

## Nuclear Medicine Breast Imaging

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Received date: September 2, 2021; Accepted date: September 17, 2021; Published date: September 22, 2021

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### Introduction

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. 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 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. It uses an injection of a radiotracer, 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.

This energy is detected by a device called a gamma camera. 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. 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. Ordinary x-ray 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. Prior to imaging, the doctor or 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.