

# Estrogen May Mediate Brain Aneurysm Risk

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FROM THE ANNUAL MEETING OF THE SOCIETY OF NEUROINTERVENTIONAL SURGERY

CARLSBAD, CALIF. — Women with cerebral aneurysms were less likely to have used oral contraceptives or hormone replacement therapy in their lifetime than controls, according to the results of a retrospective case-control study of 60 women with aneurysms.

“These findings suggest that our case group may have had not only lower levels of estrogen, but also more severe physiologic fluctuations in their estrogen level as compared to population averages. To take this one step further, therapies that mitigate the effects of low estrogen level and fluctuations may decrease the risk for cerebral aneurysms,” Dr. Michael Chen said at the meeting.

The study included 21 women with ruptured aneurysms and 39 with unruptured aneurysms who were under the care of a single physician during 2008-2010. Their median age was 52 years, with a range of 31-80 years. Dr. Chen and his associates conducted telephone interviews with the patients to obtain detailed medical, social, family, and gynecologic histories, including information about lifetime use and duration of use of OCs and hormone replacement therapy, as well as menstrual and reproductive history.

For the control group, the investigators spoke with 4,682 random American women from a publicly available data set (Ann. Epidemiol. 2002;12:213-22) that was generated as part of a National Institutes of Health-funded study exploring the use of OCs and hormone replacement therapy in breast cancer.

For each case, seven control patients matched for age and educational levels were selected, giving 420 control patients. Measures such as median age, body mass index (BMI), age of menarche, nulliparity, and age of first pregnancy were comparable between the case and control patients.

Significantly fewer women with an aneurysm reported lifetime use of OCs than did controls (60% vs. 77.6%,  $P = .003$ ) as well as use of hormone replacement therapy (23.7% vs. 44.8%,  $P = .002$ ). The median age of menopause for women with aneurysms was more than 2 years earlier than for the control group (44.5 vs. 46.9 years,  $P = .53$ ), and 50% of cases had menopause before age 45, compared with 34% of controls ( $P = .18$ ). “The patient group also had a high rate of early hysterectomies,” noted Dr. Chen, an interventional vascular neurologist affiliated with Rush University Medical Center, Chicago.

One of the limitations of the study is that the vasculature of the control group had not been evaluated, although it is assumed that 3%-4% of the general population harbors an unruptured cerebral aneurysm. Another limitation is that the control group data were generated during 1994-1998, before the use of hormone replacement therapy decreased

substantially in 2002 following the publication of the Women’s Health Initiative study on breast cancer, Dr. Chen said.

He said he hopes these findings will guide future research.

“Understanding more about the effects of estrogen at the receptor level may allow us to find therapies that target that receptor in order to provide some protection for women at risk of developing aneurysms or harboring unruptured aneurysms.” ■

VITALS

**Major Finding:** Compared with a control group matched for age and educational levels, a significantly lower percentage of postmenopausal women with cerebral aneurysms reported lifetime use of oral contraceptives (77.6% vs. 60) and hormone therapy (44.8% vs. 23.7%).

**Data Source:** Retrospective case-control study of 60 women with ruptured and unruptured aneurysms seen by one physician at a single center and a control group of 420 patients from a publicly available data set.

**Disclosures:** Dr. Chen reported no relevant disclosures.

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References: 1. IMS Health Inc. IMS National Sales Perspectives (12 months ending October 2009). 2. IMS Health Inc. IMS MIDAS (MATQ210). 3. Data on file. Access Point, Q3 2009.

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