Study bolsters evidence that effects of puberty blockers are reversible

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Medications commonly known as puberty blockers were found to delay development of female reproductive organs but allow for restoration of reproductive functioning after the medications were withdrawn, according to a new study being presented this week at the American Physiology Summit, the flagship annual meeting of the American Physiological Society (APS), in Long Beach, California.

Researchers say the results bolster the evidence that short-term use of puberty blockers does not cause permanent damage to the ovaries and uterus. However, they noted that because the study was conducted in rats , additional research would be needed to confirm the findings in humans.

"The results of this study suggest that the short-term developmental delay of the uterus and ovaries caused by the puberty-blocking treatment in young female rats was reversible. A majority of reproductive function also recovered immediately after puberty blocking withdrawal," said Brandon Jones, Ph.D., the study's first author and assistant professor of exercise science at Marshall University.

"This study can help inform adolescents and their families in the decision to take puberty-blocking medication."

The research centers around gonadotropin-releasing hormone agonists (GnRHa), drugs that suppress the production of estrogen and progesterone in the ovaries and testosterone in the testicles. For decades, these drugs have been used to slow pubertal development in children who experience puberty too early.

More recently, they have been used to forestall development of secondary sex characteristics, such as facial hair growth or breast development, in adolescents with gender dysphoria.

For the study, researchers administered either GnRHa or saline (as a control) to pre-pubescent female rats for four weeks and then stopped the treatment. Some of the rats were then paired with a male rat, while others were housed without a male. Researchers assessed changes in the rats' reproductive organs at various timepoints and tracked pregnancy rates among those that were paired with males.

Rats that received puberty-blocking treatment showed significant delays in the development of their reproductive organs, including reduced thickness of the uterine lining and disruption in follicle development in the ovaries. Four weeks after stopping the treatment, however, the reproductive organs showed normal development.

Among the rats that were paired with males, there was no significant difference in the overall rate of pregnancy between the two groups, although the rats given puberty blockers became pregnant and gave birth significantly later than those given saline, presumably to allow for the time it took for their reproductive organs to reach maturity after stopping the puberty-blocking medication. These rats also had significantly fewer pups per litter, but no abnormalities were observed in the pups.

By providing additional reassurance that GnRHa treatment does not irreversibly hinder reproductive system development—a finding that is in line with previous studies on the topic—researchers said the study can help families understand the potential impacts of a decision to use puberty blockers. Some transgender youth report significant psychological benefits from puberty-blocking treatment, although not all transgender youth choose to take a puberty blocker.

"Our research lab wants to support the health and well-being of the transgender community," Jones said. "Education on the physiological side effects of puberty-blocking treatment may help support transgender

youth who choose to take a puberty blocker." Jones added that additional studies are needed to further understand the potential long-term effects of puberty-blocking treatment.

Provided by American Physiological Society

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