

Eating eggs when pregnant affects breast cancer in offspring

December 1 2008

A stunning discovery based on epigenetics (the inheritance of propensities acquired in the womb) reveals that consuming choline—a nutrient found in eggs and other foods—during pregnancy may significantly affect breast cancer outcomes for a mother's offspring. This finding by a team of biologists at Boston University is the first to link choline consumption during pregnancy to breast cancer. It also is the first to identify possible choline-related genetic changes that affect breast cancer survival rates.

"We've known for a long time that some agents taken by pregnant women, such as diethylstilbestrol, have adverse consequences for their daughters," said Gerald Weissmann, M.D., Editor-in-Chief of *The FASEB Journal*. "But there's an upside. The emerging science of epigenetics has yielded a breakthrough. For the first time, we've learned that we might be able to prevent breast cancer as early as a mother's pregnancy."

The researchers made the discovery in rats by studying females whose mothers were fed varying amounts of choline during pregnancy. Different groups of pregnant rats received diets containing standard amounts of choline, no choline at all, or extra choline. Then the researchers treated the female offspring with a chemical that causes cancer of the mammary gland (breast cancer). Although animals in all groups developed mammary cancer, the daughters of mothers that had received extra choline during pregnancy had slow growing tumors while daughters of mothers that had no choline during pregnancy had fast

growing tumors.

"Our study provides additional support for the notion that choline is an important nutrient that has to be considered when dietary guidelines are developed," said Krzysztof Blusztajn, Ph.D., Professor of Pathology at Boston University and the study's senior researcher. "We hope it will be possible to develop nutritional guidelines for pregnant women that ensure the good health of their offspring well into old age."

The researchers also found multiple genetic and molecular changes in the rats' tumors that correlated with survival outcomes. For example, the slow growing tumors in rats had a genetic pattern similar to those seen in breast cancers of women who are considered to have a good prognosis. The fast growing tumors in mice had a pattern of genetic changes similar to those seen in women with a more aggressive disease. The researchers also found evidence that these genetic changes may result from the way that choline affects modifications of the DNA within the mammary gland of fetuses as they develop in the womb.

The National Cancer Institute estimates that there will be more than 184,000 new cases of breast cancer in 2008 and more than 40,000 deaths. Treatments for women suffering from breast cancer range from hormone therapy to surgery.

Source: Federation of American Societies for Experimental Biology

Citation: Eating eggs when pregnant affects breast cancer in offspring (2008, December 1) retrieved 9 May 2024 from <https://medicalxpress.com/news/2008-12-eggs-pregnant-affects-breast-cancer.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private

study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.