Beyond Excellence Toward the Best! APRIL 5-6, 2019 Seoul, Korea

BP Best OP 2

GLRLM features in CT texture analysis are prognostic factors: Evaluation of pancreatic cancer heterogeneity, retrospective cohort study

Hyung Sun KIM¹, Joon Seong PARK^{* 1}, Young Jae KIM², Kwang Gi KIM²

¹Department of Surgery, Pancreatobiliary Cancer Clinic, Gangnam Severance Hospital, Yonsei University, Korea ²Department of Biomedical Engineering, Gachon University College of Medicine, Korea

Introduction : Pancreatic cancer is an lethal disease. Tumor heterogeneity is an important indicator of the progression of chemoresistance. Although texture analyses can allow quantification of tumor heterogeneity, only a few studies reported the use of texture analysis in cases of pancreatic cancer. Therefore, we analyzed tumor heterogeneity in preoperative computed tomography (CT) scans by performing texture analysis using the gray-level run-length matrix (GLRLM).

Methods : We analyzed 116 consecutive patients who underwent surgical resection during 2001-2017 and had preoperative CT data available for analysis. An ROI was drawn on slices with a visible tumor and normal pancreas on the arterial phase CT scans and the correlation of pathological characteristics and GLRLM features was analyzed. We then performed Kaplan—Meier survival curve analysis among pancreatic cancer patients.

Results : The gray-level non-uniformity (GLN) values in GLRLM features for tumors were higher than those for normal pancreas. High GLN values represent a non-uniform texture, i.e., heterogeneity. Recurrence-free survival was shorter in the group with high GLN135 values (p = 0.025).

Conclusions : Tumor heterogeneity is a significant prognostic factor. Our analyses of the correlation between pathological outcomes and GLRLM features in pancreatic cancer patients showed that GLN values were a powerful indicator of prognosis.

Corresponding Author. : Joon Seong PARK (jspark330@yuhs.ac)