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Researchers identify pancreatic cancer patients who benefit from personalized treatment

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Cancer researchers at Indiana University report that about 15 percent of people with pancreatic cancer may benefit from therapy targeting a newly identified gene signature.

Using data from the Cancer Genome Atlas, Murray Korc, M.D., the Myles Brand Professor of Cancer Research at the Indiana University School of Medicine and a researcher at the Indiana University Melvin and Bren Simon Cancer Center, and colleagues found that a sub-group of pancreatic cancer patients who possess a strong angiogenic gene signature could benefit from personalized therapies that cut off the pathways that feed the cancer's growth.

This particular gene signature enables abnormal blood vessels to form in tumors, which feeds the tumor's growth.

The finding, published online Feb. 25 in the journal *Oncotarget*, is new because the prevalence of this signature was not previously known. The authors also demonstrated for the first time that endothelial cells, the main type of cell found in the inside lining of blood vessels, can produce molecules that directly stimulate the growth of pancreatic cancer cells.

"We showed that endothelial cells can stimulate the growth of pancreatic cancer cells and that by silencing or inhibiting certain pathways - JAK1-2 and STAT3 - we can alter that effect," Dr. Korc explained. "We

demonstrated that it is possible to target these pathways and prolong the survival of genetically modified mice whose pancreatic cancers also have a strong pro-angiogenic gene signature."

Thus, for people with a strong pro-angiogenic gene signature, the finding suggests that they may benefit from targeted therapy that is directed against one of these pathways.

An important feature of the study was to demonstrate that it is possible to implant in mice small biopsy samples obtained from patients undergoing endoscopic procedures and to generate human tumors in these mice. When the original human tumor had evidence for angiogenesis, the implanted human tumor also exhibited angiogenesis in the mouse. Additional studies are necessary to confirm that these approaches could guide the design of precision medicine using targeted therapies, Dr. Korc said.

The need for new therapies for pancreatic cancer patients is great as only 7 percent of people with the disease survive more than five years after diagnosis. According to the American Cancer Society, there will be an estimated 48,960 new cases of pancreatic cancer and 40,560 deaths from the disease in 2015.

Provided by Indiana University