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Oncologic impact of SPARC expression in resected pancreatic cancer

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Introduction : Dense, fibrotic stroma associated with pancreatic cancer causes hypovascularity and hypoxia, creating a major hurdle for drug delivery and plays an important role in cancer progression. In pancreatic cancer, SPARC has been frequently expressed in stromal fibroblasts. We evaluated the oncologic impact and significance of SPARC in resected pancreatic cancer and using TCGA-PADD cohorts.

Methods : Between January 2009 and December 2015, patients who underwent curative resection for pancreatic ductal adenocarcinoma were reviewed and 91 resected specimens were available for analysis at Severance Hospital. Immunohistochemistry was performed to characterize expression patterns of SPARC. Oncologic outcomes were compared according to SPARC expression. TCGA-PADD cohorts from the public database were used to assess oncologic outcome according to mRNA expression of SPARC.

Results : Disease-specific survival for patients with presence of SPARC expression in pancreatic cancer stroma was significantly worse than those without. (5-year disease-specific survival 60.3% vs. 26.3%, p=0.005, respectively) Among 73 patients (80.2%) who underwent adjuvant therapy, disease-specific survival was significantly increased for patients without SPARC expression in pancreatic cancer stroma. (5-year disease-specific survival 70.6% vs. 28.7%, p=0.004, respectively) After the selection of best cut-off using Cox proportional hazard model, the TCGA-PAAD samples were divided with high or low SPARC expression groups according to oncologic outcomes. High SPARC expression group showed significantly worse outcome in overall survival (Cut-off: 14.1295, P=00222).

Conclusions : High expression of SPARC may be a poor prognostic indicator for pancreatic cancer. And, prominent expression in stroma may be a strong pathologic marker for worse oncologic outcome with poor response to adjuvant therapy.

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