

Maternal Flu Vaccine Cuts Infants' Infection Risk

BY MARY ANN MOON

FROM THE ARCHIVES OF
PEDIATRIC AND ADOLESCENT
MEDICINE

Vaccinating pregnant women against seasonal influenza reduced the risk of laboratory-confirmed influenza infection in their infants by 41%, according to a study.

Maternal immunization similarly cut by 39% the risk that infants up to 6 months of age would be hospitalized for influenza-like illness, said Angelia A. Eick, Ph.D., of the Center for American Indian Health, Johns Hopkins Bloomberg School of Public Health, Baltimore, and her associates.

Influenza vaccination is already recommended for pregnant women to reduce their risk of developing flu-related complications. "These findings provide support for the added benefit of protecting infants from influenza virus infection up to 6 months, the period when infants are not eligible for influenza vaccination but are at highest risk of severe influenza illness," they noted.

Even though such immunization is recommended during pregnancy, it is not well accepted in the United States and many pregnant women do not get vaccinated. Since it would be unethical to perform a randomized, controlled study of maternal vaccination, Dr. Eick and her colleagues conducted a

nonrandomized observational study to assess whether immunization during pregnancy conferred protection to infants.

The study subjects were 1,160 mother-infant pairs in which approximately half the mothers (573) had chosen to receive seasonal flu vaccine while pregnant and the other half (587) had declined the vaccine. All were enrolled after delivering healthy singleton infants at 7 hospitals serving the Navajo and White Mountain Apache Indian reservations in the southwestern United States during three flu seasons between 2002 and 2005.

A total of 605 infants developed influenza-like illness during the flu season following delivery. "We found a 41% reduction in the risk of laboratory-confirmed influenza virus infection for infants of influenza-vaccinated mothers compared with infants of unvaccinated mothers," they said (*Arch. Pediatr. Adolesc. Med.* 2010 [doi:10.1001/archpediatrics.2010.192]).

The incidence of influenza-like illness was 6.7 per 1,000 person-days for infants of mothers who had been vaccinated, compared with 7.2 per 1,000 person-days for infants of mothers who had not. Among the infants whose mothers were vaccinated, there was a 41% reduction in the risk of laboratory-confirmed influenza virus infection compared with those whose mothers declined vaccination.

When the analysis was restricted only to cases of influenza that required hospitalization, a 39% reduction in risk was found for infants of women who had been vaccinated, compared with those of mothers who had not been vaccinated.

Cord blood samples or infant blood samples taken at 2-3 months of age were available for 160 study subjects. In this subgroup, the risk of influenza infection declined with increasing antibody titers.

The exact mechanism by which vaccination of the mother conferred protection to the infant is not certain. It may be due to maternal influenza antibodies being acquired transplacentally or through breastfeed-

VITALS

Major Finding: The incidence of influenza-like illness was 6.7 per 1,000 person-days for infants of mothers who had been vaccinated, compared with 7.2 per 1,000 person-days for infants of mothers who had not.

Data Source: A nonrandomized, prospective, observational cohort study involving 1,160 mother-infant pairs.

Disclosures: The study was funded by the U.S. Department of Health and Human Services' National Vaccine Program Office, the Office of Minority and Women's Health (now the Office of Health Disparities), the Centers for Disease Control and Prevention, Aventis-Pasteur, and Evans-Powderjert. One of Dr. Eick's associates reported ties (unrelated to this study) with MedImmune, Pfizer, and Sanofi-Pasteur, all of which manufacture influenza vaccine.

ing, or to reduced infant exposure to influenza in the mother.

It even could be due to residual confounding not accounted for in the statistical analyses, but

the finding of significantly higher antibody titers in 2- to 3-month-old infants who did not develop illness argues against that possibility, they said. ■

Barriers to Maternal Vaccination

VIEW ON THE NEWS

This study confirms the potential for influenza vaccination of pregnant women to decrease newborn illness.

"In the United States, acceptance of vaccination during pregnancy is poor. Despite the fact that the U.S. Advisory Committee on Immunization Practices (ACIP) has recommended the use of influenza vaccine during pregnancy since 1997, there has been little appreciable change in vaccine use by the group from 1997 through 2009," noted Dr. Justin R. Ortiz and Dr. Kathleen M. Neuzil.

Studies have indicated that some members of the public believe that influenza infection "is not serious" or hold misconceptions about vaccine safety during pregnancy.

But decades of research have demonstrated substantial influenza-associated morbidity in pregnant women and have established the "excellent" safety profile of maternal trivalent inactivated influenza vaccination, they wrote.

JUSTIN R. ORTIZ, M.D., and KATHLEEN M. NEUZIL, M.D., and are both with the Vaccine Development Global Program at PATH, an international nonprofit organization dedicated to solving health care problems, and at the University of Washington, Seattle. They reported having no financial disclosures. These comments were summarized from their editorial (*Arch. Pediatr. Adolesc. Med.* 2010 [doi:10.1001/archpediatrics.2010.193]).

Obstetric Subarachnoid Hemorrhage Often Post Partum

BY MIRIAM E. TUCKER

FROM THE ANNUAL MEETING OF THE
SOCIETY FOR OBSTETRIC ANESTHESIA
AND PERINATOLOGY

SAN ANTONIO – Pregnancy-related subarachnoid hemorrhage presented most often in the postpartum period and often with severe headache, analyses of both nationwide and single-institution datasets revealed.

In an analysis of data from the Nationwide Inpatient Sample – an administrative dataset containing information on 20% of United States hospital admissions – SAH occurred at a rate of 5.6 per 100,000 deliveries and 5.0 per 100,000 pregnancy-related admissions. Two-thirds of these occurred in the postpartum period, Dr. Vanessa A. Olbrecht said.

Although rare, the incidence of SAH is increased twofold among women in the intrapartum/peripartum periods compared with the general population, and it is the second leading cause of indirect maternal death after cardiac disease. SAH needs to be considered in the differential diagnosis of postpartum

headache, according to Dr. Olbrecht.

She and her associates at Massachusetts General Hospital used two data sources to investigate the epidemiology of SAH in pregnancy. From the NIS, they extracted all pregnancy-related admissions for women aged 15-44 years during 1997-2006, and identified all of those admissions with a primary or secondary diagnosis of SAH.

The second analysis was a comprehensive retrospective review of their own institution's experience with pregnancy-related SAH from 1992 through 2009. Here, they included only patients with SAH as the primary pathology, Dr. Olbrecht explained.

In the NIS, there were an estimated 2,254 cases of pregnancy-related SAH in the United States during the study period.

There was a geometric increase in SAH with age, with a doubling of the in-

cidence from those aged 35-39 years to 40-44 years and odds ratios of 1.7 to 2.3 per every 10-year increase in age.

In a logistic regression analysis, eclampsia was the single biggest predictor of pregnancy-related SAH, with an "impressive" odds ratio of 88.4. Other significant and independent predictors included coagulopathy (odds ratio 7.2), preeclampsia superimposed on pre-existing hypertension (4.2), severe preeclampsia (3.1), tobacco use (2.6), pre-existing hypertension (2.4), African-American race (2.4, compared with Caucasians), mild preeclampsia (2.1), and Hispanic race (1.6).

Compared with an age-matched cohort of non-pregnant women with SAH, the pregnant women with SAH had significantly lower in-hospital mortality, with a rate of 10.7% versus 18.7%. The proportion discharged somewhere other than home was 35.2% among the pregnant

women with SAH vs. 48% among those with non-pregnancy related SAH. And the percentage who had aneurysm clipping/coiling – used as a proxy for aneurysmal SAH – was 12.1% in the pregnancy-related SAH group, compared with 44.2% among the non-pregnant SAH patients.

At Massachusetts General, there were 11 cases of SAH during the 17-year study period. Nine of the 11 had cesarean sections, and only 2 had vaginal deliveries. The women ranged in age from 19 to 42, with one-third over the age of 35 at the time of diagnosis. Half were Caucasian, 3 were African-American, and 2 were Hispanic. As in the NIS, two-thirds of the SAH occurred in the postpartum period, at a median of postpartum day 8.

The majority (9) presented with a sudden severe headache, and one-fourth (3) had seizures. Three cases were aneurysmal and were treated with craniotomy, and 2 were associated with venous sinus thrombosis. One patient died, and two were discharged home with significant neurologic deficits.

None of the study authors reported having relevant conflicts of interest. ■



SAH needs to be considered in the differential diagnosis of postpartum headache.

DR. OLBRECHT