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¹⁸F-FDG PET-guided measurement of dynamic MRI parameters improve the prediction of the disease free survival in patients with breast cancer

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The aim of this study was to determine whether ^{18}F-FDG PET-guided measurement of dynamic MRI parameters could predict disease-free survival (DFS) in patients with operable breast cancer. Seventy-eight patients with breast cancer were enrolled. All patients underwent preoperative parallel PET/MR. All patients were analyzed by diverse parameters (maximum SUV at 1 h [SUV1], retention index of SUVmax [RI], initial slope of the enhancement curve [IS], transfer constant [K^{trans}], reflux constant [K_{ep}], extravascular extracellular space volume fraction [Ve] and initial area under the curve [iAUC]). Dynamic MRI parameters were measured at the tumor region with SUV1. A relationship between covariates and DFS after operation was analyzed using Kaplan-Meier method and multivariate Cox proportional-hazard regression method. The median follow-up of 78 patients was 55 months, and 9 (11.5%) patients developed recurrence or metastasis. Among parameters, higher RI (p=0.0010), lower K^{trans} (p=0.0046), and lower Ve (p=0.0035) were significantly associated with poorer DFS. In contrast, SUV1, IS, K_{ep}, and iAUC were not. On multivariate analysis, RI (p=0.016; HR=5.20; CI 1.4-19.7), and K^{trans} (p=0.035; HR=0.22; CI 0.054-0.89) were found as independent predictors of DFS. Patients with higher RI and lower K^{trans} revealed a significantly higher recurrence rate (66.7%) than the rest of patients (6.9%, P<0.0001). ^{18}F-FDG PET-guided measurement of dynamic MRI parameters could make improvement of patients care because tailored surveillance would be applied for high risk group.

Biography

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