Inpatient Data Link Migraine, Peripartum Stroke

BY ELIZABETH MECHCATIE

The risk of having a stroke during pregnancy is 15 times higher among women with active migraines, and the association is independent of preeclampsia, according to a large, population-based case-control study that analyzed national hospital-discharge data.

The study also identified significant associations between migraines during pregnancy and other vascular events, including myocardial infarctions, and vascular risk factors, such as smoking. The association between stroke and migraines was the strongest in the study and is consistent with previous findings that a migraine diagnosis is 17-fold greater among women who have a stroke during pregnancy (BMJ 2009;338:b664 [doi:10.1136/bmj.b664P]).

"Obstetricians, general practitioners, and neurologists should all realize that these results do not apply to every woman with migraine during pregnancy," wrote study investigators Dr. Cheryl Bushnell of the department of neurology, Wake Forest University Health Sciences, Winston-Salem, N.C., and her associates. Still, "for pregnant women admitted to hospital with active migraines, modifiable cardiovascular risk factors and complications of pregnancy such as preeclampsia, should be recognized and treated," they advised.

The researchers used ICD-9 diagnosis codes from a nationwide sample of inpatients that was culled from a database of 1,000 U.S. hospitals from 2000-2003. Almost 34,000 of the pregnancy-related discharges during this time also had a migraine diagnosis code, a migraine diagnosis rate of 185 per 100,000 deliveries. The researchers noted that this rate was lower than expected, probably because only women with active migraines during hospitalization were included in the analysis.

Migraines increased with maternal age; women 40 years and older had a 2.4-fold greater risk of having a migraine diagnosis at discharge than did women younger than 20 years. White women were more likely to have a migraine diagnosis than were women of other ethnicities and races.

Among women with a migraine diagnosis, the overall risk for all types of stroke was increased by nearly 16-fold. For individual types of strokes, the risk was highest for ischemic stroke, which was increased by nearly 31-fold among those women with a migraine diagnosis at discharge. There was no association between migraine and a diagnostic code of cerebral venous thrombosis or subarachnoid hemorrhage.

Migraine diagnostic codes were also significantly associated with codes for other vascular events: Among women with a migraine during pregnancy, a diagnosis of an MI was five times more likely, a heart disease diagnosis was about twice as likely, a diagnosis of a pulmonary embolism was about three times as likely, and a diagnosis of thrombophilia was almost four times as likely.

"The most logical explanation for the relation between migraine and vascular disease during pregnancy is the existence of overlapping pathophysiological mechanisms in both conditions, compounded by the physiological changes during pregnancy," Dr. Bushnell and associates wrote. They added that the increases in blood volume and other physiological changes during pregnancy "favor thrombosis," which may "compound the interactions between migraine and vascular complications."

Women with a migraine diagnosis code were also almost nine times more likely to have a diagnosis of hypertension, about twice as likely to have a diagnosis of preeclampsia/gestational hypertension, and were nearly three times more likely to smoke cigarettes. A statistical analysis that adjusted the associations for age and removed the effect of preeclampsia indicated that stroke was independently associated with a migraine diagnosis, at a 15-fold greater risk.

The researchers noted that a strength of the study was its size: It is probably the largest study to date on the characteristics of migraine headaches during pregnancy, they said.

The investigators reported that they had no financial conflicts of interest. ■