Recurrence and survival outcomes based on histologic subtypes in adenocarcinoma of ampulla of Vater

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Background/Aims: Several previous studies have investigated the correlation between histological subtype and prognosis of ampulla of Vater (AoV) carcinoma, but the results have been inconsistent. Refining histologic classification with immunohistochemical markers has been attempted; however, the limited sample size of patients and inconsistencies in subtype definitions undermine the prognostic significance.

Methods: We analyzed the clinical outcomes of curatively resected patients with stage IB-III AoV adenocarcinoma, assessing the potential clinical value of histomolecular phenotypes by combining histopathological analysis with protein expression (MUC1, CDX2, CK20, and MUC2) in a cohort of 87 patients.

Results: Out of 87 patients, 54 were classified as the pancreato-biliary (PB) subtype and 33 as the intestinal subtype. The PB subtype tended to have poor disease-free survival (HR=1.81; 95% CI, 1.04-3.17; p=0.054) and overall survival (OS) (HR=2.01; 95% CI, 1.11-3.66; p=0.039) compared to the intestinal subtype. In terms of recurrence patterns, local recurrences were predominantly observed solely in the PB subtype, whereas both subtypes exhibited no significant difference in systemic recurrence. Among patients with systemic disease, the PB subtype exhibited significant CA 19-9 elevation compared to intestinal subtype (p=0.024). In relapsed patients who underwent chemotherapy, the PB group demonstrated shorter OS of 10.3 months compared to 28.3 months in the intestinal group (HR=2.47; 95% CI, 1.23-4.95; p=0.025), while no significant differences were noted in progression-free survival. In patients who received gemcitabine plus cisplatin as their first-line systemic chemotherapy, the PB group displayed inferior OS outcomes compared to the intestinal group (HR=2.96%; 95% CI, 1.32-6.62; p=0.029).

Conclusions: Categorizing based on histomolecular phenotypes may significantly impact existing therapeutic strategies, as it correlates with survival outcomes, patterns of recurrence, and prognoses. Tailoring treatment approaches based on histomolecular subtypes, such as considering adjuvant chemoradiation or perioperative treatments, may mitigate the local recurrence risk in the PB subtype.