Objective: We aimed to evaluate the availability of fluorine-18-fluorodeoxyglucose (18F-FDG) PET/computed tomography (CT) in initial axillary lymph node (ALN) staging in breast cancer. The secondary objective is to evaluate the role of FDG PET/CT as a pretest in sentinel lymph node biopsy vs. axillary lymph node dissection when predicting disease aggressiveness.

Methods: The study evaluated retrospectively 194 breast cancer patients who underwent preoperative 18F-FDG. The sensitivity, specificity, positive predictive value (PPV) and negative predictive value (NPV) of FDG PET/CT for ALN metastases were confirmed with histopathology as the gold standard.

Results: The value of the area under curve (AUC), sensitivity and specificity for ALN metastases were determined as 0.847, 78.8% and 92.6%, respectively. The cut-off value of the maximum standardized uptake value (SUVmax) for metastatic ALN detection was calculated as 1.79. PPV, NPV and the accuracy of 18F-FDG PET/CT were 0.933 (93.3%), 0.75 (75%) and 0.837 (83.7%), respectively. The SUVmax value of the primary lesion was significantly correlated with grade, estrogen receptor (ER) status, progesterone receptor (PR) status, SUVmax value of metastatic ALN, Her-2 status and Ki-67 level. Molecular subtypes revealed no statistically significant difference in terms of mean SUVmax value.

Conclusion: High values of AUC, sensitivity, specificity, NPV and PPV encourage utilization of PET/CT for locoregional staging of nonmetastatic breast carcinoma. The significant correlation between the primary tumor SUVmax value and grade, ER status, PR status and Ki-67 level increases the prognostic predictive value of the preoperative PET/CT. Nucl Med Commun 40:1043–1050 Copyright © 2019 Wolters Kluwer Health, Inc. All rights reserved.