MRSA Colonized in 2% of Women Upon Delivery

BY SHERRY BOSCHERT
San Francisco Bureau

MONTEREY, CALIF. — Two (2%) of 98 pregnant women being admitted for labor or a scheduled C-section were colonized with methicillin-resistant *Staphylococcus aureus* in a pilot study, Dr. Richard H. Beigi reported in a poster presentation at the annual meeting of the Infectious Diseases Society for Obstetrics and Gynecology.

The results of the study are consistent with a 2%-4% colonization rate for methicillin-resistant *S. aureus* (MRSA) found in some populations, though higher rates have been seen in select populations. These are among the first data on MRSA in women entering labor and delivery wards, said Dr. Beigi, who performed the study at MetroHealth Medical Center, Cleveland, and now is at Magee-Women's Hospital, Pittsburgh.

"It emphasizes the fact that we need to have very good hand hygiene," he said in an interview at the poster session. The study was funded by Steris Corp., which makes a hand hygiene product.

The 2% rate provides a baseline for comparisons as the incidence of MRSA is tracked in labor and delivery over time. Ongoing surveillance is warranted given the increasing rates of MRSA in other specialties and the limited number of effective drug treatments for complications of MRSA infection, said Dr. Beigi and his associates.

Of the 96 women, 21 (22%) had *S. aureus* detected in samples from the anterior nares. Two (10%) of the 21 with *S. aureus* had MRSA. One of the women with MRSA worked in a hospital, and the other had no contact with a hospital or hospital workers as a potential source for her MRSA colonization.

Eight (38%) of the 21 isolates with *S. aureus* demonstrated inducible clindamycin resistance, and one of these was a strain with MRSA. The clinical implications of this are unclear, but MRSA plus clindamycin resistance would further narrow choices for therapy.

In a subset of 28 women who also had cultures obtained from the outer third of the vagina, 23 (82%) had concordant findings, meaning that if they were positive or negative for *S. aureus* in one anatomical site, they had the same result at the other site.

Six postpartum infections potentially were attributable to *S. aureus*—two cases of mastitis and four wound infections after C-section. Postpartum infection rates were twice as high in women with *S. aureus* (10%), compared with uncolonized women (5%), but the difference was not statistically significant. A larger study might show a significant difference in infection rates, Dr. Beigi suggested. ■

S. aureus *Found in 11% of Screened Pregnant Women*

BY TIMOTHY F. KIRN
Sacramento Bureau

SAN FRANCISCO — *Staphylococcus aureus* was carried in the vaginal-rectal area in 11% of pregnant women who were screened at a Camden, N.J., hospital, according to a study presented at the annual Interscience Conference on Antimicrobial Agents and Chemotherapy.

The investigators took vaginal-rectal specimens collected from pregnant women who were being screened for group B streptococcus from June 2005 until March 2006 and cultured them for *S. aureus*.

Of the 353 women who were screened, 39 (11%) were colonized with staphylococcus; 7 of the 39 (2%) were methicillin-resistant strains, said Dr. Henry Fraimow of Cooper University Hospital in Camden.

Five of the seven MRSA isolates contained the Panton-Valentine leukocidin virulence gene.

All seven were susceptible to clindamycin and levofloxacin.

The study could help to explain why in Camden generally half of *S. aureus* abscesses occur below the waist, and why Camden nurseries have had outbreaks of neonatal *S. aureus* infections, Dr. Fraimow said at the conference, which was sponsored by the American Society for Microbiology.

"This is higher than reported rates of vaginal colonization with staph aureus, most [studies] of which were done in the 1980s during some of the toxic shock syndrome outbreaks," he said. "There hasn't been a lot of good recent data."

One other recent study that looked at vaginal colonization found a higher rate of carriage, 18%, but a lower rate of methicillin resistance, 0.5%, he added.

Dr. Fraimow and his colleagues also found much more carriage in the summer months than during the rest of the year. Specifically, they found that 14% of the specimens collected between June and September were colonized, compared with only 7% of those collected between October and March.

"We also conclude that all reservoirs for this organism must be considered when looking at strategies such as decolonization to prevent recurrent infections," Dr. Fraimow said. ■

DRUGS, PREGNANCY, AND LACTATION

Do NSAIDs Cause Birth Defects?

BY GERALD G. BRIGGS, B.PHARM.

Prescription and over-the-counter nonsteroidal anti-inflammatory drugs are frequently used in pregnancy, including during the first trimester. When used around the time of conception, there is evidence that NSAIDs impair fertility by interfering with blastocyst implantation, resulting in spontaneous abortions.

Exposure to these agents toward the end of the second trimester and throughout the third is known to cause functional toxicity in the fetus and newborn, consisting of renal impairment, oligohydramnios, premature closure of the ductus arteriosus, and primary pulmonary hypertension of the newborn. Increased risks for other toxicities—such as intraventricular hemorrhage, necrotizing enterocolitis, patent ductus arteriosus requiring ligation, platelet dysfunction, and gastrointestinal bleeding—have been reported in association with prenatal exposure to NSAIDs, but a causative role has not yet been proved.

When used in the first 3 months of gestation, there have been conflicting reports associating the use of NSAIDs with structural anomalies. However, a Canadian study published in September has strengthened the argument that NSAIDs can cause birth defects, particularly cardiac septal defects. In the following discussion, the evidence for and against this association is examined:

► A large observational cohort study conducted in Denmark compared the outcomes of 1,106 pregnancies exposed to NSAIDs in the first trimester with 17,529 controls and found no significant association between NSAID use during pregnancy and congenital defects (BMJ 2001; 322:266-70). A weakness of this study was that it included only women who had received an NSAID prescribed at doses equivalent to 400 mg or 600 mg of ibuprofen. The study did not identify women who might have taken NSAIDs that were available as OTC products at doses equivalent to 200 mg of ibuprofen.

► A Food and Drug Administration analysis of Michigan Medicaid data on a large number of women exposed in the first trimester to three NSAIDs between 1985 and 1992 found no evidence of an increased risk of cardiac or orofacial defects for any of the drugs. There were 19 birth defects among the 258 women (7.4%) exposed to diflunisal, 143 birth defects among the 3,178 women (4.5%) exposed to ibuprofen, and 70 birth defects among the 1,448 women (4.8%) exposed to naproxen. These rates were higher than the expected number of birth defects (10, 129, and 62, respectively), but these types of studies only raise hypotheses and cannot show causation (Briggs GG, Freeman RK, Yaffe SJ. Drugs in Pregnancy and Lactation. 5th ed. Baltimore: Williams & Wilkins, 1998: ix).

► A 2001 prospective observational cohort study that examined the relationship between first-trimester exposure to NSAIDs in 2,557 women and congenital defects found no association with birth defects in general. However, significant associations with cardiac defects and orofacial clefts were noted: There were 36 cardiac defects, representing an odds ratio of 1.86, and 8 orofacial defects, an odds ratio of 2.81. Both were statistically significant increases over the expected rates (Reprod. Toxicol. 2001;15:371-5).

► A 2003 study using data from Swedish health registers of 1,142 infants with orofacial clefts (isolated or nonisolated) found a greater risk associated with naproxen exposure. Compared to the expected number (2.9), 8 of the infants had been exposed to naproxen, a relative risk of 2.72 (Cleft Palate Craniofac. J. 2003; 40:624-8).

► Another study identified 5,015 infants in the same registry with cardiovascular defects, and compared them with 577,730 controls, finding no significant association when all NSAIDs were grouped together or with individual agents, with the exception of naproxen. Among babies born to 1,679 women exposed to naproxen, 24 had cardiovascular defects, a statistically significant odds ratio of 1.7 (Reprod. Toxicol. 2003;17:255-61).

► The latest study, a case-control study conducted in Quebec, found a significant association between congenital anomalies, specifically cardiac septal defects, and the use of NSAIDs in the first trimester. Case infants were those with any congenital anomaly diagnosed in the first year of life, who were matched with up to 10 controls (infants without a congenital anomaly) for maternal age, urban or rural residence, gestational age, and diabetes status. The data were adjusted for common comorbidities.

There were 93 infants (8.8%) with congenital anomalies born to 1,056 mothers who had filled prescriptions for NSAIDs in the first trimester. Among controls, there were 2,478 infants (7%) with anomalies born to 35,331 mothers who had not filled such a prescription. Among women who had filled a prescription for an NSAID during the first trimester, the adjusted odds ratio for any congenital anomaly was 2.21, and the adjusted odds ratio for cardiac septal closure was 3.34. Both were significant. There were no significant associations for oral clefts or defects involving other major organ systems (Birth Defects Res. B. Dev. Reprod. Toxicol. 2006;77:268-79).

Taken in sum, the data from these studies provide increasingly convincing evidence that NSAIDs are human teratogens, especially for cardiac septal defects and, possibly, for orofacial clefts. Additional research is needed, but women who may become pregnant or are pregnant should be counseled regarding this possible risk.

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