New clues to restoring fertility in women with disabling ovary disorder

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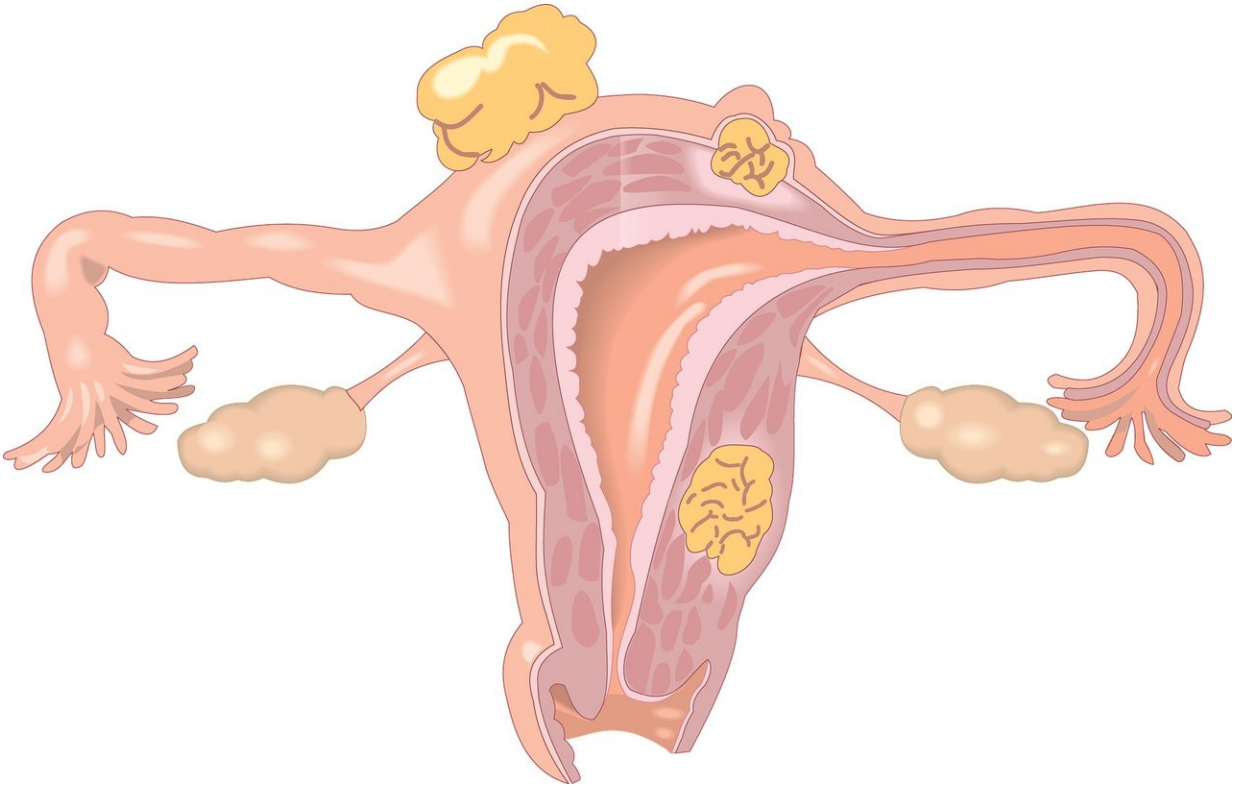

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Groundbreaking research out of the University of Otago is showing potential to restore fertility in women suffering polycystic ovary syndrome.

Polycystic ovary syndrome (PCOS) is a major endocrine disorder affecting about one in 10 women of reproductive age globally, and is one of the leading causes of infertility in women. Currently, there is no cure.

The syndrome is a set of symptoms related to elevated levels of androgens (male hormones) in females and includes irregular or no menstrual periods, heavy periods, excess body and facial hair, acne, pelvic pain and patches of thick, darker, velvety skin. It is associated with Type 2 diabetes, obesity, obstructive sleep apnoea, heart disease, mood disorders and endometrial cancer.

Findings from the research, conducted in a pre-clinical model and just published in the *Journal of Clinical Investigation Insight*, show that blocking androgen actions could help re-set reproductive function to normal levels by modifying brain circuitry important to fertility.

Associate Professor Rebecca Campbell from the University's Centre for Neuroendocrinology and Department of Physiology, says she and her co-investigators, Ph.D. student Mauro Silva and Assistant Research Fellow Mel Prescott, are excited about their findings which are potentially significant for women suffering from the syndrome.

"Our findings suggest that despite the early development of brain pathology in some forms of polycystic ovary syndrome, normal reproductive function can potentially be restored in adult women with the disorder through modifying the wiring in the brain," Associate Professor Campbell explains.

There is growing evidence the brain is involved in both the development and pathology of polycystic ovary syndrome. The Otago researchers' earlier work in a preclinical model on the syndrome has identified changes in specific brain circuits that may underlie the disorder.

In this most recent study, Associate Professor Campbell and her team investigated when these circuit abnormalities develop and whether the circuits are "hard-wired" or can be changed by blocking androgen actions once the disorder is established.

"We discovered that brain changes occur prior to the onset of puberty, which is before the syndrome appears, suggesting that the brain pathology precedes disease development," Associate Professor Campbell says.

"We also discovered that, despite this early 'programming' of neural circuitry, long-term blockade of androgen actions was able to completely restore normal brain wiring and reproductive cycles."

Associate Professor Campbell says that although the work is still pre-clinical, it gives clues about potentially effective therapies in treating the reproductive pathology of polycystic ovary syndrome in women.

Her research team has established a collaboration with clinicians in Sweden to retrospectively look at the impact of androgen receptor blocker drugs on long-term reproductive outcomes in women with the syndrome.

More information: Mauro S.B. Silva et al. Ontogeny and reversal of brain circuit abnormalities in a preclinical model of PCOS, *JCI Insight* (2018). DOI: 10.1172/jci.insight.99405

Provided by University of Otago

https://medicalxpress.com/news/2018-04-clues-fertility-women-disabling-ovary.html