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Prophylactic anti-staphylococcal antibiotics for cystic fibrosis

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Study design (if review, criteria of inclusion for studies)

Randomised trials of continuous oral prophylactic antibiotics (given for at least one year) compared to intermittent antibiotics given 'as required', in people with cystic fibrosis of any disease severity

List of included studies (4)

Chatfield 1991; Schlesinger 1984; Stutman 2002; Weaver 1994

Participants

People with CF, of any age, diagnosed on the basis of clinical criteria and sweat testing or genotype analysis.

Interventions

Continuous, oral, anti-staphylococcal antibiotic prophylaxis

Outcome measures

Adverse effects; Chrispin-Norman Score; Days in hospital (annualised rates); Days of additional antibiotics; Lung function; Number of children from whom H. influenzae isolated at least once; Number of children from whom P. aeruginosa isolated at least once; Number of children from whom S. aureus isolated at least once; Number of children receiving additional antibiotics; Number of children requiring admission (annualised rates); Shwachman score; Z score length (6 months to 3 years); Z score weight (6 months to 3 years)

Main results

Four studies were included, with a total of 401 randomised participants aged zero to seven years on enrolment; one study is ongoing. The two older included studies generally had a higher risk of bias across all domains, but in particular due to a lack of blinding and incomplete outcome data, than the two more recent studies. We only regarded the most recent study as being generally free of bias, although even here we were not certain of the effect of the per protocol analysis on the study results. Evidence was downgraded based on GRADE assessments and outcome results ranged from moderate to low quality. Downgrading decisions were due to limitations in study design (all outcomes); for imprecision (number of people needing additional antibiotics); and for inconsistency (weight z score). Fewer children receiving anti-staphylococcal antibiotic prophylaxis had one or more isolates of Staphylococcus aureus (low quality evidence). There was no significant difference between groups in infant or conventional lung function (moderate quality evidence). We found no significant effect on nutrition (low quality evidence), hospital admissions, additional courses of antibiotics (low quality evidence) or adverse effects (moderate quality evidence). There was no significant difference in the number of isolates of Pseudomonas aeruginosa between groups (low quality evidence), though there was a trend towards a lower cumulative isolation rate of Pseudomonas aeruginosa in the prophylaxis group at two and three years and towards a higher rate from four to six years. As the studies reviewed lasted six years or less, conclusions cannot be drawn about the long-term effects of prophylaxis.

Authors' conclusions

Antiâ€•staphylococcal antibiotic prophylaxis may lead to fewer children having isolates of Staphylococcus aureus, when commenced early in infancy and continued up to six years of age. The clinical importance of this finding is uncertain. Further research may establish whether the trend towards more children with CF with Pseudomonas aeruginosa, after four to six years of prophylaxis, is a chance finding and whether choice of antibiotic or duration of treatment might influence this.

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See also

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Keywords

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