

Metformin in Breast Cancer

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Editorial

Hyperinsulinemia, insulin resistance, and diabetes have all been associated to poor breast cancer outcomes in recent clinical and epidemiologic studies. This has been paired with a better knowledge of metformin's molecular actions and potential role in cancer.

Metformin has been shown to have indirect (insulin-mediated) effects on cancer cells, as well as direct effects. Cancer cells' growth and apoptosis are affected.

Metformin has been shown to be useful in the treatment of breast cancer in preclinical studies. Jiralerspong offer the first evidence of a potential effect of metformin in human breast cancer in this issue of Journal of Oncology Medicine & Practice

Jiralerspong report in their article that diabetic patients with breast cancer who were given metformin had a greater pathologic complete response (pCR) rate with neoadjuvant chemotherapy than those who were given other diabetes drugs.

Between 1990 and 2007, the authors looked at chemotherapy response rates in 2,592 patients, including 157 women with diabetes, who were treated with neoadjuvant chemotherapy for early stage or locally advanced breast cancer.

The pCR rate in diabetic patients treated with metformin was 24 percent, which was considerably higher than the pCR rate in diabetic women who were

not treated with metformin and numerically (but not statistically) greater than the pCR rate in women without diabetes.

The possibility of metformin having a positive effect on breast cancer appears to be scientifically reasonable.

Metformin lowers circulating glucose, improves insulin sensitivity, and reduces the hyperinsulinemia associated with insulin resistance by decreasing transcription of key gluconeogenesis genes in the liver and improving glucose absorption in skeletal muscle, all of which are factors linked to breast cancer prognosis.

Metformin use is dramatically reduced in patients with hepatic, cardiac, or renal compromise, as well as those who are 80 years or older.

The most prevalent hazard is minor gastrointestinal distress, which leads to medication discontinuation in about 10% of patients. We're currently working on a large-scale phase III trial of metformin in the setting of adjuvant breast cancer.

The National Cancer Institute of Canada Clinical Trials Group (MA.32) is proposing an intergroup clinical trial to assess the impact of metformin on breast cancer outcomes, such as recurrence and death.

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