

# The Role of Preoperative [18F]Fluorodeoxyglucose Positron Emission Tomography Predicting for Early Recurrence after Curative Resection for HCC

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**Purpose:** 18F-fluorodeoxyglucose (FDG) uptake on positron emission tomography (PET) scan has been found to reflect tumor differentiation and to predict clinical outcome of hepatocellular carcinoma patients. We investigated the correlativity of PET scan with tumor differentiation of hepatoma and the clinical significance of PET scan for predicting early tumor recurrence (time-to-recurrence <1 year) clarified as adverse prognostic factor.

**Method:** Ninety three hepatocellular carcinoma patients who underwent curative resection between August 2004 to December 2008 were retrospectively collected in the study according to inclusion criteria. PET scan was performed preoperatively, and the maximum standardized uptake value (SUVmax) of tumor and the tumor to nontumor SUV ratio (TNR) were calculated from FDG uptake. Tumor differentiation was measured using H & E stain.

**Results:** Early tumor recurrence patients were twelve among twenty six recurrence patients. SUVmax and TNR showed a high correlativity with tumor differentiation measured by Edmonson-Steiner classification ( $p=0.000$ ). Early recurrence-free and the overall survival rates in low TNR group ( $TNR<2.0$ ) were higher than in high TNR group ( $TNR>2.0$ ) using Kaplan-Meier method ( $p=0.015$ ,  $p=0.007$ ). According to univariate analysis, predictors for early tumor recurrence were large tumor size ( $\geq 5$  cm), high TNR ( $TNR\geq 2$ ), high SUVmax ( $SUVmax\geq 4$ ), high Edmonson-Steiner grade. However, any predictor for early tumor recurrence was not statistically proved in multivariate analysis.

**Conclusion:** These results suggest that preoperative PET scan reflect tumor differentiation of hepatocellular carcinoma. Further investigation would be followed to estimate clinical validity of preoperative PET scan for predicting early tumor recurrence.