A key to unlocking the mystery of triple negative breast cancer

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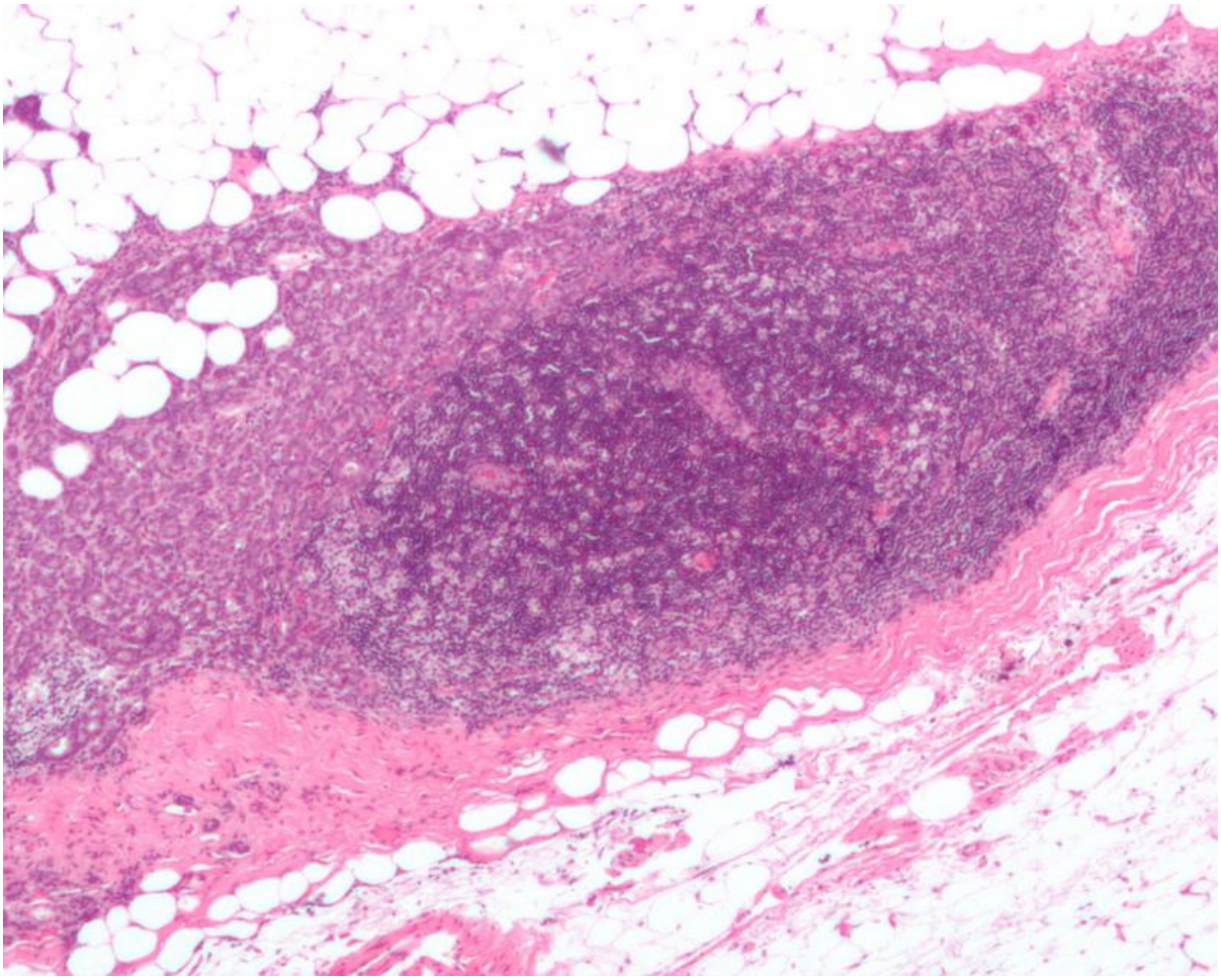

Micrograph showing a lymph node invaded by ductal breast carcinoma, with extension of the tumour beyond the lymph node. Credit: Nephron/Wikipedia

A study conducted at the Research Institute of the McGill University Health Centre (RI-MUHC) suggests screening breast cancer patients for the prolactin receptor could improve the prognosis for patient and may help them avoid unnecessary and invasive treatments. Using a database of 580 women with triple negative breast cancer (TNBC), the researchers found that survival was prolonged in patients who expressed the prolactin receptor and that prolactin hormone was able to reduce the aggressive behavior of cancerous cells. It does so by decreasing their ability to divide and form new tumors. The research was published in the journal *Scientific Reports*.

TNBC refers to a tumor that is estrogen receptor-negative, progesterone receptor-negative and HER2-negative. "TNBC is the most aggressive type of breast cancer and it is very difficult to treat," explains Dr. Ali, a researcher from the Cancer Research Program at the RI-MUHC and lead author of the study. "While prognosis and treatment options for breast cancer patients as a whole have improved in recent decades, this is not true for women who develop TNBC - they still have limited options for targeted treatment strategies, often require invasive chemotherapy and have a poor prognosis."

The reason for this is that TNBC cancers are diverse and do not behave in the same manner in all patients, something that researchers have not fully understood. However, Dr. Ali's team may have found the key to unlock this mystery. They discovered that women with tumors that express the prolactin receptor had a less aggressive breast cancer and a far better prognosis. Furthermore, in a preclinical animal model, they determined that if the prolactin receptor was not present, the tumor cells were not just more aggressive, but also proliferative and invasive compared with the ones that express the prolactin receptor.

The results suggest that screening for the prolactin receptor could indicate which patients might benefit from prolactin treatment as a

single agent, or in combination with less aggressive chemotherapy," explains Dr. Ali. "We think this could be a revolutionary path to developing new treatments for breast cancer.".

Women's health and prolactin

The role of prolactin in breast cancer is not fully characterized and still controversial. Better understanding of its role in cancer could have directly impact in doctor advice to patients with high risk of developing breast cancer to practice breastfeeding as a protective measure. These findings are consistent with past studies suggesting that prolactin has a suppressing effect on breast cancer. Dr. Ali states "our research supports that breastfeeding is not only beneficial for infants but also for the mothers. Since breastfeeding is a natural way to produce prolactin in high levels, breastfeeding would actually reduce a woman's risk of developing breast cancer".

More information: Prolactin Pro-Differentiation Pathway in Triple Negative Breast Cancer: Impact on Prognosis and Potential Therapy, *Scientific Reports*, 2016.

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