CP Risks Are Higher at 'Early' and 'Late' Term

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Among births that occur during the term and postterm range of 37-44 weeks' gestation, the risk of cerebral palsy is lowest at 40 weeks and highest at the "early" extreme of 37-38 weeks and the "late" extreme of 42 weeks or more, said Dr. Dag Moster of the University of Bergen, Norway, and his associates.

Preterm delivery is a well-established risk factor for CP, but there is scant information on CP risk within the term range, even though most cases of CP occur in children born at term. Dr. Moster and his colleagues examined the issue using data in a nationwide Norwegian registry covering 1,682,441 singleton live births at 37-44 weeks that took place between 1967 and 2001, as well as a medical registry of all the disabled people in the country born during the same period.

There were 1,938 infants in this cohort who were eventually diagnosed as having CP, for an overall prevalence of 1.15 cases per 1,000 live births (JAMA 2010;304:976-82). Delivery at 40 weeks was associated with the lowest CP risk, with a prevalence of 0.99 cases per 1,000 live births.

In comparison, the prevalence of CP at 37 weeks' gestation was 1.91 per 1,000 (for a relative risk of 1.9) and at 38 weeks was 1.25 per 1,000 (for a relative risk of 1.3). Similarly, the prevalence of CP at 42 weeks was 1.36 per 1,000 live births (for a relative risk of 1.4) and after 42 weeks was 1.44 per 1,000 live births (for a relative risk of 1.4).

Children with CP had lower mean birth weights (3,437 g) compared with children without CP (3,585 g) and smaller head circumferences (35.1 cm) compared with children without CP (35.3 cm). Children with CP were 82 times more likely to have had low Apgar scores (less than 4) and were eight times more likely to have been transferred to pediatric units after delivery. Results were essentially the same in a further analysis of the data after adjustment for possible confounders such as maternal age, marital status, and education level.

"One possible interpretation is that delivery too early or too late, even within the limited range of term and postterm births, increases the risk of CP.

"However, an equally plausible interpretation is that fetuses predisposed to CP have a disturbance in the timing of their delivery, which causes them to be more often delivered early or late," Dr. Moster and his associates said.

"This apparently happens with other fetal conditions: There is a U-shaped pattern in the risk of congenital anomalies with gestational age after 37 weeks. Since congenital anomalies are not caused by the timing of delivery, the most plausible explanation is reverse causation: Malformed infants experience disruptions in their time of delivery, with increased chance of delivery either earlier or later than 40 weeks," the researchers said.

"Although the forces that regulate timing of a normal delivery are poorly understood, it appears that the types of malformations most likely to disrupt the timing of delivery often involve cerebral function.

For example, anencephalic fetuses have a tendency to be born post term, children with Trisomy 18 to be born preterm or post term, and children with Down syndrome to be born early.

"It is possible that cerebral damage later expressed as CP similarly disrupts time of delivery," Dr. Moster and his associates said.

The lower birth weight and smaller head circumference among CP cases in this cohort "suggest that these children differ from non-CP infants even before birth," they added.

Dr. Moster and his associates emphasized that it would be incorrect to extrapolate from these study findings that intervening to alter the time of delivery could reduce the rate of CP. ■

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