World Academy of Science, Engineering and Technology
International Journal of Biomedical and Biological Engineering
Vol:9, No:02, 2015

Evaluation of 18F Fluorodeoxyglucose Positron Emission Tomography, MRI, and Ultrasound in the Assessment of Axillary Lymph Node Metastases in Patients with Early Stage Breast Cancer

Authors : Wooseok Byon, Eunyoung Kim, Junseong Kwon, Byung Joo Song, Chan Heun Park

Abstract : Purpose: 18F Fluorodeoxyglucose Positron Emission Tomography (FDG-PET) is a noninvasive imaging modality that can identify nodal metastases in women with primary breast cancer. The aim of this study was to compare the accuracy of FDG-PET with MRI and sonography scanning to determine axillary lymph node status in patients with breast cancer undergoing sentinel lymph node biopsy or axillary lymph node dissection. Patients and Methods: Between January and December 2012, ninety-nine patients with breast cancer and clinically negative axillary nodes were evaluated. All patients underwent FDG-PET, MRI, ultrasound followed by sentinel lymph node biopsy (SLNB) or axillary lymph node dissection (ALND). Results: Using axillary lymph node assessment as the gold standard, the sensitivity and specificity of FDG-PET were 51.4% (95% CI, 41.3% to 65.6%) and 92.2% (95% CI, 82.7% to 97.4%) respectively. The sensitivity and specificity of MRI and ultrasound were 57.1% (95% CI, 39.4% to 73.7%), 67.2% (95% CI, 54.3% to 78.4%) and 42.86% (95% CI, 26.3% to 60.7%), 92.2% (95% CI, 82.7% to 97.4%). Stratification according to hormone receptor status showed an increase in specificity when negative (FDG-PET: 42.3% to 77.8%, MRI 50% to 77.8%, ultrasound 34.6% to 66.7%). Also, positive HER2 status was associated with an increase in specificity (FDG-PET: 42.9% to 85.7%, MRI 50% to 85.7%, ultrasound 35.7% to 71.4%). Conclusions: The sensitivity and specificity of FDG-PET compared with MRI and ultrasound was high. However, FDG-PET is not sufficiently accurate to appropriately identify lymph node metastases. This study suggests that FDG-PET scanning cannot replace histologic staging in early-stage breast cancer, but might have a role in evaluating axillary lymph node status in hormone receptor negative or HER-2 overexpressing subtypes.

Keywords : axillary lymph node metastasis, FDG-PET, MRI, ultrasound
Conference Title : ICBC 2015 : International Conference on Bone and Cartilage
Conference Location : London, United Kingdom
Conference Dates : February 16-17, 2015