

INFECTION PUTS EXTREMELY LOW BIRTH WEIGHT INFANTS AT RISK FOR
DEVELOPMENTAL DELAYS

Extremely low birth weight infants -- the tiniest category of premature infants -- are much more likely to experience developmental impairments if they acquire an infection during the newborn period, according to a study by the Neonatal Research Network of the National Institute of Child Health and Human Development, one of the National Institutes of Health. The developmental impairments were seen regardless of the type of infection -- whether it occurred in the brain, blood or intestines.

The study was conducted by Barbara J. Stoll, M.D., of the Emory University School of Medicine in Atlanta, Georgia and her colleague. Appearing in the November 17 "Journal of the American Medical Association," the study reported that 65 percent of a group of extremely low birth weight infants had developed at least one infection during their hospitalizations after birth. These infants were more likely to have an impairment than were infants who had not developed an infection.

"This study shows us that successfully treating an extremely low birth weight infant's infection does not automatically ensure that the infant will do well," said NICHD Director Duane Alexander, M.D. "Parents and health care workers need to monitor these children carefully as they grow, and be ready to provide them with developmental and educational services, if necessary."

According to the U.S. Centers for Disease Control and Prevention, there were 60,326 very low birth weight infants born in 2002, or 1.46 percent of the 4,021,726 total births for that year. Infants are classified as low birth weight if they are born weighing less than 2500 grams (about 5.5 pounds) and very low birth weight if they weigh less than 1500 grams (about 3.3 pounds). In the current study, the researchers analyzed the records of extremely low birth weight (ELBW) infants -- those weighing less than 1000 grams, or 2.2 pounds. Yearly statistics are not compiled on ELBW infants. Study co-author Rosemary Higgins, M.D., of NICHD's Pregnancy and Perinatology Branch, estimated that as many as 50 percent of newborns below 1500 grams may fall into the ELBW category.

The study enrolled infants weighing from 401 to 1000 grams at birth. In all, 6,093 infants were evaluated for this study. The infants were evaluated when they were between 18 and 22 months corrected gestational age -- equivalent to the age they would be had they been born at term. The researchers found that the majority of these infants (65 percent) had at least one infection during their stay in the hospital after birth.

According to Dr. Higgins, about 47 percent of the children with infections had some form of delay in development or a physical or mental impairment.

These impairments consisted of either cerebral palsy, a visual impairment, a hearing impairment, or were manifested as low scores on tests of infant mental development or motor skills.

Dr. Higgins added that although infants with infections were more likely to have such impairments, infants who did not have infections also had a high rate of impairment, at about 29 percent.

"This is a high risk, fragile population of infants," she said.

As expected, meningitis -- an infection of the membrane covering the brain and spinal cord -- was associated with neurological impairments. For example, in the group that had meningitis with or without sepsis (an infection of the blood) 38 percent had low scores for mental development, compared to 22 percent of the children who did not have an infection.

Children in this group were also more likely to have cerebral palsy (19 percent) than were children who did not have an infection (8 percent).

Moreover, children with infections that did not directly involve the nervous system were also more likely to have an impairment involving the nervous system. Of the infants who had sepsis alone, 37 percent had low mental development scores and 17 percent had cerebral palsy. Of the children without an infection, 22 percent had low mental development scores, and 8 percent had cerebral palsy.

Of the infants who had both sepsis and necrotizing enterocolitis (an intestinal infection), 42 percent received low mental development scores, compared to 22 percent who had not had an infection.

Dr. Higgins explained that before the current study, researchers had known that ELBW infants were more likely to experience problems with the brain and nervous system, but did not know the extent of the problems. This study is the first to show how widespread the problems are, and that they appear more often in children who have had an infection.

The study authors called for additional research to determine how infections might injure brain tissue in this group of infants, as well as research to prevent infection and to prevent such nervous system damage from occurring once an infection had occurred.

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