Breast cancer spread may be tied to cells that regulate blood flow

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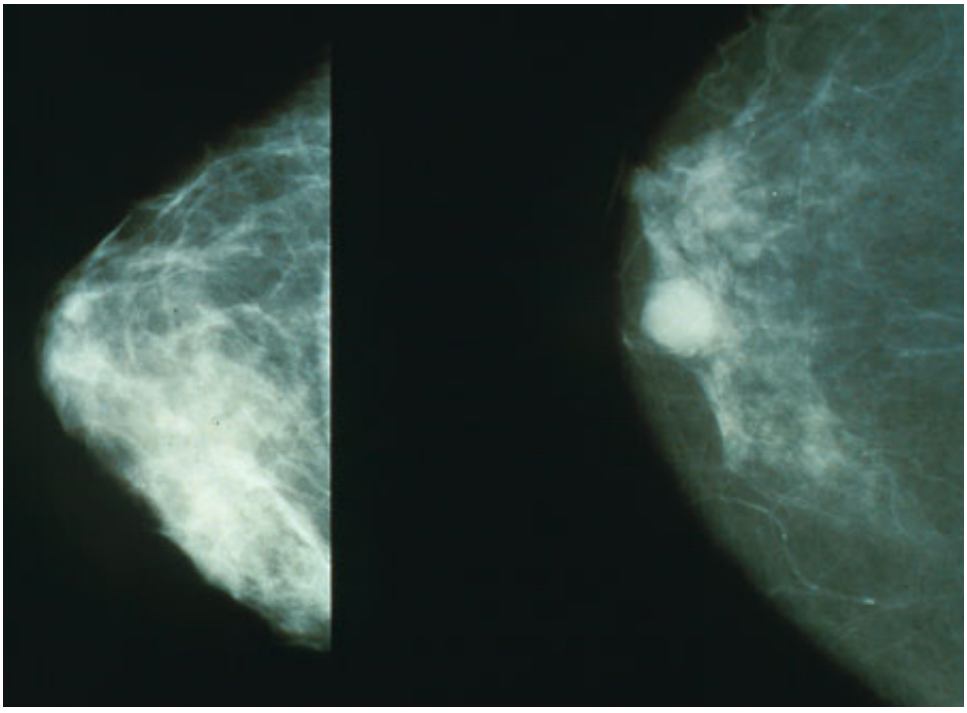

Mammograms showing a normal breast (left) and a breast with cancer (right). Credit: Public Domain

Tumors require blood to emerge and spread. That is why scientists at The University of Texas MD Anderson Cancer Center believe that targeting blood vessel cells known as pericytes may offer a potential new therapeutic approach when combined with vascular growth factors responsible for cell death.

A study lead by Valerie LeBleu, Ph.D., assistant professor, Department of Cancer Biology at MD Anderson, looked at how cellular signaling by vascular growth factors called angiopoietin-2 (ANG2), when combined with depletion of pericytes, may decrease breast cancer tumor growth that spreads to the lungs. Targeting pericytes and ANG2 signaling may also offer new potential therapy options for treatment of some breast cancers.

LeBleu's findings are published in this week's online edition of *Cell Reports*.

"Our study showed that angipoietin signaling is a key metastasis promoting pathway associated with abnormal tumor blood vessels with poor pericytes coverage," said LeBleu. "When combined with pericyte loss during the late phases of tumor progression, it is possible to reduce both primary tumor growth and metastatic disease."

Previous strategies to target how tumors develop blood supplies have looked at pericyte depletion. Pericytes, cells that "wrap" around capillary cells throughout the body, have the ability to contract, thus regulating blood flow. Since angiopoietins are blood vessel growth factors that provide the green light for new arteries or veins to grow, the combination of the two is of interest to cancer researchers.

"Targeting of ANG2 signaling in tumors with abnormal blood vessels with low pericyte coverage appeared to restore vascular stability and decreased tumor growth and metastasis in lung cancer mouse models," said LeBleu. "We also found that ANG2 was tied to poor outcome in patients with breast cancer. These results emphasize the potential for therapies targeting in advanced tumors with poor quality blood vessels."

Provided by University of Texas M. D. Anderson Cancer Center