

Study finds more accurate method to diagnose pancreatic cancer

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Researchers from the University of Missouri have found a more accurate laboratory method for diagnosing pancreatic cancer, the fourth leading cause of cancer death in the United States. The disease causes more than 38,000 deaths each year in the United States, and kills 94 percent of people with the illness within five years, according to the National Cancer Institute.

"Pancreatic cancer can be difficult to diagnose because of subtle differences that distinguish between healthy tissue, cancerous tissue and tissue that is atypical, or suspicious," said Lester Layfield, M.D., professor and chair of the MU School of Medicine's Department of Pathology and Anatomical Sciences. "Our goal was to find a way to make a more accurate and reproducible diagnosis."

Because of the pancreas' location within the body, no routine screening methods, such as mammography for breast cancer, exist for detecting pancreatic cancer.

If a physician suspects a patient may have pancreatic cancer, a biopsy of the pancreatic tissue is taken through a minimally invasive technique called endoscopic ultrasound-guided fine-needle aspiration.

"Traditionally, pathologists have examined a tissue sample through a microscope and made a diagnosis based on the overall features of all the cells in the tissue sample," Layfield said. "Previous research has shown an experienced pathologist can diagnose pancreatic cancer with accuracy in the mid-to-upper 80 percent range using current techniques. However, we wanted to develop a more accurate method by determining which cellular features are most closely associated with cancer."

To develop the new diagnostic method, MU researchers performed a retrospective study of the

records from 57 patients at University of Missouri Health Care who were tested for pancreatic cancer. They evaluated 16 features of pancreatic biopsies that could be evaluated under a microscope and performed a statistical analysis to determine which could be most reliably identified by multiple pathologists and which were most likely to be associated with pancreatic cancer.

"Through our analysis, we developed a group of four characteristics that allow a pathologist to diagnose pancreatic cancer with 93 percent accuracy—a substantial improvement over the traditional method," Layfield said. "I believe this new technique can help pathologists improve the diagnosis of pancreatic cancer, ultimately improving care for patients by providing an evidence-based approach to diagnosing the disease and determining the best treatment."

The four features of [pancreatic cancer](#) the researchers identified are:

- a wide variation in the size of pancreatic cells' nuclei, called anisonucleosis
- oversized nucleoli, called macronucleoli
- single atypical epithelia cells, a type of cell found in the pancreas
- mucinous metaplasia, which is the production of mucin in cells that normally don't produce the substance

The study, "Risk Stratification Using Morphological Features in Endoscopic-ultrasonography Guided Fine Needle Aspirations of Pancreatic Ductal Adenocarcinoma," was presented at the American Society for Clinical Pathology's 2013 annual meeting.

Provided by University of Missouri-Columbia

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