Prognosis of ductal adenocarcinoma of pancreatic head with overexpression of CD44

Tsann-Long Hwang, a, Li-Yu Lee, b Tse-Ching Chen, b Ashok Thorat, a Jen-Ter Hsu, a Chun-Nan Yeh, a Ta-Sen Yeh, a Yi-Yin Jan a

aDepartment of Surgery, Chang Gung Memorial Hospital, Chang Gung University, Lin-Kou, Taiwan
bDepartment of Pathology, Chang Gung Memorial Hospital, Chang Gung University, Lin-Kou, Taiwan

Background: The long-term survival rate of patients with pancreatic ductal adenocarcinoma (PDAC) is very low. Cancer stem cells have been identified in PDAC based on the expression of the surface markers CD24, CD44, CD133, and epithelial specific antigen. The prognosis of PDAC may be related to the presence or absence of tumor cells with cancer stem cell surface markers.

Methods: Eighty-six PDAC patients (51 male and 35 female patients) who underwent surgical treatment at Chang Gung Memorial Hospital—Lin-Kou Medical Center, Lin-Kou, Taiwan between 1998 and 2007 were included in this study. The patients’ ages ranged from 30 years to 84 years. All their surgical specimens showed invasive ductal cancer. Immunohistochemical staining with CD44 antibodies was performed. The differences in clinical data, cell types of tumors, tumor staging, and survival rates between patients with CD44 − (Group A; n = 33) and CD44 + (Group B; n = 53) were compared.

Results: Clinical data, cell types of tumors, and tumor staging between the two groups showed no significant differences. The 3- and 5-year survival rates were, respectively, 51.5% and 19.8% in patients with CD44 − tumor cells and 4.0% and 2.0% in those with CD44 + tumor cells. The differences were statistically significant (p < 0.0001). The median overall survival times of the two groups were also different (36.9 months vs. 12.2 months, p < 0.0001). Multivariate analysis showed that the CD44 as well as lymph node status, and differentiation of tumor cells were prognostic factors for patients with PDAC.

Conclusion: The results suggested that CD44 expression in patients with PDAC after surgery was significantly associated with decreased survival, whereas patients with CD44 − tumor cells survived significantly longer.