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Residual fetal cells in women may provide protection against breast cancer

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Fetal cells that persist in a woman's body long after pregnancy – a common occurrence known in scientific circles as fetal microchimerism – in some cases may reduce the woman's risk of breast cancer, according to researchers at Fred Hutchinson Cancer Research Center. The findings, published in the Oct. 1 issue of *Cancer Research*, add to the Jekyll and Hyde characteristics of fetal microchimerism, or FMc, which has been found to be both detrimental and beneficial to women's health.

In this latest prospective study, scientists V.K. Gadi, M.D., Ph.D. and J. Lee Nelson, M.D., examined the blood of 82 women post-pregnancy, 35 of whom had had breast cancer. They looked for male DNA in the blood, presuming it was present due to a prior pregnancy. Fetal microchimerism (FMc) was found significantly more often in healthy women than women with a history of breast cancer, 43 percent versus 14 percent respectively. The scientists concluded that FMc may contribute to reduction of breast cancer based on the hypothesis that residual fetal cells may provide immune surveillance of malignant cells in the mother. They caution that further studies are needed to confirm the theory.

"To our knowledge, the current results provide the first indication that FMc could impart a protective effect against breast cancer," Gadi said.

Prior research into FMc, some of it performed at the Hutchinson Center, indicates that while the presence of fetal cells in women may confer immune protection and promote cell repair, such cells also may be harbingers of some autoimmune diseases.

Two observations provided a rationale for the study hypothesis of the potential beneficial role of fetal cells, according to the authors. It is well established that women who have given birth have a lower risk of breast cancer. And, allogeneic (from another individual) stem-cell transplants are used to treat many types of blood cancers by replacing a diseased immune system with a healthy one

Additionally, fetal cells are commonly found in the circulating blood of healthy women who have given birth. Fetal cells represent a naturally acquired source of allogeneic immune cells; in prior studies the prevalence of T, B, natural-killer (NK) and antigen-presenting cells of fetal origin in healthy women ranged from 30 percent to 70 percent, depending on the cell type. The research was funded by the National Institutes of Health and Amgen Inc.

Source: Fred Hutchinson Cancer Research Center