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COMPARISON BETWEEN ^{99m}Tc-MIBI AND ^{99m}Tc-MDP SCINTIMAMMOGRAPHY FOR DETECTION OF BREAST CARCINOMA. S. L. Chen*, W. G. Liu, and Y. Q. Yin, Zhongshan Hospital, Shanghai, People's Rep of China. (100400)

Objectives: The goal of our study was to assess the values of scintimammography with both ^{99m}Tc-MIBI and ^{99m}Tc-MDP in detecting breast cancer. **Methods:** A total of 35 women with clinical findings of suspicious breast lesions were studied with both ^{99m}Tc-MIBI and ^{99m}Tc-MDP scintimammography. All patients underwent surgery within one week and the final diagnostic results (histopathological) were obtained. **Results:** Eighteen of 35 abnormalities of breast were pathologically confirmed as breast cancer, and 17 as benign lesions. In this group of patients studied, the sensitivity, specificity and accuracy of ^{99m}Tc-MIBI scintimammography were 77.8%, 88.2%, 82.9%, respectively; and that of ^{99m}Tc-MDP scintimammography were 72.2%, 88.2% and 80.0%, respectively. There was no significant difference between ^{99m}Tc-MIBI and ^{99m}Tc-MDP scintimammography. **Conclusion:** This study showed the high diagnostic accuracy of both ^{99m}Tc-MIBI and ^{99m}Tc-MDP scintimammography in detecting breast cancer. Both drugs can be used as an assistant method to non-invasively assess breast cancer invasiveness before surgery.

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FINDING RECURRENT BREAST CANCER: DOES X-RAY MAMMOGRAPHY HAVE A COMPLEMENTARY ROLE TO SCINTIMAMMOGRAPHY? A. D. Kolasinska*, J. B. Cwikla, J. R. Buscombe, S. P. Parbhoo, T. Davidson, B. Holloway, and A. J. Hilson, Royal Free Hospital, London, United Kingdom. (100366)

With the incresing demand for breast conservation surgery, the probability of recurrent tumour within the breast increases. Traditionally x-ray mammography (XMM) was used to assess the post surgical breast, but post surgery and radiotherapy changes have reduces the accuracy of this method. Scintimammography (SMM) has also been proposed and though not perfect appears more accurate than XMM. However combinations of tests may be more accurate than a single test alone. As SMM has been shown to be more accurate this was used as the primary test with XMM as a secondary test in the receiver operator curve (ROC) analysis. A total of 99 women received ^{99m}Tc MIBI SMM and 56 had a subsequent XMM. SMM was performed by the standard Diggles-Khalkhali method and XMM was performed using 2 views. All scans were read by trained experts in their field. Analysis was performed on the breast with the original cancer only and the results of each type of imaging compared with histology. In the ROC curve analysis 5 points of certainty were used from 1 being definitely normal to 5 being definitely cancer, grades 4 and 5 were counted as positive. The overall sensitivity value of SMM was 79% and specificity was 81%, compared with a sensitivity of 36% for XMM and a specificity of 77%. Combining the two tests did not improve the sensitivity over SMM however if equivocal XMM and SMM studies (grade 3) were included as well, the sensitivity of XMM and SMM rose to 83%, with only a small drop in specificity. ROC curve analysis demonstrates that scintimammography should be the primary investigation in suspected local recurrence following breast conservation surgery. The addition of x-ray mammography enables a few more cancers to be found but is not ideal. Other modalilities such as MRI in combination with SMM should be explored

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CORRELATION OF FDG PET AND SENTINEL LYMPH NODE BIOPSY IN PATIENTS WITH BREAST CANCER. M. P. Jacobs*, R. L. Glaser, C. D. Peterson, K. A. Dunigan, and J. C. Mantil, Kettering Medical Center, Dayton, OH. (500240)

PET scanning with FDG and sentinel lymph node (SLN) biopsy are 2 recently developed techniques which have been found useful in the identification of axillary metastases in patients with breast cancer. Using a dedicated PET scanner (ECAT HR plus), we performed attenuation corrected FDG PET scans on 35 women with newly diagnosed breast cancer who were scheduled to undergo SLN biopsy and correlated the PET findings with SLN histology. Images were analyzed qualitatively with uptake greater than background considered abnormal. SLN were identified during surgery with a gamma probe 2 hours following the parenchymal, subcutaneous and/or intradermal injection of 0.5 mCi of filtered ^{99m}Tc labeled sulfur colloid in 2 ml of normal saline/lidocaine near the tumor or biopsy site. At the time of surgery, 3 ml of isosulfan blue was also injected to aid in the identification of the SLN. The SLN was sectioned at multiple levels and stained with hematoxylin and eosin (H&E) and cytokeratin stain. 9 of 35 patients were found to have metastatic disease in the axilla. 5 of the 9 were detected only with the cytokeratin stain and those 5 PET scans were negative in the axilla. None of these patients had a complete axillary dissection. Of the 4 patients whose axillary metastases were detected with H&E, 3 had positive PET scans. Each of these 3 patients had additional malignant nodes (between 2 and 18) removed at the completion of the axillary dissection. The one patient with a negative PET had a 5 mm tumor deposit in the SLN and went on to have 9 of 9 nodes negative at the complete axillary dissection. 26 of 35 patients were free of metastatic disease and 24 of these patients had negative PET scans. We conclude that FDG PET scanning cannot detect the minimal metastatic disease present in SLN which is diagnosed histologically only by cytokeratin staining. A negative PET scan however may indicate that in those patients with minimal involvement of the SLN, further axillary dissection is not necessary. A positive PET scan requires surgical confirmation and suggests the presence of more extensive disease.

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EVALUATION OF THE INTERNAL MAMMARY (IM) LYMPH NODE (LN) CHAIN BY PET IN LOCALLY ADVANCED BREAST CANCER (LABC). J. R. Bellon*, D. A. Mankoff, W. B. Eubank, L. K. Dunnwald, J. R. Gralow, G. K. Ellis, and R. B. Livingston, University of Washington, Seattle, WA. (500425)

Identifying patients with IM metastases is critical to predicting outcome and individualizing treatment planning. Standard imaging such as CT is not sensitive for IM metastases. Our previous studies suggested that FDG PET improves the detection of IM and mediastinal lymph node (LN) metastases in advanced breast cancer. We therefore performed a retrospective review of women with LABC who underwent FDG PET prior to neoadjuvant chemotherapy in order to determine the potential benefit of PET imaging of IM disease. **Methods:** The records of 30 consecutive patients receiving FDG PET prior to neoadjuvant chemotherapy for advanced breast cancer were reviewed. The presence or absence of IM uptake significantly above the chest wall background was judged by two observers. IM involvement was correlated with standard radiographic imaging (CT or CXR) as well with putative risk factors for IM involvement and with clinical patterns of failure. **Results:** Highly suspicious IM uptake of FDG was seen in 7 of 30 women (23%). Mean maximum SUV in the positive IM foci was approximately 3. Twenty-five of the 30 patients were staged with chest x-ray or CT, and retrospective review failed to identify evidence of metastases (this included negative CTs in all patients who were PET positive). Patient characteristics predictive of IM uptake on PET included inflammatory breast disease (IBD) (4/7 patients with IBD had + IM by PET) and palpable axillary disease (6/17 with palpable axillary disease had + IM). Evaluation of patterns of failure was possible in 27 patients with long term followup (median follow-up 22 months). Of patients with PET positive for IM uptake, 3/6 had patterns of failure consistent with IM nodal spread: Two IM + patients had synchronous pulmonary metastases at presentation, and a third later developed IM failure By CT. Only 2/21 patients without IM uptake on PET had similar patterns of failure ($p = .06$ for difference). **Conclusion:** PET appears to detect IM metastases not visible by CT. IM disease may potentially serve as an early conduit for pulmonary metastases. Pathologic verification is necessary to confirm these findings. Supported by NIH grant CA 72064