Mother-to-Infant *S. aureus* Transmission Horizontal

BY ROBERT FINN

SAN FRANCISCO — Infants most often acquire *Staphylococcus aureus* infections from their mothers horizontally after birth and not vertically during birth, based on a prospective, longitudinal study of 158 pregnant women and their offspring.

Of the participating women, 54 (34%) were *S. aureus* carriers, and 17 of the children born to them (31%) acquired *S. aureus* before discharge, Dr. Eyal Leshem and colleagues at Chaim Sheba Medical Center, Tel Hashomer, Israel, wrote in a poster presentation at the annual Interscience Conference on Antimicrobial Agents and Chemotherapy, sponsored by the American Society for Microbiology .

By contrast, only 3% of the children born to noncarrier mothers acquired *S. aureus*. The investigators found that the mother's carriage status was a very strong predictor of the infant's status. Children born to carriers were 22 times more likely to acquire *S. aureus* than other children.

The investigators controlled for the sex of the child, carriage status of the mother, breastfeeding, gestational age, antibiotic treatment, type of delivery, and smoking status. This increase in risk was highly statistically significant.

If a vertical transmission were dominant, one would expect a greater rate of transmission in vaginal births, but there was no significant difference in rates between vaginal, cesarean births.

The only other statistically significant predictor of mother-to-infant transmission was smoking status. Children born to mothers who smoked before or during pregnancy were four times more likely to acquire *S. aureus*.

Of the 54 maternal carriers, 38 were nasal carriers, 9 were vaginal carriers, and 7 were both vaginal and nasal carriers. Among 11 of the newborns who acquired *S. aureus* from their carrier mothers, 9 had strains that were genetically identical to the mother's nasal strain, but only 2 had strains identical to the mother's vaginal strain. This suggests that the transmission was horizontal rather than vertical.

Two other pieces of evidence supported the hypothesis that most transmission was horizontal. Only 5% of newborns had acquired *S. aureus* by 1 hour after birth, but this figure increased to 8% at 24-48 hours and to 12% by 72-100 hours.

In addition, there were no significant differences in transmission rates between infants born vaginally and those born by cesarean section.

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Not all infants acquired a strain identical to the mother's. Five infants acquired a different strain, but in two of those cases that strain was later replaced by a maternal strain.

The investigators reported no conflicts of interest related to their study. ■