

Neonatal MRSA Is Often Community Acquired

BY KATE JOHNSON

MONTREAL — Community-acquired strains are the most common source of methicillin-resistant *Staphylococcus aureus* colonization and infection in babies in the neonatal intensive care unit, even though they have never left the hospital, researchers found.

Findings in a 5-year retrospective study of 50 MRSA-colonized neonates in the NICU were presented at the annual meeting of the Infectious Diseases Society for Obstetrics and Gynecology.

"There are higher rates of community-acquired MRSA infection in our neonates than in our general adult and pediatric patient population," said lead investigator Dr. Gweneth Lazenby of the Medical University of South Carolina in Charleston said. "This is a call for people to help us really detail the sources of such early colonization, how we can prevent it, and how we can prevent subsequent infection."

Theories on how neonates are exposed to MRSA in the NICU include maternal transmission, transmission from other family or hospital workers, contaminated equipment, and a recently reported possible transmission through breast milk, she said. "We have some concern about family members and maternal transmission to neonates and so we would like to consider interrupting transmission by possibly culturing the individuals the babies are exposed to."

In the current study, there was a

mean of 21 days between birth and colonization of the 50 infants. However, 30% tested positive within 7 days of birth, she said.

"The 30% of infants who acquired early MRSA colonization, within the first week, were 2.5 times more likely to go on to develop infection," she explained. No other risk factors for infection could be identified, although there was a nonsignificant trend toward a higher risk with lower birth weight.

In total, 16 of the 50 colonized infants (32%) eventually developed MRSA infections, which included 8 blood stream infections, 6 skin and soft tissue infections, and 2 ventilator-associated pneumonias. One of the bloodstream infections was fatal and was identified as a community-acquired MRSA strain (USA 300).

Pulse field gel electrophoresis identified USA 300 in 36% of 14 colonizing strains and 56% of 9 infection strains, she said. "This is considerably higher than what is seen in the rest of our hospital's pediatric and adult patient population, where we see a 4%-6% colonization rate and a 19% infection rate, with one-quarter of those infections being community-acquired."

Dr. Lazenby said decolonization is not currently attempted in neonates.

The current management is isolation and contact precautions to prevent spreading the infection, she said.

Dr. Lazenby said she had no disclosures to declare. ■

Zoster Risk Sharply Reduced After Varicella Vaccination

BY BRUCE JANCIN

VAIL, Colo. — The risk of herpes zoster in children under age 10 years who've been vaccinated against varicella was 4- to 12-fold less than in those with naturally acquired varicella in a large population-based study.

Moreover, when herpes zoster did occur, the pain was significantly less if the eruption was caused by the vaccine strain varicella zoster virus (VZV).

This has previously been anecdotally reported, but the new study by the Los Angeles County Department of Public Health and the Centers for Disease Control and Prevention provides the first actual proof

that herpes zoster in varicella vaccinees is a generally benign disease, Dr. Myron J. Levin said at a conference on pediatric infectious diseases sponsored by the Children's Hospital, Denver.

The study was conducted during 2000-2006 in Antelope Valley, Calif. During the study period, the incidence of herpes zoster among children less than 10 years old declined by 55%, from 74.8 cases per 100,000 in 2000 to 33.3 per 100,000 in 2006.

In contrast, the incidence jumped by 63% among 10- to 19-year-olds. The investigators said they couldn't explain this increase and would like to see it confirmed in other data sets (*Pediatr. Infect. Dis. J.* 2009 June 16 [Epub ahead of print]).

One possible explanation for the in-

crease over time in the older youths is waning VZV immunity, with resultant re-activation of the latent vaccine strain of the virus, according to Dr. Levin, professor of pediatrics and medicine at the University of Colorado at Denver.

Another possibility is that the varicella vaccine is a suboptimal immunogen. Although the vaccine's primary failure rate is 4%-5%, the fact is that the boost in immunogenicity to varicella antigen following a first dose of the MMR vaccine is

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DR. LEVIN

markedly less than the resultant immunogenicity boost to the measles, mumps, and rubella antigens. That's the basis for the two-dose strategy recommended by a CDC committee in 2007.

The second vaccine dose boosts antibody to levels similar to those seen in adults after varicella. "We are in the midst of a very large clinical experiment," Dr. Levin said of the two-dose strategy.

It makes sense that herpes zoster in VZV vaccine recipients should be less frequent and less severe because the vaccine virus is attenuated. Plus, the latent VZV that causes herpes zoster comes from skin lesions—and skin lesions are rare following vaccination. In contrast, herpes zoster in leukemic recipients of VZV vaccine correlates with the occurrence and extent of rash following vaccination, he noted.

Dr. Levin disclosed that he is a consultant to, is on the speakers bureau for, and receives royalties from Merck & Co. ■



EXPERT OPINION

Circumcision and MRSA



BY STEPHEN I. PELTON, M.D.

Pustular infections due to *Staphylococcus aureus* in the newborn nursery are preventable.

Approximately 4% of all new-

borns develop an infection in the first 30 days of life. Of these, pustulosis is the second-most common (after nonpneumonia respiratory tract infections), occurring in about 1 in every 100-200 newborns with a peak onset at 10-15 days of life. Most of these infections are due to *S. aureus*, and increasingly, methicillin-resistant *S. aureus* (MRSA).

Indeed, outbreaks of neonatal pustular disease should prompt concern about MRSA in the community. Colonization with *S. aureus* requires very little exposure. The problem can often be traced to crowding and failures of standard infection control practices in the newborn nursery, along with two other specific recently identified risk factors: circumcision

and the use of multidose lidocaine vials.

A case-control study investigated 11 newborns who had onset of MRSA skin and soft-tissue infection within 21 days after discharge from a well-infant nursery at a community hospital over an 8-month period. All were term male infants with pustular-vesicular lesions in the groin, Dr. Dao Nguyen and associates at the Centers for Disease Control and Prevention reported (*Infect. Control Hosp. Epidemiol.* 2007;28:406-11).

Risk factors associated with the MRSA infections were length of stay, circumcision in the nursery, and receipt of lidocaine injections used to anesthetize for the circumcision procedure. Inspection revealed uncovered circumcision equipment, multiple-dose lidocaine vials, and inadequate hand hygiene practices.

Nineteen cases of MRSA infection were reported in neonates born at Beth Israel Deaconess Medical Center in Boston. Of the 19 infants who have become ill with the drug-resistant staphylococcal infection, 15 have been boys, the

Boston Public Health Commission reported. Violations of standard infection control practices related to circumcision and postprocedure care were identified as contributing factors.

A literature review of 10 articles reporting on staphylococcal colonization and infection in the newborn period revealed that male infants have a greater risk than do female infants, and that the male to female ratio is even higher in studies where most of the boys are circumcised as infants (*Clin. Pediatr.* 2007;46:356-8).

But the answer to the neonatal staphylococcal problem is not to stop circumcising babies. Policies and attitudes toward circumcision are currently being revisited. After a decade or so in which a large body of evidence indicating the procedure reduces the risk for the development of a variety of sexually transmitted diseases was largely ignored, the American Academy of Pediatrics is reviewing its policy on the medical benefits of the procedure.

What's needed is better attention to surgical technique and hygiene during

circumcision procedures, along with the use of single-dose lidocaine vials.

For newborns who do develop pustular disease in the diaper area, lower abdomen, or any other area, the approach to management varies considerably. Some infants are hospitalized and treated systemically while others are managed with local or topical therapy. An individualized approach would appear necessary as the spectrum of clinical disease is broad. First, the child should be evaluated for other possible etiologies.

If staphylococcal disease is suspected, the presence or absence of systemic signs, abscess, or local cellulitis will help determine whether systemic therapy is needed or if initial local management is appropriate. In all cases, close follow-up is needed to ensure that resolution occurs. ■

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