

Stem cells may solve mystery of early pregnancy breast cancer protection

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The answer to why an early pregnancy seems to protect against breast cancer could rest with a decrease in stem cells found after animals have given birth, said researchers at Baylor College of Medicine in a report that appears in the current issue of the journal *Stem Cell*.

Women who have children young, at least before the age of 30, reduce their risk of developing breast cancer, said Dr. Yi Li, a professor in the Lester and Sue Smith Breast Center at BCM. The most dramatic reduction in risk occurs in women who have their first children before the age of 24. However, the mechanism by which these early pregnancies provided protection has proved elusive.

The promise of such work is important.

"If we can figure out the mechanism behind this, we could develop a pill that we could offer young women in high school and college that could significantly reduce their risk of breast cancer," he said.

However, he said, there are many steps to be taken before he and his colleagues can determine how best to do that. Understanding why stem cells decrease in women who have their children young could prove an important advance.

In studies in mice, Li and his colleagues compared the numbers of mammary or breast stem cells (early cells that can differentiate into breast tissue) found in mice that had had babies at an age equivalent to

the teens to mice that had never had babies.

Using proven scientific techniques, they found that the mice that had had early pregnancies had half the numbers of mammary cells found in the mice that had never had babies, Li said.

They found that 1 in approximately 2,500 mammary cells were stem cells in the "virgin" mice while 1 in 5,000 were stem cells in the mice that had given birth.

Why having fewer stems cells protects against breast cancer remains unproven, said Li.

"Stem cells are long-living cells. One theory is that they can thus accumulate more mutations and are probably the most susceptible to giving rise to breast cancer," said Li. Thus, the more stem cells an animal has, the more likely the animal is to developing breast cancer.

However, Li stressed that this is just a theory.

He also noted that the protective effect of pregnancy is seen across the lifetime. The effect is not immediate. He studied the effect in mice that were 10 months old – the equivalent to 50 to 60 years old in humans.

"We saw that the stem cells are reduced," he said. "We know that breast cancer risk is reduced. This is an association. We have not proven that reducing the number of stem cells actually reduces the risk of breast cancer."

That is the next step he plans to take in his research.

Source: Baylor College of Medicine

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