Medical Xpress

Babies born at 37 and 38 weeks are at higher risk for adverse health outcomes (Update)

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Babies considered "early-term," born at 37 or 38 weeks after a mother's last menstrual period, may look as healthy as full-term babies born at 39-41 weeks, but a new study published by University at Buffalo physicians in *JAMA Pediatrics* has found that many of them are not.

The study is considered the first population-based, countywide assessment of neonatal morbidity among early-term infants based on individual medical records in the U.S.

"Our results show the need for an increased awareness among health care providers that even though we consider babies born at 37 or 38 weeks almost term, they are still, to a large extent, physiologically immature," says Shaon Sengupta, MD, corresponding author and formerly a UB medical resident in the Department of Pediatrics and Women and Children's Hospital of Buffalo. She is currently doing a neonatal-perinatal medicine fellowship at Children's Hospital of Philadelphia.

The UB researchers found that these early-term babies were at significantly higher risk for adverse outcomes. They also found that birth by elective cesarean section pushed those risks even higher, from 9.7 percent risk of admission to neonatal intensive care with vaginal deliveries to 19 percent following cesarean section.

The research covered nearly 30,000 live births in Erie County (which includes the city of Buffalo) from Jan. 1, 2006 through Dec. 31, 2008.

In an accompanying editorial, William Oh of Brown University and Tonse N. K. Raju of the Eunice Kennedy Shriver National Institute of Child Health and Human Development, said that the findings "…have important implications for obstetric and neonatal care and research. The findings reinforce the concept that maturation is a continuum and any preset gestational age cannot be assumed to provide a clear separation between immaturity and mature."

The study was precipitated by observations among neonatologists that babies born at 37 or 38 weeks had more adverse health outcomes than those born at 39 to 41 weeks, according to Satyan Lakshminrusimha, MD, senior author on the study, associate professor of pediatrics in the UB School of Medicine and Biomedical Sciences and chief, division of neonatology at Women and Children's Hospital of Buffalo. He has worked in the hospital's Neonatal Intensive Care Unit (NICU) since 1996.

"We were seeing a significant number of infants born at 37 weeks who looked big and pretty healthy, but who, within a few hours of birth were developing low blood sugar, difficulty in breathing or needed antibiotics, necessitating admission to the neonatal intensive care unit," says Lakshminrusimha.

After evaluating admission patterns among newborn infants between 37 and 41 weeks of gestation at Women and Children's Hospital, Lakshminrusimha, Sengupta and colleagues found that these early-term infants were more likely to suffer some morbidity within a few hours of birth.

To see if these patterns were valid in a wider population, they undertook the larger, county-wide study, conducting an analysis of births at Women and Children's, Millard Fillmore Suburban, Sisters of Charity Hospital and Mercy Hospital, located either in the city of Buffalo or its nearby

suburbs.

These data showed similar patterns. Adverse outcomes experienced by the early term babies included hypoglycemia (4.9 percent versus 2.5 percent of full-term babies), admission to the neonatal intensive care unit (8.8 percent versus 5.3 percent, the need for respiratory support (2.0 percent versus 1.1 percent), the need for intravenous fluids (7.5 percent versus 4.4 percent) intravenous antibiotics (2.6 percent versus 1.6 percent) and mechanical ventilation or intubation, which was required in .6 percent of early term babies versus .1 percent in full-term babies.

"Although these early term babies appeared to be mature, providing a false assurance to clinical providers and parents, and they did well on the Apgar scores, they are nevertheless physiologically immature," notes Lakshminrusimha.

The data revealed, for example, that twice as many of these early term babies needed mechanical ventilation and the need for lung surfactant use was seven times higher than in term babies.

The data also show that early term babies delivered by cesarean section were at a higher risk—by 12.2 percent—for admission to the NICU compared with full-term babies and at 7.5 percent higher risk for morbidity compared with term births.

In particular, the study points out that cesarean delivery is a strong predictor of neonatal morbidity at early-term gestation. Lakshminrusimha notes that the need for respiratory support is increased for babies delivered by cesarean section who may retain their fetal lung fluid, since they do not experience the hormonal changes of labor, which clear the fluid from the lungs.

Sengupta launched the study as a UB medical resident in pediatrics

under Lakshminrusimha's mentorship. While small research projects are typically undertaken by medical residents, Sengupta was capable of a larger study due to her motivation, Lakshminrusimha says, and because she came to the UB residency program with a Master's in Public Health from Johns Hopkins University.

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