Transmission of MRSA Traced to Breast Milk

BY MIRIAM E. TUCKER
Senior Writer

WASHINGTON — Methicillin-resistant *Staphylococcus aureus* has been transmitted via breast milk, Dawn Terashita Gastelum, M.D., reported in a poster presentation at the annual Interscience Conference on Antimicrobial Agents and Chemotherapy.

The two reported cases, which resulted in MRSA outbreaks in neonatal intensive care units at two Los Angeles hospitals, suggest that hospital NICUs should consider screening mothers and family members for skin lesions at the time of delivery and obtaining breast milk cultures before infant feedings, said Dr. Terashita Gastelum of the Los Angeles County Department of Health Services.

The first case was in a premature (1,180 g at birth) quadruplet born to an Algerian mother who developed mastitis the day after delivery and was treated with dicloxacillin. Her breast milk was collected 3 days later and fed to the quadruplets. Twelve days after that, the baby girl died of MRSA sepsis.

The bacterium subsequently was found in nasopharyngeal cultures of the mother and her three surviving infants, another infant in the NICU, and the mother's frozen postpartum breast milk samples. Molecular fingerprinting was identical for the four infants and the breast milk, but the mother's nasopharyngeal isolate was different.

"Since the mother was actually colonized by a different strain, it is unlikely that the infants obtained the MRSA during birth or through skin-to-skin contact with the mother. The breast milk is the only known source," Dr. Terashita Gastelum told this newspaper.

And, though it is possible to be colonized with two different strains of MRSA, it's rare. On the other hand, "it is easy to imagine that the macerated skin of the nipple on a postpartum woman is more susceptible to infection from any organism," she said at the conference, sponsored by the American Society for Microbiology.

The second case was an 1,199-g male infant born to an African American mother, who was fed her breast milk the day of birth and developed MRSA sepsis 8 days later. This mother had no sign of mastitis, but MRSA was cultured from her breast milk collected on the day of delivery. Four other infants from the NICU were also positive: two colonized and two infected. Isolates from the breast milk and the five cases were identical. ■

Smoking Doesn't Actually Protect Against Preeclampsia

BY MARY ANN MOON
Contributing Writer

WASHINGTON — A paradoxical benefit of cigarette smoking during pregnancy finally may have been explained.

Smoking has long been linked to a decreased rate of preeclampsia. But rather than protecting against the disorder, smoking may mask the true incidence of preeclampsia by indirectly inducing preterm delivery, so that smokers' infants are simply born before preeclampsia can be manifested, Ahmad O. Hammoud, M.D., said at the annual meeting of the Central Association of Obstetricians and Gynecologists.

A 1999 study published in the New England Journal of Medicine found that the risk of developing preeclampsia was 32% lower in women who smoked than in nonsmokers. And most studies—a total of 99—cited in a review of the literature since 1959 also showed that smoking was associated with decreased risk. But this link "has always been questioned," because it is counterintuitive that smoking could benefit pregnancy and because many of these studies had relatively small sample sizes, said Dr. Hammoud, a fourth-year resident in the department of ob.gyn. at Wayne State University, Detroit.

He and his associates examined the issue using a large German database of 170,254 singleton deliveries that took place at 29 hospitals across Germany during the late 1990s. Mean maternal age was 29 years. Overall, 23% of the women were smokers, and the overall rate of preeclampsia was 3.5%.

The incidence of preeclampsia was 2.5% among nonsmokers, compared with only 1.9% among smokers. Moreover, the incidence of preeclampsia showed a clear inverse correlation with the number of cigarettes smoked per day. Nonsmokers had the highest rate of preeclampsia, followed by women who smoked 1-5 cigarettes per day, then by women who smoked 6-10 cigarettes per day, and finally, by women who smoked more than 10 cigarettes per day.

"The new finding in our study was that the incidence of preeclampsia was not uniformly low in all smokers. It increased with advancing gestational age and was especially high in smokers who made it to 40 weeks or more," Dr. Hammoud said.

"We postulate that placental damage from smoking leads to severe complications, such as placental abruption and restricted fetal growth, which in turn lead to preterm delivery before preeclampsia is manifested. So what smokers actually have is just an apparent decrease in preeclampsia," he said.

This hypothesis is supported by the finding that smokers had a higher rate of placental abruption than nonsmokers and that fetal weight was adversely affected by smoking in a dose-response fashion, he noted. ■

DRUGS, PREGNANCY, AND LACTATION

Migraine Drugs

Migraine symptoms improve in up to 70% of women during pregnancy. But in 4%-8% of women, migraines worsen, and as many as 16% of all migraine cases during pregnancy may be new onset.

A 2002 review identified drugs or drug classes used for preventing migraine attacks (N. Engl. J. Med. 2002;346:257-70), including four drugs available in the United States that were considered well-accepted treatments or had proved to be effective: metoprolol, propranolol, amitriptyline, and valproate. Verapamil (Calan, Isoptin) and selective serotonin-reuptake inhibitors (SSRIs) were also widely used, but the reviewers concluded that there was poor evidence of benefit. Gabapentin (Neurontin) and topiramate (Topamax) were considered promising for migraine prophylaxis.

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Of these agents, only amitriptyline, verapamil, and low-dose propranolol (30-40 mg/day) have enough data to be classified as low risk during pregnancy. Higher doses of propranolol may cause intrauterine growth retardation (IUGR) and other fetal/neonatal toxicity. Based on the drug class (antihistamine and calcium channel blocker), flunarizine is probably compatible with pregnancy. Gabapentin and topiramate should be avoided in the first trimester because of inadequate human data. Valproate causes neural tube defects and other structural anomalies if used in the first trimester, and use of metoprolol during the second and third trimesters is associated with an increased risk of IUGR. SSRI use in the third trimester may cause newborn toxicity, and methysergide and other ergot alkaloids are contraindicated in pregnancy.

Other migraine drugs include acetaminophen (alone, or in combination with caffeine and butalbital, aspirin and caffeine, or isometheptene and dichloralphenazone); NSAIDs, including aspirin; chlorpromazine (Thorazine); dimenhydrinate (Dramamine); diphenhydramine (Benadryl); morphine; meperidine; intranasal butorphanol (Stadol); and corticosteroids.

Others are dihydroergotamine (Migranal, D.H.E. 45), ergotamine (Ergomar) (alone or in combination with caffeine, or caffeine-belladonna-pentobarbital), intranasal lidocaine, and selective serotonin receptor agonists, also called triptans.

Combination products with butalbital are not recommended because in studies, the butalbital component did not increase efficacy. Acetaminophen, caffeine, dimenhydrinate, diphenhydramine, narcotic analgesics, lidocaine, and butorphanol are of very low risk in pregnancy. However, frequent, prolonged use of narcotic analgesics may result in maternal and fetal addiction.

Several therapeutic agents can cause developmental toxicity. NSAIDs, including aspirin, have been associated with miscarriage when used around the time of conception, and exposure in the third trimester is tied to premature closure of the ductus arteriosus with the risk of persistent pulmonary hypertension of the newborn.

Aspirin causes irreversible inhibition of platelet function and other clotting disorders, so its use near term may result in enhanced maternal blood loss at delivery and an increase in the incidence of intracranial hemorrhage in premature or low-birthweight infants. Cortico steroid use in the first trimester is tied to a low risk of oral clefts. Ergot alkaloid preparations are contraindicated in pregnancy because of their dose-related developmental toxicity and oxytocic properties.

Seven triptans indicated for the short-term treatment of migraine with or without aura are available: sumatriptan (Imitrex), almotriptan (Axert), eletriptan (Relpax), frovatriptan (Frova), naratriptan (Amerge), rizatriptan (Maxalt), and zolmitriptan (Zomig). Triptans do not appear to be major teratogens in humans, but more data are needed.

In animal studies at doses or systemic exposures 10 times the human dose, triptans caused developmental toxicity. Human data are only available for naratriptan, sumatriptan, and rizatriptan. About 500 women have been prospectively enrolled since early 2004, about 90% with first-trimester exposure. Except for a small cluster of five ventricular septal defects, there was no consistent pattern of defects to suggest a common cause.

Other than ergot drugs (contraindicated) and amitriptyline (concern for long-term neurotoxicity), antimigraine agents appear to be compatible with breast-feeding. There are few or no data available for gabapentin and topiramate. Ergot alkaloids may inhibit lactation; high doses have been associated with toxicity in nursing infants (vomiting, diarrhea, and convulsions). The effect of triptans on a nursing infant is unknown, but the small amount of drug in milk does not appear to represent a risk.

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