Maternal obesity may influence brain development of premature infants

March 8 2012

Maternal obesity may contribute to cognitive impairment in extremely premature babies, according to a new study by researchers at Wake Forest Baptist Medical Center.

"Although in the past decade medical advances have improved the survival rate of babies born at less than seven months, they are still at very high risk for mental developmental delays compared with full-term infants," said Jennifer Helderman, M.D., assistant professor of pediatrics at Wake Forest Baptist and lead author of the study. "This study shows that obesity doesn't just affect the mother's health, but might also affect the development of the baby."

Published in the March issue of the journal *Pediatrics*, the study looked at 921 infants born before 28 weeks of gestation during 2002 to 2004 at 14 participating institutions. The researchers assessed the babies' placenta for infection and other abnormalities, interviewed the mothers and reviewed their medical records. At age 2, the children's cognitive skills were evaluated using the Mental Development Index (MDI) portion of the Bayley Scales of Infant Development, a commonly used measure.

The scientists found that both maternal obesity and lack of high school education were associated with impaired early cognitive function, as was pre-term thrombosis (blood clot) in the placenta.

"We weren't really surprised by the socioeconomic factors because it has

been repeatedly shown that social disadvantage predicts worse infant outcomes," Helderman said. "However, obesity is of particular interest because it is becoming more prevalent and it is potentially modifiable during the pre-conception period and pregnancy."

Obesity has been linked to inflammation, and inflammation can damage the developing brain, Helderman said. What isn't known is if the obesity-related inflammation in the mother is transmitted to the fetus.

"Few studies have addressed prenatal risk factors of cognitive impairment for infants born this prematurely. The long-term goal is to use information from studies like ours to develop treatments that prevent cognitive impairment in extremely premature babies," Helderman said.

Helderman's colleague, Michael O'Shea, M.D., section head of neonatology at Wake Forest Baptist, is currently conducting a study that follows these same babies into mid-childhood to determine long-term cognitive problems.

More than 30,000 extremely premature babies are born each year in the United States.

Provided by Wake Forest Baptist Medical Center