Medical Xpress

Progress made in understanding causes and treatment of endometriosis

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Endometriosis is a poorly understood chronic disease characterized by infertility and chronic pelvic pain during intercourse. It affects between 5 to 10 million women in the U.S.

Serdar Bulun, M.D., George H. Gardner Professor of Clinical Gynecology at Northwestern University's Feinberg School of Medicine, has spent the past 15 years investigating and identifying the causes of this disease. Bulun, and colleagues in his lab, discovered key epigenetic abnormalities in endometriosis and identified existing chemicals that now help treat it.

Bulun describes his lab's findings over the past 10 years in the Jan. 15 issue of the *New England Journal of Medicine.*

One of the abnormalities he discovered is the presence of the enzyme aromatase -- which produces estrogen -- in endometriosis, the diseased tissue that exists on pelvic organs and mimics the uterine lining. (Normal endometrium, located in the uterine cavity, does not contain aromatase.) As a result, women with endometriosis have excessive estrogen in this abnormal tissue found on surfaces of pelvic organs such as the ovaries. Bulun found the protein SF1 that produces aromatase, which is supposed to be shut down, is active in endometriosis.

"Estrogen is like fuel for fire in endometriosis," Bulun said. "It triggers the endometriosis and makes it grow fast."

As a result of the aromatase finding, Bulun launched clinical trials in 2004 and 2005 testing aromatase inhibitors -- currently used in breast cancer treatment -- for women with endometriosis. The drug blocks estrogen formation and secondarily improves progesterone responsiveness.

"We came up with a new treatment of choice for post-menopausal women with endometriosis," Bulun said. Moreover, treatment with an aromatase inhibitor is a very good option for premenopausal women with endometriosis not responding to existing treatments, he noted.

Another molecular abnormality Bulun found is that women with endometriosis have a progesterone receptor that is inappropriately turned off. Normal progesterone action would be beneficial because it blocks the growth of endometriosis. In the absence of appropriate progesterone action, endometriosis tissue remains inflamed and continues to grow.

Bulun believes that these abnormalities result from epigenetic defects that occur very early on during embryonic development and may be the result of early exposure to environmental toxins. In fact, other investigators have implicated the environmental pollutant dioxin and the synthetic estrogen DES in the etiology of endometriosis.

"This may be a disease that women are born with," Bulun said. "Perhaps when a baby girl is born, it has already been determined that she is predisposed to have endometriosis. Maybe research can now be directed toward the fetal origins of the disease and raise the awareness of how the disease develops."

Source: Northwestern University