

PATIENT-DERIVED ORGANOID MODEL FOR PREDICTING THE CHEMO-RESPONSE IN PATIENTS WITH AMPULLA OF VATER CANCER

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Background : Currently, no standard adjuvant chemotherapy regimen exists for patients with resected ampulla of Vater cancer (AoVca). This study aims to evaluate drug sensitivity using patient-derived tumor organoids (PDOs) to identify an appropriate adjuvant chemotherapy regimen.

Methods : This study retrospectively reviewed PDOs from AoVca patients. Drug sensitivity to 5-fluorouracil (5-FU), Cisplatin, Oxaliplatin, Irinotecan, Gemcitabine, and nab-Paclitaxel was assessed by comparing IC50 values, defined as the concentration required to inhibit cancer cell growth by 50%.

Results : Tissue samples were obtained from the 14 patients, with successful culture achieved in 11 cases. Among these, 10 PDOs successfully expanded and subjected to drug screening. In PDOs derived from 10 AoVca patients, resistance to cisplatin was universally observed, followed by resistance to Irinotecan in 9 cases and nab-Paclitaxel in 8 cases. Conversely, Gemcitabine demonstrated the highest sensitivity, with only 1 PDO showing resistance. This was followed by 5-FU, with resistance in 4 cases.

Conclusions : Based on the findings from PDO-based study, Gemcitabine was identified as the most suitable chemotherapy regimen for AoVca. Additionally, if combination therapy was considered, Oxaliplatin appear to be more appropriate option than Cisplatin. However, further clinical studies are required to validate these findings.

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