

Title

Effects of Antibiotics in Preventing Hospitalisations due to Respiratory Tract Infections in Children with Down's Syndrome

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ABSTRACT (400-word limit)

RATIONALE

Children with Down's Syndrome (DS) have increased rates of consultations and hospitalisations due to respiratory tract infections (RTIs) compared to controls. Despite this, there is little evidence on interventions to prevent or treat RTIs in this at-risk population. This study aims to estimate the impact of antibiotics on the risk of hospitalisation following a GP consultation for an RTI.

METHODS

A total of 992 children with DS aged 0-18 years and 4,874 matched controls were included in this retrospective cohort study using the CALIBER data source. Univariate and multivariate logistic regression was undertaken in children with and without DS to assess the effects of antibiotics on the risk of RTI-related hospitalisation in patients consulting for RTIs. Where significant protective effects were seen, the number needed to treat (NNT) to prevent one RTI-related hospitalisation were estimated. An alternative analysis using inverse probability of treatment weighting (IPTW) using propensity scores was also undertaken to estimate the effects of antibiotics in children with and without DS.

RESULTS

In children with DS who received an antibiotic on the same day as a consultation for an RTI, 1.8% [95% CI 1.3%-2.3%] had a RTI-related hospitalisation compared to 2.5% of those not prescribed an antibiotic [95% CI 1.9%-3.4%]. In children without DS consulting for an RTI and receiving an antibiotic, 0.6% [95% CI 0.4%-0.8%] had a RTI-related hospitalisation compared to 0.7% [95% CI 0.5%-1.0%] of those not prescribed an antibiotic. Multivariate analysis using adjusted logistic regression models found that antibiotics had a significant protective effect for infants (0-1 years) with DS (AOR 0.260; 95% CI 0.077-0.876) with an NNT of 11.9. However, univariate subgroup and IPTW analysis of infants found no significant protective effect (OR 0.319; 95% CI 0.100-1.016 and AOR 0.919; 95% CI 0.845-1.000) and there

were no significant findings in older children with DS or, by subtype of RTI when examining all ages together. For children without DS, there was no significant protective effect within any age group or within any sub-classification of RTI.

CONCLUSIONS

This study suggests that treating children with DS older than one year or any children without DS with antibiotics is not beneficial in preventing RTI-related hospitalisation. There was some evidence that antibiotics may be beneficial in preventing RTI-related hospitalisation in infants with DS, but this finding requires further investigation before definitive recommendations can be made.

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