

Role of FDG-PET/CT in evaluating surgical outcomes of operable breast cancer – Usefulness for malignant grade of triple-negative breast cancer

Ohara, M., et al, *The Breast*, Volume 22, Issue 5 , Pages 958-963, October 2013.

Abstract

Background

The aim of this study was to evaluate the significance of ¹⁸F-fluorodeoxyglucose positron emission tomography/computed tomography (FDG-PET/CT) for speculating the malignant level and prognostic value of operable breast cancers.

Methods

Of 578 consecutive patients with primary invasive breast cancer who underwent curative surgery between 2005 and 2010, 311 patients (53.8%) who received FDG-PET/CT before initial therapy were examined.

Results

Receiver operating characteristics (ROC) curve analysis showed the cutoff value of the maximum standardized uptake value (SUV_{max}) to predict cancer recurrence was 3.8 in all patients and 8.6 in patients with the triple-negative subtype, respectively. In all patients, 3-year DFS rates were 98.8% for patients with a tumor of SUV_{max} ≤ 3.8 and 91.6% for patients with a tumor of SUV_{max} > 3.8 ($p < 0.001$). High value of SUV_{max} was significantly associated with large tumor size ($p < 0.001$), lymph node metastasis ($p = 0.040$), high nuclear grade ($p < 0.001$), lymphovascular invasion ($p = 0.032$), negative hormone receptor status ($p < 0.001$), and positive HER2 status ($p = 0.014$). Based on the results of multivariate Cox analysis in all patients, high SUV_{max} ($p = 0.001$) and negative hormone receptor status ($p = 0.005$) were significantly associated with poor prognosis. In patients with triple-negative subtype, 3-year DFS rates were 90.9% for patients with a tumor of SUV_{max} ≤ 8.6 and 42.9% for patients with a tumor of SUV_{max} > 8.6 ($p = 0.002$), and high SUV_{max} was the only significant independent prognostic factor ($p = 0.047$).

Conclusion

FDG-PET/CT is useful for predicting malignant behavior and prognosis in patients with operable breast cancer, especially the triple-negative subtype.



The PET Experts

Summary

PET/CT in Triple-Negative Breast Cancer

Ohara et al. from Hiroshima University (Japan) reported on June 8 ahead of print in *The Breast* on a study evaluating the ability of 18F-FDG PET/CT to correctly identify stage and predict outcomes in operable breast cancers. The study included the records of 311 patients with primary invasive breast cancer who underwent PET/CT before initial curative surgery.

The maximum standardized uptake value (SUVmax) cutoff for predicting cancer recurrence was 3.8 in all patients but was 8.6 in patients with triple-negative subtype breast cancer. Three-year disease-free survival rates were 98.8% in patients with tumor SUVmax \leq 3.8 and 91.6% for those with tumor SUVmax $>$ 3.8. High SUVmax was significantly associated with large tumor size, lymph node metastases, high nuclear grade, lymphovascular invasion, negative hormone receptor status, and positive HER2 status.

Additional analyses showed that high SUVmax and negative hormone receptor status were significantly associated with poor prognosis. In patients with the triple-negative subtype, 3-y disease-free survival rates were 90.9% for patients with tumor SUVmax \leq 8.6 and 42.9% for those with tumor SUVmax $>$ 8.6. In these individuals, high SUVmax was the only significant independent prognostic factor.

The authors concluded that 18F-FDGPET/CT is “useful for predicting malignant behavior and prognosis in patients with operable breast cancer, especially the triple-negative subtype.”

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