The Burden of Childhood Asthma and Late Preterm and Early Term Births

PURPOSE OF THE STUDY. The goal of this study was to evaluate the association between gestational age at birth and the risk of subsequent development of childhood asthma.

STUDY POPULATION. The study population was derived from a clinical birth database of 45,030 infants born after 22 weeks’ gestation at a university hospital in Finland between 1989 and 2008. Women with live-born infants without asthma served as control subjects.

METHODS. This trial was a retrospective, observational, hospital-based birth case-controlled study in which data on 44,173 women with live-born infants were linked with data from the register for reimbursement for asthma medication for their offspring. Pregnancy factors consisting of 75 background items were recorded during pregnancy. Health care workers added information on pregnancy complications, pregnancy outcomes, and the neonatal period. The main outcome measure was asthma among the infants.

RESULTS. The study found that the risk of asthma was highest in children born before 32 weeks’ gestation compared with control subjects. There was also a significantly higher risk found for those born late preterm (33–36 weeks) and those born early term (37–38 weeks); these 2 groups contributed the most to the extra cases of asthma compared with the reference group of term infants. Delivery at ≥41 weeks was protective against developing asthma. The burden of asthma in offspring was associated mainly with early term deliveries, even though the relative risk of asthma was higher in infants born before 32 weeks. Maternal asthma and male gender had stronger effects on the risk of asthma in offspring born after 37 weeks.

CONCLUSIONS. The risk of asthma was 3.9-fold higher in children born at <32 weeks’ gestation compared with control subjects, and it remained high in those born up to 38 weeks. Delivery after 41 weeks seemed to protect against the development of asthma. The magnitude of the risk decrease depends on gestational age at birth.

REVIEWER COMMENTS. Reduction in risk of asthma development is a key goal of asthma management. This study confirmed previous reports of the association between preterm delivery and asthma in offspring. A novel finding is that the risk is still almost double in those born late preterm and that it remains significant even in those born early term compared with children born at term. This knowledge can help guide the avoidance of iatrogenic early term/late preterm deliveries, especially in pregnant women with asthma. A limitation of the study is that prenatal and environmental factors after birth, which are potential risk factors for asthma development in children, were not controlled. In addition, asthma severity was not taken into account.
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