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Are Drops in Estrogen Levels More Rapid in Women with Migraine?

MINNEAPOLIS – Researchers have long known that sex hormones such as estrogen play a role in migraine. But there’s been little research on how that works. Do women with migraine have higher estrogen levels in general? Higher levels at the peak of the monthly cycle?

Research published in the June 1, 2016, online issue of *Neurology*®, the medical journal of the [American Academy of Neurology](http://www.aan.com), shows that estrogen levels may drop more rapidly for women with history of migraine in the days just before menstruation than they do for women who do not have migraine history. For other hormone patterns, there were no differences between women with migraine and women who did not have migraine.

The study also showed that the women with migraine history had a faster rate of estrogen decline regardless of whether they had a migraine during that cycle.

“These results suggest that a ‘two-hit’ process may link estrogen withdrawal to menstrual migraine. More rapid estrogen decline may make women vulnerable to common triggers for migraine attacks such as stress, lack of sleep, foods and wine,” said study author Jelena Pavlović, MD, PhD, of Albert Einstein College of Medicine/Montefiore Medical Center in Bronx, NY, and a member of the American Academy of Neurology.

For the study, researchers reviewed data from the Study of Women’s Health Across the Nation, including migraine history, daily headache diaries and hormone data for 114 women with a history of migraine and 223 women without a history of migraine. The women were an average 47 years old. From daily urine samples for one monthly cycle, the participants’ peak hormone levels, average daily levels and day-to-day rates of decline over the five days following each hormone peak in their cycles were calculated.

In the two days after the peak estrogen level in the luteal phase of the cycle, which is the time after ovulation and before menstruation, the estrogen levels in the women with migraine dropped by 40 percent compared to 30 percent for women without migraine. The rate dropped 34 picograms per milligram of creatinine (pg/mgCr) in women with migraine, compared to 23 pg/mgCr in women without migraine.

“Future studies should focus on the relationship between headaches and daily hormone changes and explore the possible underpinnings of these results,” said Pavlović.

While the study’s size and amount of hormone data are strengths, limitations include that proportionately more Chinese and Japanese women were involved in the group of women without migraine and more white and black women were in the migraine group. Racial and ethnic differences have been shown in levels of sex hormones.

The study was supported by the National Institutes of Health, the National Institute on Aging and the National Institute of Nursing Research.



To learn more about headache, please visit <http://www.aan.com/patients>.

The American Academy of Neurology, an association of 30,000 neurologists and neuroscience professionals, is dedicated to promoting the highest quality patient-centered neurologic care. A neurologist is a doctor with specialized training in diagnosing, treating and managing disorders of the brain and nervous system such as Alzheimer's disease, stroke, migraine, multiple sclerosis, brain injury, Parkinson's disease and epilepsy.

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