

## Greater seizure frequency seen in women with epilepsy during anovulatory cycle

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A recent multi-center study determined that women with generalized tonic-clonic seizures (GTCS) had a greater number of seizures during anovulatory cycles—menstrual cycles where an egg is not released—than in cycles where ovulation occurs. According to the study publishing today in *Epilepsia*, a journal of the International League Against Epilepsy (ILAE), reproductive steroids may play a role in GTCS occurrence.

Medical evidence has shown that sex hormones, estradiol and progesterone, have neuroactive properties that can affect seizures. Previous studies by Andrew Herzog, MD, MSc, of Beth Israel Deaconess Medical Center in Boston, Massachusetts and colleagues found that ratios of hormone levels in the blood differ in relation to the ovulatory status of menstrual cycles, with anovulatory cycles having higher estradiol-progesterone ratios during the second half of the menstrual cycle (luteal phase) compared to ovulatory cycles. Further studies have determined that anovulatory cycles are more common among [women](#) with epilepsy than in the general population.

To expand on their prior research, Dr. Herzog and colleagues used data collected during the Progesterone Trial Study—a 3-month investigation of progesterone therapy for focal onset seizures that are difficult to control. Of the 281 women who participated, 92 had both anovulatory and ovulatory cycles during the study period, with progesterone levels of 5 ng/ml measured in the latter part of the menstrual cycle, designating ovulation.

Among the 281 study participants, 37% had GTCS, 81% had complex partial seizures (CPS) and 38% had simple partial seizures (SPS). In the 92 women who had both ovulatory and anovulatory cycles, the seizure percentages were slightly lower, but not significantly different.

Researchers determined that the average daily seizure frequency was 30% greater in the women during their anovulatory cycles than in those cycles where ovulation occurred. Seizure frequency did not differ significantly for CPS, SPS, or for all seizures combined.

"Our results showed that GTCS frequency during anovulatory cycles correlate with proportional increases in estradiol-progesterone level ratios, suggesting sex hormones contribute to seizure incidence," concluded Dr. Herzog. "Efficacy results from the phase 3 clinical trial of a progesterone supplement that generated the data for the current study are forthcoming, and may provide a much needed treatment option to control seizures in women with epilepsy."

According to the National Institute of Neurological Disorders and Stroke (NINDS), tonic-clonic seizures, formerly known as grand mal seizures, are the most common type of generalized seizure and cause symptoms that include stiffening of the body, repeated jerking of the arms or legs, and loss of consciousness. The Epilepsy Foundation estimates that 200,000 new cases of epilepsy are diagnosed each year in the U.S., and roughly half of those are generalized onset [seizures](#).

**More information:** "Variation of Seizure Frequency with Ovulatory Status of Menstrual Cycles." Andrew G. Herzog, Kristen M. Fowler, Michael R. Sperling, Joyce D. Liporace, Laura A. Kalayjian, Christianne N. Heck, Gregory L. Krauss, Barbara A. Dworetzky, Page B. Pennell, and the Progesterone Trial Study Group *Epilepsia*; Published Online: July 14, 2011 ([DOI: 10.1111/j.1528-1167.2011.03194.x](https://doi.org/10.1111/j.1528-1167.2011.03194.x))

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