Scientists link elevated insulin to increased breast cancer risk

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Elevated insulin levels in the blood appear to raise the risk of breast cancer in postmenopausal women, according to researchers at Albert Einstein College of Medicine of Yeshiva University. Their findings are published in the online version of the *International Journal of Cancer*.

Increased breast cancer risk for postmenopausal women has previously been linked to obesity and diabetes. Both conditions involve insulin resistance, which causes increases in circulating levels of insulin. Since insulin is known to promote cell division and enhance breast tumor growth in animal models, the Einstein scientists reasoned that relatively high insulin levels may contribute to breast cancer risk in women.

"Up to now, only a few studies have directly investigated whether insulin levels are associated with breast cancer risk, and those studies have yielded conflicting results," says Geoffrey Kabat, Ph.D., senior epidemiologist in the department of epidemiology and population health at Einstein and the lead author of the paper. "Those other studies were based on just a single baseline measurement of insulin, while our study involved analyzing repeated measurements of insulin taken over several years — which provides a more accurate picture of the possible association between insulin levels and breast cancer risk."

An earlier study linking insulin levels with breast cancer risk was carried out by Einstein researchers and was published in the January 7, 2009 issue of the Journal of the National Cancer Institute.

In the most recent study, Dr. Kabat and his colleagues analyzed data on 5,450 women enrolled in the Women's Health Initiative, a large multicenter study investigating the influence of a number of factors on women's health. Most of the women had participated in the clinical trial portion of the study and provided fasting blood samples at the start of the study (i.e., at baseline) and then at years one, three and six. The remaining women, who were enrolled in a separate "observational" component of the study, provided fasting blood samples at baseline and at year three of the study. Among all these women, 190 cases of breast cancer were identified over eight years of follow-up.

The analysis by Dr. Kabat and colleagues revealed a strong association between elevated insulin levels and increased risk for breast cancer.

After dividing the participants into three groups based on their insulin levels, the researchers found that women in the upper third for insulin level were more than twice as likely to develop breast cancer compared with women in bottom third for insulin level. The association between insulin level and breast cancer risk was even stronger for those women who had not received treatment in the clinical trial (i.e., the placebo participants) or were in the observational component: women in the upper third for insulin level had a more than three-fold increased risk for breast cancer compared with those in the bottom third.

Notably, the link between elevated insulin level and breast cancer was strongest among lean women and weakest among obese women (who, in general, have higher insulin levels compared with lean women). "This finding is potentially important because it indicates that, in postmenopausal women, insulin may be a risk factor for breast cancer that is independent of obesity," says Dr. Kabat. However, because the number of lean women was small, this finding is preliminary.

While these results require confirmation from other studies, Dr. Kabat

notes that the current recommendations for reducing breast cancer risk in postmenopausal women — including maintaining a healthy weight and engaging in regular physical exercise — can help to reduce insulin levels.

Source: Albert Einstein College of Medicine (news : web)