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Detection of High-Risk Pancreatic Cysts using Avantect™ blood-based test

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Background:
Pancreatic cystic lesions are common incidental findings on imaging and current diagnostic methods cannot robustly identify cysts that have the highest probability to progress to pancreas cancer and require treatment. To address this gap, we assessed the performance of a non-invasive epigenomic based test utilizing cell-free DNA (cfDNA), the Avantect Pancreatic Cancer test, in a cohort of patients with pancreatic cysts to identify those at high risk of malignancy.
Methods: We investigated the use of Avantect in patients with pancreatic cysts in a pilot study of 44 patients with cysts comprising 18 patients with high/moderate- and 26 patients with low grade-dysplasia/benign cysts. Whole blood was collected from all study participants along with demographic information, imaging results, surgical reports, and histological findings.

Results: The Avantect test was performed on cfDNA extracted from all 44 pancreatic cysts. 16 out of the 18 (89%) patients with cysts of moderate/high grade dysplasia exhibited an abnormal signal associated with pancreatic cancer. Of the 26 patients with cysts with low grade/benign features 8 (31%) were identified by Avantect as abnormal. Pathway analysis on genes differentially hydroxymethylated between moderate/high grade and low-grade dysplasia revealed significant alterations in disease biology. Importantly, in pancreatic cystic lesion with moderate/high grade dysplasia we identified a set of hydroxymethylated genes associated with pancreatic fetal pancreas ductal cells, indicating dedifferentiation phenotypes reminiscent of cell plasticity changes that occur in cancer development.

Conclusions: The Avantect Pancreatic Cancer test shows promise as a non-invasive method for identifying patients with pancreatic cysts at high risk of malignancy by revealing dynamic changes in disease biology associated with early cancer development.