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New tool may help with early detection of deadly pancreatic cancer

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A new diagnostic tool developed by Van Andel Research Institute (VARI) scientists has shown promising results when used with patients of pancreatic cancer, one of the deadliest forms of cancer due to the difficulty of diagnosing it in its early stages. The method, which studies carbohydrate structures in the bloodstream, could lead to the development of blood tests that can detect cancer more effectively.

"Tumor cells sometimes shed proteins into a patient's bloodstream," said VARI Senior Scientific Investigator Brian Haab, Ph.D., whose lab published its findings in the journal *Molecular & Cellular Proteomics*. "These proteins can have carbohydrate structures attached to them that might be able to tell us not only if a patient has cancer, but also more about the cancer and how to treat it."

Associating specific carbohydrate alterations on proteins with cancer could provide better cancer detection than the measuring of protein levels alone, the current, most-commonly-used method of blood testing for many types of cancer. Haab said that specific alterations also could be connected to specific cancer characteristics, such as the ability to spread or resistance to therapy. Some carbohydrate alterations also could have distinct functions in cancer progression, which might have therapeutic value.

Researchers used the method to study blood samples from pancreatic cancer patients at Evanston Northwestern Healthcare in Illinois. They identified the prevalence of a variety of alterations on different proteins.

"Interestingly, the protein with the most alterations was not previously recognized as a marker for pancreatic cancer, perhaps because the protein level alone did not provide good cancer detection," said Tingting Yue, a Michigan State University graduate student working at VARI and lead author of the study. "This protein is found in pre-malignant lesions and could be valuable for early detection if we can find unique alterations associated with it."

"We greatly need improved diagnostic tests to find tumors at the earliest possible stages to provide the most appropriate and effective treatment for pancreatic cancer patients and to improve their chances of recovery," said Randall E. Brand, M.D., Professor of Medicine at University of Pittsburgh Medical Center, another of the study's authors. "These results are an encouraging step toward that goal."

Source: Van Andel Research Institute