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Circulating Tumor Cells with Epithelial-Mesenchymal Transition Features Predict Metastatic Outcome in Pancreatic Cancer.

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Introduction : To clarify the metastatic potential of CTCs with mesenchymal phenotypic (mCTCs) characteristic in pancreatic cancer (PC).

Methods : Among both localized (n=21) and metastatic (n=14) patient populations, blood samples (7.5ml each) were drawn from peripheral vein. Of them, portal and peripheral blood samples were simultaneously collected intra-operatively in 19 patients following surgical dissection prior to tumor removal. All samples were analyzed for CTCs with immunomagetic negative enrichment together with 4-channel immunofluorescence against Cytokeratin, Vimentin, DAPI and CD45.

Results : CTCs were detected in 91.4% (32/35) and 100.0% (14/14) of patients with AJCC stage Ⅰ-Ⅲ and stage Ⅳ tumors, respectively. 21 localized patients had a mean count of (148.9±159.9) CTCs/7.5 mL in peripheral blood, compared with a mean count of (279.5±297.5) CTCs/7.5 mL in 14 metastatic patients (p=0.127). Meanwhile, the mCTCs percentage tended to be higher in metastatic group, implying that mCTCs may be a risk factor for metastatic disease. Among 19 patients received operations, there was a mean count of (148.1±152.8) CTCs/7.5 mL in peripheral blood vs. (252.0.4±220.9) CTCs/7.5 mL in portal vein (p=0.170). However, the mCTCs percentage of portal vein was significantly different from that of peripheral vein (p=0.048), meaning a obvious spatial heterogeneity in epithelial and mesenchymal composition during circulation. The clinical significance of distant composition warrants further exploration.

Conclusions : CTCs with mesenchymal phenotype may in part represent tumor clones with high metastatic potential, suggesting that this special subtype CTC-positivity identifies patients with occult systemic disease and neoadjuvant therapy may improve the prognosis.

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