Identification of a chemotherapy resistance factor in breast cancer patients

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Chemotherapy is a key part of the standard treatment regimen for triple-negative breast cancer patients whose cancer lacks expression of estrogen and progesterone receptors and the human epidermal growth factor receptor 2 (HER2). While many patients respond well to chemotherapy, a significant fraction of those treated are resistant to chemotherapy or will develop recurrent tumors that are chemoresistant.

In this issue of *JCI Insight*, a research team led by Mercedes Rincon at the University of Vermont identified low expression of methylation-controlled J protein (MCJ) as a marker of poor response to chemotherapy.

In a prospectives study of 62 breast cancer patients, they demonstrated that MCJ expression correlates with pathological and clinical responses to neoadjuvant chemotherapy.

Further, by analyzing a large clinical data set from breast cancer repositories, they found that breast cancer patients with low-MCJ-expressing tumors had reduced relapse-free survival. Lastly, they examined a mammary tumor mouse model and showed that mice deficient in MCJ had larger tumors and increased chemoresistance.

Their study suggests that MCJ may be useful as a marker of chemotherapy response and could be a potential therapeutic target for breast cancer treatment.

More information: Maria J. Fernández-Cabezudo et al, Deficiency of mitochondrial modulator MCJ promotes chemoresistance in breast cancer, *JCI Insight* (2016). DOI: 10.1172/jci.insight.86873