Medical Xpress

Metastatic pancreatic, primary breast cancer have common growth mechanisms, study suggests

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A recently discovered form of the protein that triggers blood clotting plays a critical role in promoting the growth of metastatic pancreatic cancer and primary breast cancer, according to the cumulative findings from two new scientific manuscripts published online ahead of print in the *International Journal of Cancer* and *PNAS* (*Proceedings of the National Academy of Sciences*).

The protein, called "Tissue Factor," is present in various tissues—for example, walls of blood vessels. Earlier studies suggested that alternatively spliced Tissue Factor (asTF) may contribute to cancer growth, but the molecular events leading to this were previously unknown.

New research conducted through an international collaboration between the labs of Vladimir Bogdanov, PhD, of the University of Cincinnati Cancer Institute, and Henri Versteeg, PhD, of the Einthoven Laboratory for Experimental Vascular Medicine at the Leiden University Medical Center in Leiden, the Netherlands, articulates how asTF fuels growth and metastasis of solid cancers.

Using preclinical animal models, Bogdanov and Versteeg's teams obtained the first scientifically validated evidence that asTF promotes the spread of pancreatic cancer and promotes primary growth of breast cancer tumors.

"We have demonstrated that targeting asTF with a novel monoclonal antibody—developed based on our 10 years of studying asTF—also stops the growth of breast cancer in an animal model, giving us a promising new target to fight certain forms of breast cancer," says Bogdanov, who originally described asTF in 2003. UC filed a patent for this technology in January 2013.

Bogdanov and Versteeg presented their findings at the XXIV Congress of the International Society on Thrombosis and Haemostasis in Amsterdam, the Netherlands (held June 29-July 4, 2013).

"Many molecules on the surface of cells—including integrins—are important for the function of both normal and cancerous cells, so targeting integrins for stopping the growth of cancer is not a promising strategy. What is unique about asTF is that it binds to integrins on vessel-forming cells, activating them. We've shown that certain cancer cells share those same qualities, so if you target asTF—which is elevated in cancer—there is significant potential to spare the 'good' parts of the cellular system while removing the 'bad' cancer-specific protein from the game," explains Bogdanov.

"Many routine therapies such as chemotherapy or radiation may not always be efficient. Targeting asTF in tumors using our monoclonal antibody may form a potent additional anticancer strategy in combination with conventional avenues", says Versteeg.

Provided by University of Cincinnati Academic Health Center