

## Stroke Risk in Pregnancy, Delivery Is Adjusted Upward

BY MITCHEL L. ZOLER  
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NEW ORLEANS — The risk of stroke among more than 8 million American women during the pre-, peri-, and postpartum periods was 34/100,000, a higher rate than previously calculated.

In addition, the risk of stroke rises with age. Women who were at least 40 years old had a 3.3-fold increased risk of stroke during pregnancy, delivery, and immediately after delivery, compared with women 15-19 years old, Cheryl D. Bushnell, M.D., reported at the 30th International Stroke Conference.

Women 35-39 years old had a 90% increased risk, compared with women younger than 20, said Dr. Bushnell, a neurologist at Duke University in Durham, N.C.

Although the stroke risk during pregnancy and delivery was higher than previous estimates of 4-26/100,000, there are currently no clear implications of what this

finding means for monitoring and managing women during pregnancy and delivery, commented Andra H. James, M.D., an obstetrician at Duke and a coinvestigator on this study. Dr. James had no recommendations for changing current obstetric practice based on the new finding.

The researchers used data collected in the Nationwide Inpatient Sample during 2001-2002. This database, maintained by the Agency for Healthcare Research and Quality, is a 20% sample of all inpatients at about 1,000 community hospitals in the United States.

The database included records for more than 8 million women who were discharged with prepartum, delivery, or postpartum codes. In this group, 2,850 women had a stroke, a rate of

34.2 events/100,000 women, Dr. Bushnell said at the conference, sponsored by the American Stroke Association.

Besides age, race was a variable that affected women's stroke risk. African American women had a 70% increased risk, compared with white women. Clinical factors that boosted the risk of stroke were preeclampsia, postpartum infection, a blood transfusion, and any other comorbidity.

Of the 2,850 women with strokes, 117 died, for a mortality of 4.1%. and a rate of 1.4 stroke deaths per 100,000 deliveries. Given that the overall mortality rate during pregnancy and delivery in the United States is 10/100,000 deliveries, stroke accounts for 14% of all maternal deaths, Dr. Bushnell said. ■

**The risk of stroke rises with age, with women 35-39 years old at 90% increased risk, compared with women younger than age 20.**

## Calcium Doesn't Prevent Gestational Hypertension

BY SHARON WORCESTER  
Tallahassee Bureau

ORLANDO, FLA. — Data have been conflicting on the role of calcium in gestational hypertension, but findings from a recent longitudinal study suggest it does not help prevent the condition, Yi Ning, M.D., of Harvard University, Boston, and colleagues reported in a poster at an international conference on women, heart disease, and stroke.

In the study, mean total calcium intake in 1,686 women was 1,310 mg/day in the first trimester, with most of that (85%) coming from foods. Gestational hypertension occurred in 118 of the women, and preeclampsia occurred in 61.

Adjustments were made for numerous variables, including maternal age, prepregnancy body mass index, race and ethnicity, income, parity, and smoking, as well as first measured systolic blood pressure and history of gestational hy-

per-tension or preeclampsia. No significant associations were found between the development of gestational hypertension or preeclampsia and the first-trimester intake of calcium.

The investigators also looked at intake of n-3 and n-6 polyunsaturated fatty acids and *trans*-fatty acids, and found no associations with gestational hypertension or preeclampsia. The same was true for second-trimester intake of the nutrients.

Participants completed food frequency questionnaires in both their first and second trimesters, and gestational hypertension and preeclampsia were identified using outpatient blood pressure and urine protein measurements, as well as delivery hospitalization diagnoses.

The findings support those of several other studies showing that calcium does not prevent gestational hypertension, according to Dr. Ning. ■

## Plasma Volume Expansion No Help in Preeclampsia

RENO, NEV. — Plasma volume expansion, once thought of as a possible treatment for severe preeclampsia, appears to confer no benefit even after a 1-year follow-up, results of a randomized controlled trial suggest.

The trial, which compared plasma volume expansion with temporizing treatment, showed that there were no differences in pregnancy outcomes and no differences in mental or psychomotor scores of the children at 1 year of age, reported Wessel Ganzevoort, M.D., and colleagues of Vrije University Medical Center, Amsterdam.

The study involved 216 women with severe preeclampsia; hemolysis, elevated liver enzymes, and low platelet count (HELLP) syndrome; or fetal growth restriction related to pregnancy-induced hypertension.

Gestational ages ranged between 24 and 33 weeks at the start of the study, the investigators wrote in a poster that was presented at the annual meeting of

the Society for Maternal-Fetal Medicine.

Women randomized to the plasma volume expansion group received 500 mL of 6% hexaethyl starch daily. Patients in both groups received antihypertensive treatment and magnesium sulfate when appropriate, they said.

Of the 111 women in the treatment group, 89 (80%) delivered live infants. Similarly, of the 105 women in the control group, 91 (87%) delivered live infants. The difference between the two groups was not statistically significant.

At 1 year of age, children from both groups showed lower scores than would be expected in the normal population on the Bayley mental developmental index (MDI) and the Bayley psychomotor developmental index (PDI).

But a comparison between the two groups demonstrated no significant differences in the proportion of children with abnormal or suspect MDI or PDI scores.

—Robert Finn

## Maternal Vitamin D Status Impacts Bone Mass of Lumbar Spine in Offspring

BY DIANA MAHONEY  
New England Bureau

HARROGATE, ENGLAND — A woman's vitamin D status in late pregnancy is predictive of her offspring's lumbar spine volumetric bone density at age 9, a prospective study has shown.

The findings add to the growing body of evidence confirming that a woman's diet while pregnant can influence her child's later bone mass, said Nicholas W. Harvey, B.Chir.

The results of the population-based investigation also point to the potential efficacy of preventive measures to protect children's bone health, Dr. Harvey said in a presentation at the annual conference of the National Osteoporosis Society. "Vitamin D supplementation in pregnant women who are deficient may optimize peak accrual of bone mineral in their offspring," he stated.

The investigation included 210 offspring of mothers enrolled in a larger cohort study of maternal nutrition and fetal development conducted by Dr. Harvey and his colleagues at the MRC environmental epidemiology unit of the University of Southampton (England). The mothers completed a questionnaire regarding their diet and lifestyle beginning from early pregnancy.

Anthropometric measures were recorded, including mid-upper arm circumference, which is a potential indicator of maternal nutritional status. The mothers gave venous blood samples in late pregnancy for the measurement of 25-hydroxyvitamin D levels and other nutrients. Concentrated umbilical cord blood was collected at birth to measure calcium, albumin, and phosphate.

The investigators recorded the size and weight of the offspring at birth. When the children reached age 9 years, they underwent dual-energy x-ray absorptiometry (DXA) for bone mass measurement. Because bone mineral density measured by DXA represents the areal density (grams per square centimeter) rather than the volumetric density (grams per cubic centimeter) of bone, the investigators generated mathematical estimates of volumetric bone density from the DXA measurements of bone mineral content and bone area.

"When studying bone mineral density during growth, the differences [between volumetric and areal BMD] have to be taken into consideration," Dr. Harvey explained. As bones grow, the volume increases at a faster rate than the area, so the areal bone density will increase even if the volumet-

ric density remains stable, he said.

At 9 years, the boys in the study group (112) were significantly taller than the girls, and had higher age-adjusted lumbar spine bone mineral content and bone area but lower volumetric bone mineral density. After adjustment for child age and gender, maternal vitamin D was positively correlated with childhood volumetric BMD. "There was a threshold in the relationship, such that mothers in the lowest fifth of the [vitamin D] distribution had children with significantly lower volumetric bone mineral density at age 9 than those in the remaining four fifths," Dr. Harvey said.

Maternal mid-upper arm circumference and vitamin D supplementation in late pregnancy both had significant positive associations with volumetric BMD, while social class, maternal smoking, and umbilical cord phosphate, calcium, and albumin levels did not.

Calcium from the cord blood was predictive of increased bone mass, but not volumetric BMD, Dr. Harvey noted.

In a multivariate model, both maternal mid-upper arm circumference and low serum vitamin D remained significant predictors of childhood volumetric BMD status, he said. ■