Eclampsia's Neurologic Damage May Be Permanent

BY PATRICE WENDLING
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DALLAS — Several years after a pregnancy complicated by eclampsia, significantly more women demonstrate subcortical cerebral white matter lesions on MRI, compared with women with a normotensive pregnancy.

In a study of 103 women, white matter lesions were observed in 16 of 39 (41%) formerly eclamptic women, in 10 of 35 (29%) formerly preeclamptic women, and 5 of 29 (17%) women who had a normotensive pregnancy, lead investigator Annet Aukes and associates reported at the annual meeting of the Society for Maternal-Fetal Medicine.

The average time from index pregnancy was not significantly different between the formerly eclamptic and normotensive groups (7 years vs. 5 years), who were the focus of the analysis. Their mean age was 38 years.

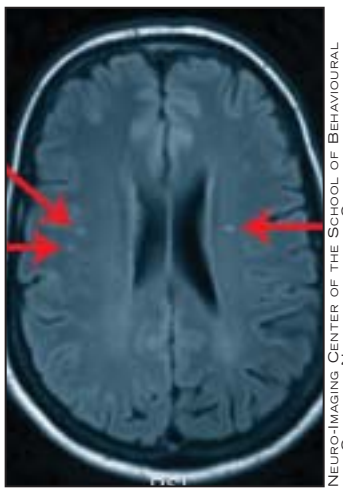
The findings are remarkable because the predominant opinion holds that eclampsia is a one-time event from which women can expect a full clinical recovery.

"We conclude that the paradigm that eclampsia is reversible should be revised," said Ms. Aukes, an MD/PhD student at the University of Groningen (the Netherlands).

The researchers also observed that the number of eclamptic seizures appeared to be related to the presence and severity of the brain matter lesions. In all, 19 eclamptic women had one grand mal seizure, 10 had two, and 10 had three or more. Women who reported three or more eclamptic seizures were three times more likely to have white matter lesions than were women with no seizures, she said.

The total volume of the lesions was significantly greater among formerly eclamptic women than controls (0.04 mL vs. 0.004 mL).

The neurologic disturbances in eclampsia and preeclampsia are thought to represent a form of posterior reversible encephalopathy syndrome (PRES), which is recognized as a complication in various non–pregnancy-related disorders, including several of iatrogenic or neurotoxic origin, connective tissue disease, and acute glomerulonephritis. It can be reversed by lowering blood pressure and/or discontinuing the offending drug.



Neuro-Imaging Center of the School of Behavioural and Cognitive Neurosciences in Groningen

A fluid-attenuated inversion-recovery MRI of a formerly eclamptic patient reveals white matter lesions (arrows).

In PRES, it is thought that an acute elevation of systemic blood pressure exceeds the upper limit of cerebral autoregulation. This causes forced dilation of cerebral arteries, disruption of the blood-brain barrier, and formation of vasogenic cerebral edema, Ms. Aukes explained.

More recently, it has been hypothesized that when vasogenic edema becomes severe enough, it can result in reduced tissue perfusion and cytotoxic edema because of irreversible ischemic changes that lead to white matter lesions.

The theory is supported by studies, she said, including one in which persistent brain white matter lesions, consistent with the appearance of cerebral tissue loss, were demonstrated in nearly one-fourth of 27 eclamptic women when imaged 6 weeks after delivery (Am. J. Obstet. Gyn. 2004;190:714-20).

A study by Ms. Aukes and associates presented at last year's Society for Maternal-Fetal Medicine meeting demonstrated that formerly eclamptic women reported significantly more disruptions in cognitive function 7.6 years after the index pregnancy than did healthy parous controls (Am. J. Obstet. Gynecol. 2007;197; 365.e1-6).

An audience member asked if baseline imaging data were available on the women who seized to determine if the lesions were predisposing to eclampsia or if they were a result of eclampsia. Ms. Aukes responded that very few women had imaging at the time of their seizures, and thus they had not linked the data. "We're not sure if these lesions were preexisting or occurred during or after the seizures," she said.

The investigators did not report any conflicts of interest and did not receive funding for the study. ■

Poor Obstetric Outcome Rates Similar in Types 1 and 2 Diabetes

BY PATRICE WENDLING
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DALLAS — Women with type 2 diabetes had a similar incidence of adverse obstetric outcomes as those with type 1 diabetes but fewer adverse neonatal outcomes in a retrospective cohort analysis of 384 pregnancies.

As expected, patients with both type 1 and type 2 diabetes had worse obstetric and neonatal outcomes, compared with nondiabetic controls, Dr. Kristin M. Knight and colleagues at the University of Rochester (N.Y.) reported in a poster at the annual meeting of the Society for Maternal-Fetal Medicine.

Type 2 diabetic patients should receive the same counseling and treatments as type 1 patients.

DR. KNIGHT

Using a preexisting database of pregestational diabetes patients, the researchers analyzed maternal and fetal outcomes of singleton pregnancies between July 2000 and August 2006 in 64 women with type 1 diabetes, 64 women with type 2 diabetes, and 256 matched controls with normal glucose screening during pregnancy.

Patients with type 2 diabetes were significantly older (mean 30.1 years) than patients with type 1 diabetes (26.8 years) or controls (27.4 years), and had a significantly higher prepregnancy body mass index (37 vs. 27 vs. 24 kg/m^2).

Mean hemoglobin A_{1c} values did not differ significantly between women with type 1 and type 2 diabetes (7.1% vs. 6.9%). The majority of women with type 2 diabetes (91%) were on insulin during pregnancy.

Both groups with diabetes had higher incidences of cesarean delivery, preeclampsia, preterm delivery, polyhydramnios, large-for-gestational-age infants, and neonatal ICU admission than did the 256 nondiabetic controls. However, the incidences were not different for women with type 2 vs. type 1 diabetes, the researchers noted.

Women with type 1 diabetes had a higher incidence of composite poor neonatal outcome (perinatal death, respiratory distress syndrome, sepsis, meconium aspiration, hypoglycemia, seizures, necrotizing enterocolitis, or intubation) than did women with type 2 diabetes and controls.

Those with type 1 diabetes had significantly more fetal congenital anomalies than did controls (6.3% vs. 1.2%). While such anomalies were elevated in women with type 2 diabetes, they were not significantly different (3.2%).

This finding differs from some of the other literature that's available, Dr. Knight said in an interview. This might be because the study population included only women seeking prenatal care, which is not the norm in clinical practice, and thus might have underrepresented poorer outcomes in patients with type 2 diabetes, he noted.

Overall, few data are available regarding pregnancy outcomes in type 2 diabetes, even though this type of diabetes is becoming increasingly common in reproductive-age women, she said.

"Type 2 diabetic patients should receive the same degree of preconceptional counseling, diligent glucose control, and antenatal surveillance as type 1 diabetic patients, in order to minimize the occurrence of poor perinatal outcome," the authors wrote.

In a second poster at the meeting, diabetic macrovascular and microvascular disease during pregnancy was associated with reduced intrauterine fetal growth among 358 women with type 1 diabetes enrolled in a "Diabetes in Pregnancy" program at the University of Cincinnati.

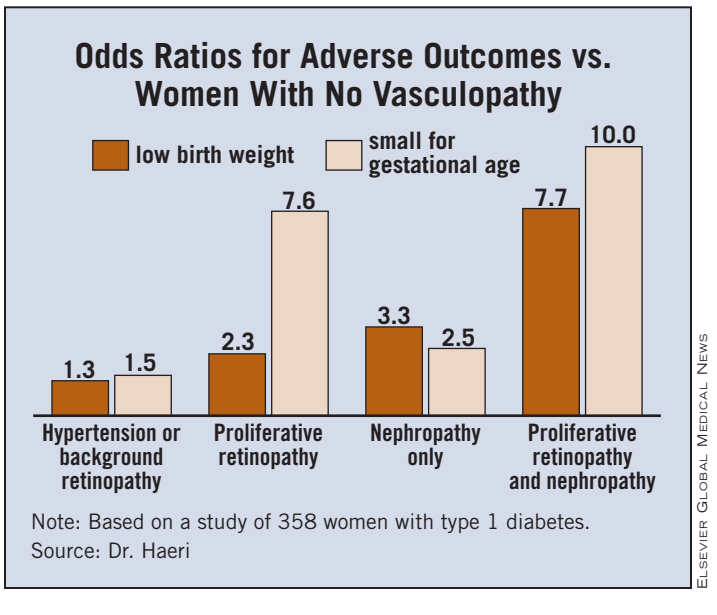
The women were enrolled before 14 weeks' gestation, prospectively followed through the postpartum period, and treated with intensive insulin therapy.

They were classified at entry based on vascular status, with no vasculopathy present in 192, hypertension or background retinopathy in 79, proliferative retinopathy in only 18, nephropathy in only 42, and proliferative retinopathy and nephropathy in 26. Their mean ages were 24, 27, 27, 26, and 29 years, respectively; and they had been diagnosed with diabetes mellitus for 10, 15, 18, 14, and 18 years, respectively.

After controlling for gestation at delivery and maternal age and race, the odds ratio for delivery of a low-birthweight infant (less than 2,500 g), compared with women without vasculopathy, was highest in women with proliferative retinopathy and nephropathy, Dr. Sina Haeri of the department of obstetrics and gynecology, Washington Hospital Center, and associates reported.

Likewise, after controlling for maternal age and race, the odds ratio for delivery of a small-for-gestational-age infant, compared with women with no vasculopathy, was highest in those with proliferative retinopathy and nephropathy (see graph below).

"The implication is that in women with type 1 diabetes, you need to keep a close eye on the babies because growth restriction is, of course, associated with neonatal death, poor outcome, and respiratory distress," Dr. Haeri said in an interview. The poorer neonatal outcomes were observed even though the population was tightly controlled, with a self-monitored fasting and preprandial blood glucose goal of less than 100 mg/dL and a 90-minute postprandial goal of less than 140 mg/dL. ■



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