Technologist Involvement in PEM: Roles and Responsibilities

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Breast imaging with nuclear medicine methods has been under investigation since the late 1980s Breast imaging has evolved with new devices and protocols aiding in the early detection of breast cancer. Positron emission mammography (PEM) is one of the new-dedicated breast imaging systems in the nuclear medicine field. The scanner images the breast using F-18 FDG isotope metabolized by abnormal cells[1].

Breast positioning and imaging techniques. It is critical not to neglect any abnormal breast tissue by imaging the whole breast[6]. Imaging options are manipulated to produce high quality and high-resolution images, depending on the size of the imaged breast.

PEM guided biopsy. The simulated stereotactic breast biopsy option is the advantage of the PEM system. Patients with suspicious breast lesions could have a biopsy taken right after the imaging. The system uses the simulator to guide the physician and technologist to the location of the lesion[5].

Comparison of PEM and MRI. Newly diagnosed breast cancer patients were imaged with both modalities to detect suspicious breast lesions. PEM imaging showed increased rates of specificity and accuracy that benefits the patient to avoid unnecessary biopsies[3].

Imaging extremities using PEM. The PEM scanner consists of two small detectors that could be positioned around any point of interest. Imaging the hands, elbows, and foot is of great interest when it comes to imaging extremities. F-18 FDG isotope is used to image bones and soft tissue of the extremities to detect any suspicious lesions. Positron Emission Tomography (PET) whole body scans uses the significant uptake value (SUV) for diagnoses whereas the PEM scans uses PEM uptake value (PUV)[4].

Conclusion. PEM is a high resolution-imaging device that is used to image the breast and different organs of the body to support the early detection of malignancies[2].

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