The preoperative SUVmax for 18F-FDG uptake predicts survival in patients with colorectal cancer

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Abstract
Background: The study was to investigate whether 18F-fluorodeoxyglucose (18F-FDG) uptake, analyzed by positron emission tomography (PET), can be used preoperatively to predict survival in Chinese patients with colorectal carcinoma. **Methods:** A prospectively maintained colorectal cancer database was retrospectively reviewed between June 2009 and December 2011. All included patients had been newly diagnosed with colorectal cancer (of various stages) and evaluated by 18F-FDG-PET/computed tomography (CT) within the two weeks preceding surgery. Univariate and multivariate analyses were used to determine whether the maximal standardized uptake value (SUVmax) and various clinicopathological and immunohistochemical factors were correlated with survival. Receiver operating characteristics (ROC) curve and Kaplan-Meier survival curve analyses were used to explore whether SUVmax could predict survival in these patients. **Results:** A total of 107 patients were enrolled in the study (mean age, 59.26±12.66 years; 66.35% males), with 77 surviving to the end of follow-up (average 60 months). Univariate analysis indicated that tumor size, TNM stage, nodal metastasis, the ratio of metastasized nodes to retrieved nodes, cyclin D1 immunostaining and SUVmax correlated with survival ($P<0.05$). Multivariate analysis showed that only TNM stage and SUVmax were associated with survival ($P<0.05$). ROC curve analysis determined the optimal SUVmax cutoff for predicting survival to be 11.85 (sensitivity, 73.3%; specificity, 75.3%). Survival was significantly longer in patients with preoperative SUVmax ≤11.85 ($P<0.001$, log-rank test). **Conclusions:** SUVmax, measured by 18F-FDG-PET/CT, provides a useful preoperative prognostic factor for patients with colorectal cancer.
Keywords: colorectal cancer; 18F-FDG; PET/CT; SUVmax; histopathologic; immunohistochemical