The abortion pill compound prevents breast tumor growth

November 30 2006

The chemical compound for the abortion pill has been found to prevent the growth of mammary tumors caused by the mutant gene responsible for a majority of breast and ovarian cancers, according to UC Irvine scientists.

This compound, called mifepristone, prevented breast tumors by inhibiting progesterone, a hormone involved with the female reproductive cycle, in breast tissue cells. The discovery points to new prevention methods for women who have a genetic predisposition to breast and ovarian cancers. Currently, these women often have their breasts or ovaries surgically removed to reduce the risk of developing cancer.

The study appears in the Dec. 1 issue of *Science*.

“We found that progesterone plays a role in the development of breast cancer by encouraging the proliferation of mammary cells that carry a breast cancer gene,” said Eva Lee, lead author of the study and professor of developmental and cell biology and biological chemistry at UCI. “Mifepristone can block that response. We’re excited about this discovery and hope it leads to new options for women with a high risk for developing breast cancer.”

In the study, Lee and her colleagues addressed how mifepristone affects the function of mutated BRCA-1 genes in tissue. BRCA-1 is widely studied by cancer geneticists because a mutated version of this gene

significantly raises the possibility of breast and ovarian cancers. By age 70, more than 50 percent of women with the mutated BRCA-1 gene develop breast or ovarian cancer.

The researchers studied mice that carried the mutated BRCA-1 gene. Mice treated with mifepristone, an anti-progesterone compound, did not develop mammary tumors by the time they reached one year of age. All of the untreated mice, however, developed tumors by eight months of age.

Progesterone, secreted by the ovaries, is essential to the maintenance of a pregnancy. Mifepristone, also called RU486, is designed to abort pregnancy in the first trimester by blocking progesterone, thereby ending the viability of the fetus. In smaller doses, it is used as an emergency contraceptive.

UCI researchers found that progesterone encourages the development of cancer when the mutated BRCA-1 is present because it speeds up the division of cells. Mifepristone was found to block a binding process that is necessary for progesterone to cause the cell division.

Previous studies conducted by other researchers linked high progesterone levels with an increase in breast cancer risk, particularly in menopausal women who underwent hormone-replacement therapy that included progesterone and estrogen to ease symptoms such as hot flashes and night sweats. That research, combined with the recent findings, lead scientists to believe that anti-progesterone could, in the future, provide women at risk for breast cancer with more prevention options.

Source: University of California - Irvine