Association of hospital admission for renal causes during childhood with renal pelvis dilatation identified during pregnancy: a prospective electronic birth cohort study

Lisa Hurt, Melissa Wright, Prof Sinead Brophy, Joanne Demmler, Prof Shantini Paranjothy,

Abstract

Background

Chronic kidney disease is a growing contributor to the global burden of non-communicable diseases. Early diagnosis and treatment in childhood can reduce the severity of kidney damage. It is not known whether renal pelvis dilatation (RPD) identified at the 18–20 weeks' fetal anomaly scan is a useful screening tool. We aimed to assess whether an association exists between this marker and renal hospital admissions during early childhood.

Methods

The population in this cohort study (Welsh Study of Mothers and Babies) was singleton babies born in Wales between Jan 1, 2009, and Dec 31, 2011, to consented mothers with validated scan data (n=22 045). We linked ultrasound data with data on hospital admissions from the patient episode database for Wales. The study population was classified into three groups: children with no RPD at the anomaly scan and no evidence of dilatation at further investigations; children with RPD and no further evidence of dilatation; and children with RPD and evidence of dilatation at later investigations. We used Cox regression to model time to first renal hospital admission in the first 5 years of life, adjusting for other predictors of hospital admissions (sex, maternal age, socioeconomic status, prematurity).

Findings

RPD was not associated with renal admissions when there was no dilatation in later pregnancy or post partum (n=109, adjusted hazard ratio [aHR] compared with children without RPD (n=21 057) 2·18, 95% CI 0·81–5·84). Children with RPD and later dilatation (n=29) were more than 20 times more likely to be admitted than were those without (aHR 27·84, 95% CI 15·22–50·93).

Interpretation

Although this was a large study in a representative population of pregnant women in Wales, obtaining records of radiological investigations after the fetal anomaly scan was challenging, and scans were not conducted or reported consistently. Clear protocols for reporting and further investigation of RPD are needed. Our results can be used to improve counselling of parents, and to contribute to the development of clear care pathways for antenatal screening programmes. Further studies should examine whether other characteristics at the fetal ultrasound scan (eg, unilateral versus bilateral findings, or associated parenchymal changes) could improve the detection of renal pathology.

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Contributors

SP is the principal investigator for the Welsh Study of Mothers and Babies, and was responsible for the coordination and management of the study. LH and MW did the statistical analysis. LH wrote the abstract and all authors have seen and approved the final version for publication.

Declaration of interests

We declare no competing interests.