Study shows gene variations may predict risk of breast cancer in women

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According to a recent study, led by Virginia Kaklamani, MD, an oncologist at Northwestern Memorial Hospital and assistant professor of medicine, Northwestern University Feinberg School of Medicine, variations of the adiponectin gene, which regulates a number of metabolic processes, may increase a woman's risk of developing breast cancer. This discovery is an important step forward in cancer genetics research, as it could help experts develop a future genetic testing model to more accurately predict a woman's risk of developing breast cancer.

Dr. Kaklamani's research, which is published in the May 1 issue of *Cancer Research*, suggests some women are born with different characteristics in the adiponectin gene which can alter its function and increase the risk of breast cancer.

This finding, coupled with previous studies that have found a correlation between low levels of adiponectin in the body and cancer risk, suggest adiponectin may be the third gene linked to breast cancer among women with no previous family history of breast cancer. If confirmed through additional studies, adiponectin could be used along with TGF-beta and CHEK2, genes that have already been linked to breast cancer, to create a genetic testing model that will allow clinicians to more accurately predict breast cancer risk.

Clinicians currently rely on epidemiologic models to predict breast cancer risk. The most common is the GAIL model, which looks at a number of factors including a woman's current age, the age she began

menstruating, her age at menopause, age of first live birth, previous biopsies and family history.

“All we know is that one in eight women will get breast cancer somehow, for some reason,” says Dr. Kaklamani. “One explanation for this is genetic background, and the adiponectin gene is one that may be responsible. By pinpointing which genes are associated with breast cancer risk, we can better predict risk, and ultimately may be able to enhance efforts for breast cancer prevention,” adds Kaklamani.

Genetic testing is already being used among women with a strong family history of breast cancer to determine if the BRCA genes are present, which have been linked to hereditary breast cancer. However, the vast majority of women diagnosed with breast cancer each year do not have familial breast cancer, leaving a large number of breast cancers unexplained.

“With further research and testing, our hope is that some day all women may be able to proactively test their genetic risk for breast cancer. By doing so, those found to have a high risk could work with their physician to take preventative measures that may lower their risk and aid in early detection, such as having frequent mammograms and undergoing a breast MRI,” said Kaklamani. “This is still in the distant future, however each day researchers take one step closer,” adds Kaklamani.

Source: Northwestern Memorial Hospital