

SOUTHWESTERN NEWS

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UT SOUTHWESTERN SCIENTISTS DISCOVER LINK BETWEEN INFECTIONS IN MOTHERS AND BRAIN INJURIES IN BABIES

DALLAS – Nov. 12, 2002 – Scientists at UT Southwestern Medical Center at Dallas have unraveled a mysterious connection – a potential mechanism that links brain injuries in infants to an infection in the mother’s placenta.

Their findings, published in the October edition of *Pediatrics*, could eventually lead to diagnostic tests for infants and mothers that could help prevent brain injury.

“The most critical issue in preventing and treating brain injury in infants is figuring out where the damage begins and what triggers it,” said Dr. Jeffrey Perlman, professor of pediatrics at UT Southwestern and senior author of the study. “Our study opens a new pathway of understanding, but we still don’t have all the answers.”

The study reveals the link between brain injury that occurs during the perinatal period – immediately before and after birth – and an infection in the mother’s placenta, called chorioamnionitis, which causes fever, inflammation, and abnormally high heart rates in the unborn child.

“Our study revealed the cause of brain injury in infants is not as simplistic as initial studies indicated,” said Perlman, also professor of obstetrics and gynecology, and anesthesiology and pain management. “These findings bring us a small step closer to understanding how the brain is injured and could eventually lead to new strategies for controlling infection and, more importantly, for preventing brain injury.”

Earlier studies have pointed to lack of oxygen as the primary cause for neonatal brain injuries, including cerebral palsy. Brain injury during the perinatal period is one of the most common causes of severe, long-term neurologic deficit in infants and children. Each year, one in 1,000 babies is born with brain injury in the United States – about 4,000 annually.

The UT Southwestern researchers studied 61 full-term infants who were admitted to the

(MORE)

BRAIN INJURIES - 2

neonatal intensive care unit at Parkland Memorial Hospital over a two-year period between July 1999 and December 2001. They examined the babies' umbilical cord blood for infection and also conducted extensive neurological examinations twice in the first 24 hours of life.

"We discovered a significant correlation between the increased elevation of inflammation in the mother's placenta and a reduction in neurological function in infants," Perlman said. "This is the first time such a relationship has been established."

By measuring specific inflammation markers in cord blood at birth and then again at 12 to 14 hours of age, researchers discovered infants with higher levels were "floppy," or had poor muscle tone.

"The five infants with the highest level of biomarkers either had a brain dysfunction known as encephalopathy or seizures," said Dr. Octavio Ramilo, study collaborator and associate professor of pediatrics and microbiology.

Brain injuries in newborns usually result in weakness or paralysis, mental retardation and/or seizures. About half of the children suffering from brain injuries must use braces, walkers, or wheelchairs as they get older.

Other UT Southwestern contributors to the study were Dr. Abbot Laptook, professor of pediatrics, and obstetrics and gynecology; and Dr. Hasan Jafri, assistant professor of pediatrics. Dr. Lina Shalak, the principal author of the study, was a fellow in neonatal intensive care at UT Southwestern at the time of the study and is currently a pediatric resident at Children's Medical Center of Dallas.

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