Paediatrics

Prematurity associated with higher hospital admission rates in childhood

Children born preterm, even at 38 and 39 weeks' gestation, have increased hospital admission rates in the first ten years of life, a large population-based study has found.

Data were analysed on 1,018,136 singleton children born in England during 2005 and 2006 identified using national records. Children were followed up until the end of March 2015.

Information on hospital admissions was obtained from the Hospital Episode Statistics Admitted Patient Care (HES APC) records. These records were used because of concerns about data quality of A&E and outpatient attendances.

Hospital diagnoses were coded using the ICD-10 classification and the primary diagnosis code within the first episode of each admission was used to define the cause. These diagnoses were then grouped into broad categories.

The primary outcome was the total number of hospital admissions during childhood at the following ages: less than 1 year, 1-2 years, 3-4 years, 5-6 years, and 7-10 years.

Statistical modelling was used to determine the association between gestational age and hospital admission rates over time, adjusting for sociodemographic variables.

The cohort were followed up for 9,372,105 person-years, an average of 9.2 person-years per child. During the study period 52% of children were admitted on at least one occasion with 5% admitted five or more times.

Children born at less than 28 weeks' gestation had the highest admission rate (253/100 person-years), compared with those born at 40 weeks' gestation (28/100 person-years).

During infancy, the admission rate was six times higher in babies born at less than 28 weeks than for those born at 40 weeks, rate ratio (RR) 6.34 (95% CI: 5.80-6.85) and it was 10% higher for those born at 39 weeks compared with 40 weeks, RR 1.10 (95% CI: 1.08-1.11).

As children got older their admission rates fell. By 7-10 years of age, the RRs had decreased to 3.28 (95% CI: 2.82-3.82) for those born at less than 28 weeks and 1.06 (95% CI: 1.03-1.08) for those born at 39 weeks.

Most admissions were due to infections at all ages, especially during infancy. Respiratory and gastrointestinal problems also accounted for a high proportion of hospital admissions in the first two years of life.

The very premature group had persisting higher prevalence of accidental injuries throughout the whole study period and this may reflect neurodevelopmental and neurological problems.

The authors acknowledge that HES data are collected for accounting purposes and not designed to capture information for research.

Nevertheless, this is a large study and the findings confirm those from previous smaller studies and attempt to quantify the effect of prematurity.

The study authors conclude: 'Gestational age at birth is a strong predictor of childhood morbidity, with those born extremely preterm being at the greatest risk of hospital admission throughout childhood.'

They add: 'Neonatal, paediatric and primary care clinicians should be aware of the increased likelihood of infections, respiratory and gastrointestinal tract problems in children born even a small number of weeks early.'

The study findings should raise awareness of the potential problems even for children born at 39 weeks' gestation. I will be more proactive in seeking and managing infections in this group.

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Coathup V, Boyle E, Carson C et al. Gestational age and hospital admissions during childhood: population based, record linkage study in England (TIGAR study). *BMJ* 2020;371:m4075