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Preoperative serum carbohydrate antigen 19-9 levels predict early recurrence after the resection of early-stage pancreatic ductal adenocarcinoma

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Introduction: To evaluate the predictive factors associated with the early recurrence of early-stage pancreatic ductal adenocarcinoma (PDAC).

Methods: This study enrolled 407 patients with stage I PDAC undergoing upfront surgical resection between January 2000 and April 2016. Early recurrence was defined as a diagnosis of recurrence within 6 months of surgery. The optimal cutoff values were determined by receiver operating characteristic (ROC) analyses. Univariate and multivariate analyses were performed to identify the risk factors for early recurrence.

Results: Of the 407 patients, 304 (74.7%) experienced disease recurrence within a median time of 10 months. Among 98 patients (24.1%) with early recurrence, 26 (26.5%) and 72 (73.5%) experienced local and distant recurrences, respectively. In total, 253 (62.2%) patients received adjuvant chemotherapy. The optimal cutoff values for early recurrence were 70 U/mL and 2.85 cm for carbohydrate antigen (CA) 19-9 levels and tumor size, respectively, on ROC curve analysis. Of 181 patients with CA 19-9 levels of > 70 U/mL, 59 (32.6%) had early recurrence, compared to 39 (17.4%) among 226 patients with CA 19-9 levels of ≤ 70 U/mL ($p < 0.001$). Multivariate analysis revealed that a CA 19-9 level of > 70 U/mL ($p = 0.006$), tumor size > 2.85 cm ($p = 0.004$), poor differentiation ($p = 0.008$), and non-adjuvant chemotherapy ($p = 0.025$) were significant risk factors for early recurrence in early-stage PDAC.

Conclusions: Elevated CA 19-9 level (cutoff value > 70 U/mL) can be a reliable predictive factor for early recurrence in early-stage PDAC. As adjuvant chemotherapy can prevent early recurrence, it should be recommended for patients susceptible to early recurrence.

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