an additional screening option in women who are at higher risk for breast cancer but cannot undergo an MRI.

How should I prepare?

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No special preparation is necessary.

You will wear a gown during the exam.

Women should always tell their doctor and nuclear medicine technologist if there is any possibility that they are pregnant or they are breastfeeding. *See the Radiation Safety (https://www.radiologyinfo.org/en/info/safety-radiation) page for more information about pregnancy and breastfeeding related to nuclear medicine imaging.*

Tell your doctor and the nuclear medicine technologist performing your exam about any medications you are taking, including vitamins and herbal supplements. List any allergies, recent illnesses and other medical conditions.

What does the equipment look like?

Scintimammography uses high resolution gamma cameras that are placed next to the breast while in compression, similar to a mammogram. The machines used look similar to a mammography machine.

Most nuclear medicine exams use a gamma camera to detect radiation and take pictures from different angles. Scintimammography uses a specific kind of gamma camera that is much smaller than the usual camera. This makes it very easy to position the breasts while taking very detailed pictures.

How does the procedure work?

Ordinary x-ray (http://www.radiologyinfo.org) exams pass x-rays through the body to create an image. Nuclear medicine uses radioactive materials called radiopharmaceuticals or radiotracers. Your doctor typically injects this material into your bloodstream. Or you may swallow it or inhale it as a gas. The material accumulates in the area under examination, where it gives off gamma rays. Special cameras detect this energy and, with the help of a computer, create pictures that detail how your organs and tissues look and function.

Unlike other imaging techniques, nuclear medicine focuses on processes within the body. These include rates of metabolism or levels of various other chemical activities. Areas of greater intensity are called “hot spots.” These may show large concentrations of the radiotracer and where there is a high level of chemical or metabolic activity. Less intense areas, or “cold spots,” indicate a smaller concentration of radiotracer and less activity.

Areas of greater intensity could require further evaluation through biopsy. Breast cancer, as well as some benign lesions, can cause areas of greater intensity in the breast.

How is the procedure performed?

Scintimammography is usually performed on an outpatient basis.

The exam should take approximately 45-60 minutes.

Prior to imaging, the doctor or nuclear medicine technologist will inject you with a small amount of radiotracer. One breast at a time will be placed next to the gamma camera and compressed with a flat plate, similar to a mammogram. Some machines place a gamma camera on each side of the breast. Each image takes about 10 minutes to capture. Two images of each breast are typically obtained. More images may be obtained depending upon the size of the breast or if a potential abnormality is identified. Therefore, the exam takes 45-60 minutes in most cases.

What will I experience during and after the procedure?

You will feel a slight pin prick when the radiotracer is injected. After the injection, you may experience a brief metallic taste.

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You will need to remain as still as possible while the camera takes each picture. Typically, you will be seated while the images are acquired. The breast compression must be firm to keep the breast from moving while the image is being obtained, but is not usually as tight as a regular mammogram.

Scintimammography does not cause pain. However, you may have some discomfort from having to remain still or maintain a particular position during imaging. If you think you may have difficulty remaining still or tolerating breast compression, tell your nuclear medicine technologist before the exam begins.

After the exam, you may need to wait until the nuclear medicine technologist determines if more images are needed. Sometimes, the nuclear medicine technologist takes more images to clarify or better visualize certain areas or structures. The need for more images does not necessarily mean there was a problem with the exam or that something is abnormal. It should not cause you concern.

Unless your doctor tells you otherwise, you may resume your normal activities after your exam. A nuclear medicine technologist, nurse, or doctor will provide you with any necessary special instructions before you leave.

Who interprets the results and how do I get them?

A radiologist or other doctor specially trained in nuclear medicine will interpret the images and send a report to your referring physician.

What are the benefits vs. risks?

Benefits

- Scintimammography can reduce unnecessary invasive procedures by helping doctors determine whether a breast abnormality requires biopsy.
- Scintimammography can detect breast cancer even when dense breast tissue or breast implants are present.
- Scintimammography can be used for some patients who can have a breast MRI.

Risks

- Because nuclear medicine exams use only a small dose of radiotracer, they have a relatively low radiation exposure. This is acceptable for diagnostic exams. Thus, the potential benefits of an exam outweigh the very low radiation risk.
- Doctors have been using nuclear medicine diagnostic procedures for more than six decades. There are no known long-term adverse effects from such low-dose exposure.
- Your doctor always weighs the benefits of nuclear medicine treatment against any risks. Your doctor will discuss the significant risks prior to treatment and give you an opportunity to ask questions.
- Scintimammography is similar to mammography in average radiation exposure to the breast but produces a slightly higher overall radiation exposure to the body. Other imaging tests, such as ultrasound and breast MRI, do not use radiation. Therefore, they may be more useful for most women. However, scintimammography may be an alternative for women who cannot undergo these other exams and may be a useful follow-up exam to characterize findings on mammography.
- Allergic reactions to radiotracers are extremely rare and usually mild. Always tell the nuclear medicine personnel about any allergies you may have. Describe any problems you may have had during previous nuclear medicine exams.
- The radiotracer injection may cause slight pain and redness. This should rapidly resolve.
- Women should always tell their doctor and nuclear medicine technologist if there is any possibility that they are pregnant, or they are breastfeeding. *See the Radiation Safety (https://www.radiologyinfo.org/en/info/safety-radiation) page for more information about pregnancy, breastfeeding and nuclear medicine exams.*

What are the limitations of scintimammography?

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Scintimammography is not a primary breast cancer screening tool. It is not a replacement for mammography or ultrasound.

Nuclear medicine procedures can be time-consuming.

The image resolution of nuclear medicine images may not be as high as that of mammography or MRI.

An abnormality detected on scintimammography may be difficult to find using other imaging exams. This can make it difficult to perform a biopsy.

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