High Levels of Estradiol, Progesterone During Pregnancy Associated With Increased Risk for HR-negative Breast Cancer

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- Pregnancy hormones linked to HR-negative tumors diagnosed before age 50.
- IGF-1 and testosterone associated with HR-positive disease.

ANAHEIM, Calif. — Increased concentrations of the pregnancy hormones estradiol and progesterone were associated with an increased risk for hormone receptor-negative breast cancer diagnosed before age 50, according to the results of a nested case-control study presented at the 11th Annual AACR International Conference on Frontiers in Cancer Prevention Research, held here Oct. 16-19, 2012.

Annekatrin Lukanova, M.D., Ph.D., associate professor at the German Cancer Research Center in Heidelberg, Germany, and colleagues examined the effects of hormonal exposure during early pregnancy and its possible association with risk for maternal breast cancer.

“Pregnancy influences maternal risk for breast cancer, but the association is complex and the biological mechanisms underlying the associations are unknown,” Lukanova said. “Understanding the mechanisms underlying the protective effect of childbearing on cancer risk can form the basis for primary prevention of breast cancer.”

Lukanova and colleagues used the Northern Sweden Maternity cohort to conduct a nested case-control study of 417 controls and 223 women who had donated blood samples during their first trimester of pregnancy and were later diagnosed with breast cancer. About three quarters of the breast cancer cases were hormone receptor (HR)-positive.

The researchers examined two groups of hormones: The first group included estradiol, estrone and progesterone, the concentrations of which increase substantially with pregnancy progression. The second group included testosterone and insulin growth factor-1 (IGF-1). During early pregnancy, concentrations of testosterone and IGF-1 are largely similar to prepregnancy concentrations.

“We found that circulating concentrations of IGF-1 and testosterone are directly associated with risk for HR-positive breast cancer, in line with studies in nonpregnant women,” Lukanova said.

Results indicated a heightened risk for HR-negative breast cancer diagnosed before 50 years of age with increased levels of estradiol and progesterone.

Lukanova noted that this study was small, that the hormones were measured during the first trimester of pregnancy only, and that further and larger studies will be necessary to characterize the association of pregnancy hormones with risk for hormone-defined maternal breast cancer.

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