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OPTIMAL NEOADJUVANT THERAPY STRATEGIES FOR PATHOLOGIC COMPLETE REMISSION AND ITS PROGNOSTIC IMPLICATION IN PANCREATIC CANCER

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Background : Pathologic complete remission (pCR) after neoadjuvant therapy (NAT) has been increasingly observed in pancreatic ductal adenocarcinoma (PDAC) with modern NAT regimens. However, the optimal NAT regimen, duration, and its prognostic impact remain unclear. This study aimed to identify factors associated with pCR and evaluate their role in survival outcomes.

Methods : We retrospectively analyzed 194 patients with PDAC who underwent surgery following NAT at a tertiary institution (2019-2024). Clinicopathologic data and survival outcomes were analyzed. The optimal NAT cycle cut-off for pCR was determined using ROC analysis. Factors associated with pCR and prognosis were evaluated using univariate and multivariate analyses.

Results : Among 181 eligible patients, pCR was achieved in 20 (11.0%). ROC analysis identified an optimal NAT cut-off of 9 cycles (AUC: 0.723; sensitivity: 70.0%; specificity: 78.7%). Logistic regression showed marginal significance for NAT $\geq$9 cycles in predicting pCR. NAT type (chemo+RT), pre-treatment CA19-9 $\leq$37, and significant CA19-9 decline were also associated with pCR. Patients achieving pCR had significantly better 2-year overall survival (OS) compared to non-pCR patients (91.5% vs. 77.0%; p=0.031). Multivariate Cox regression identified NAT $\geq$9 cycles, Evans grade, adjuvant therapy, and recurrence as independent prognostic factors for OS. Despite achieving pCR, 20% of patients experienced recurrence.

Conclusions : pCR after NAT in PDAC is associated with improved survival and influenced by NAT type, CA19-9 response, and treatment duration. NAT $\geq$9 cycles is an optimal threshold for achieving pCR and improving OS. Recurrence in pCR patients highlights the need for further optimization of neoadjuvant and adjuvant therapies.

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