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Long-term outcomes of urinary tract infection (UTI) in childhood: The LUCI study

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Background

Guidelines recommend the prompt diagnosis and treatment of UTI in young children to reduce the risk of renal scarring and possible long-term complications. However, the evidence for this association is weak and has been questioned. There is an urgent need to clarify this as the correct approach to urine sampling and diagnosis of UTI in children hinges on this association.

Main aim

Determine outcomes following UTI in childhood (<5years).

Approach

We used the Secure Anonymised Information Linkage (SAIL) Databank to access demographic, hospital, GP and microbiology data from children in Wales. Children with >1 microbiologically confirmed UTI (mcUTI) aged <5, were compared to those with no mcUTI. The primary outcome was renal scarring and secondary outcomes included hypertension, chronic kidney disease and renal failure. The primary analysis used multinomial regression and time to event models.

Results

A cohort of 159,201 children was defined. 11,099 (7.0%) had >1 mcUTI.

The overall prevalence of renal scarring in the cohort by age 7 was 0.16%; 1.26% in those with >1 mcUTI; 0.08% in those with no mcUTI. The unadjusted odds ratio (OR) was

16.62 (12.91-21.39) and adjusted 3.64 (2.57-5.14). Among the group with >1 mcUTI, predictors of renal scarring were VUR, younger age of first UTI, and greater number of UTIs <5.

Conclusion

UTI was associated with renal scarring even after adjusting for covariates.

The prevalence of renal scarring in children with >1 mcUTI was lower than expected. Possible explanations include poor coding in routine data, different patient populations or missed renal scarring diagnoses. We are currently validating our results using radiology data. If renal scarring diagnoses are being missed, a more proactive urine sampling and imaging strategy may be indicated. However, if renal scarring rates are low following UTI, this may not be necessary.

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