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**Effect Of Breast Density, Menopausal Status And Hormone Use In High Resolution Positron Emission Mammography**

**Contact:** Kathy Schilling

Boca Raton Community Hospital

E-Mail: [KSchilling@brch.com](mailto:KSchilling@brch.com)

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Effect Of Breast Density, Menopausal Status And Hormone Use In High Resolution

Positron Emission Mammography

K Schilling, MD, Boca Raton, FL ([kschilling@brch.com](mailto:kschilling@brch.com)), *D Narayanan, MS, J E Kalinyak, MD, PhD*

**PURPOSE**

Mammographic sensitivity is reduced in dense breasts, while the specificity of breast MRI is dependant on the patient's hormonal status at the time of imaging. We sought to determine whether high resolution PEM (positron emission mammography) was affected by either breast density or hormonal status

**METHOD AND MATERIALS**

Women greater than 25 years of age with histologically proven breast cancer were enrolled for PEM imaging. Participants were injected with an average of 12mCi 18-FDG and underwent bilateral breast imaging with a high resolution PET scanner, PEMFlex Solo (Naviscan PET Systems, San Diego, CA) approximately one hour later. Images were acquired for 10 min in both CC and MLO views with the breast in mild compression. Patient age, use of hormone replacement therapy (HRT), menopausal status, and final histopathology were recorded. Breast density was determined using mammograms. The sensitivity of PEM was calculated for each of these subgroups.

**RESULTS**

To date, a total of 160 participants have been enrolled. Data from 113 subjects encompassing 133 breasts with pathology were analyzed. The mean subject age was 59 yrs, with a range of 29-85. Of 113 malignant index lesions, 20(18 %) were DCIS and 93 (82 %) were invasive with median size 18 mm. 5 women had fatty breasts; 49 scattered fibroglandular densities; 45 heterogeneously dense parenchyma; 10 dense breasts and 4 were not classified. 74 women were postmenopausal, 31 premenopausal and 8 perimenopausal. 68 women had a history of HRT while 43 women did not, 2 were unknown. PEM detected 107/119 cancers for overall sensitivity of 90%. Excluding three lesions that were outside field of view due to inadequate positioning, PEM sensitivity was 107/116 (92%), including 5/5(100%) cancers in fatty breasts, 49/51(96%) in breasts with scattered fibroglandular tissue, 40/45 (89%) in heterogeneously dense breasts and 10/11(91%) in extremely dense breasts (p=NS). PEM depicted 43/46 (93%) cancers in women with a history of HRT and 63/68 (93%) in women without HRT (p=NS). Sensitivity was 28/32 (88%) for premenopausal and 72/76(95%) for postmenopausal women (p=NS).

**CONCLUSION**

PEM sensitivity does not appear to be adversely affected by breast density, hormone replacement therapy or menopausal status.

**CLINICAL RELEVANCE/APPLICATION**

Dense breast tissue and hormonal status are common limitations in mammography and breast MRI. PEM shows high sensitivity and is not limited by these factors.