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Dual Modality MR Compatible Compression Based Nuclear Imaging System For Breast Cancer

Tech ID: 20777 / UC Case 2008-644-0

BRIEF DESCRIPTION

Researchers at the University of California, Irvine have developed a dual modality MR/nuclear imaging system for diagnosing breast cancer.

FULL DESCRIPTION

Researchers at the University of California, Irvine have developed a dual modality MR/nuclear imaging system for diagnosing breast cancer. A novel MR breast radiofrequency (RF) coil built for high field MRI may be combined with planar scintigraphic or PET detectors that enables the medical practitioner to perform co-registered breast MR and nuclear imaging. The breast to be imaged is compressed using a compression device that is integrated with the RF coil. If the breast imaged with MR shows a tumor, a radiotracer is injected into the patient so that malignant tumors are identified

BACKGROUND

Several studies of certain segments of breast cancer patients have consistently shown that magnetic resonance (MR) imaging has higher sensitivity in detecting malignant cancers when compared to traditional X-ray mammogram or ultrasound. MR images small tumors well; however MR is not capable of distinguishing the difference between benign and malignant tumors. On the other hand nuclear imaging such as scintimammography that uses radionuclides such as technetium-99m-sestamibi (Tc99m-MIBI) are able to distinguish between benign and malignant tumors. When injected into a patient, Tc99m-MIBI are readily taken up by cancer cells and a gamma camera is used to acquire images of the breasts. However the spatial resolution of the resulting images are poor when compared to MRI.

Currently to use both MRI and radionuclides to diagnose breast cancer, the patient is required to physically move from an MRI system to a nuclear imaging system. The resulting images are difficult to integrate since the two images may not be in the same 3D spatial coordinate system. Therefore it is desirable to have a MR/nuclear imaging system that provides high resolution MR images that may be co-registered with nuclear images to improve localization of the radionuclide probes for the positive identification of malignant tumors.

ADVANTAGES

This new MR/nuclear imaging system diagnoses malignant tumors with high specificity and high sensitivity. The ability to image and detect malignant tumors with both MRI and nuclear imaging techniques may decrease biopsies in patients. Also this imaging system may be used preoperatively in local staging for surgical planning to determine the best surgical treatment for cancerous lesions.

PATENT STATUS

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OTHER INFORMATION

CATEGORIZED AS

- » **Imaging**
 - » Medical
- » **Medical**
 - » Disease: Cancer
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