Cysts hold clues to pancreatic cancer

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Working with researchers from the University of Michigan and Indiana University, Van Andel Research Institute (VARI) investigators have developed a method that could be used to predict whether pancreatic cysts are benign or are precursors to invasive cancer.

More pancreatic cysts are being detected due to the widespread use of high resolution abdominal imaging. These advances in early detection, when coupled with the new findings, could result in fewer deaths from pancreatic cancer, which struck more than 42,000 Americans in 2009 and killed more than 35,000, according to the National Cancer Institute.

"Because of the difficulty in detecting pancreatic cancer in its early stages, most cancers are advanced at the time of diagnosis and recur after removal of the tumor," said VARI Senior Scientific Investigator Brian Haab, Ph.D., first author of a study published in the May issue of Annals of Surgery. "The best hope for a long-term cure may be the detection and removal of these pre-cancerous cysts."

"Dr. Haab and his colleagues have sought to address a very challenging clinical management problem regarding cystic lesions of the pancreas," said Peter J. Allen, MD, FACS, a physician and researcher specializing in pancreatic, liver, and stomach cancer at Memorial Sloan-Kettering Cancer Center. "As the use of cross-sectional imaging increases, clinicians are seeing increased numbers of patients with these lesions and it will become imperative to sort out benign from pre-malignant."

The most common and deadly form of pancreatic cancer, pancreatic

ductal adenocarcinomas, develops from three types of cysts. Although the most prevalent type is too small to be detected, the other two can be found using CT or ultrasound imaging and account for 10 - 15% of pancreatic cancers. However, current methods can only distinguish pre-cancerous cysts from those that are benign with up to 79% accuracy.

Using fluid from a variety of cyst types, researchers looked for patterns in the variations of carbohydrate structures called glycans to determine if there were any biomarkers that could more accurately distinguish between pre-cancerous and benign cysts. They found several candidates, some of which could be used in combination to determine cyst type.

"Further study will be needed to validate the clinical value of using glycan variations to differentiate cyst types, but it seems like they are more accurate than current methods," said Dr. Haab.

"(Dr. Haab's) identification of variants of MUC-1, MUC-5AC, and MUC-16 (genes) within the cyst fluid of pre-malignant lesions is exciting as our current ability to non-operatively define these lesions is limited," said Dr. Allen. "Hopefully with larger numbers of patients these results can be validated and be put into clinical use."

Provided by Van Andel Research Institute