Cochrane Database of Systematic Reviews - - Cochrane Review

Once-daily versus multiple-daily dosing with intravenous aminoglycosides for cystic fibrosis

Code: CD002009 **Year:** 2019 **Date:** 2012 - updated: 25 FEB 2019 **Author:** Smyth Alan R

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

All randomised controlled trials, whether published or unpublished, in which once-daily dosing of aminoglycosides has been compared with multiple-daily dosing in terms of efficacy or toxicity or both, in people with cystic fibrosis.

List of included studies (5)

Riethmueller 2001; Smyth 2005; Vic 1998; Whitehead 2002

Participants

People with CF, who have been diagnosed by sweat test or genetic testing or both, regardless of age or clinical severity.

Interventions

Once-daily dosing of intravenous aminoglycoside antibiotics

Outcome measures

Development of ototoxicity (after treatment); Mean change in body mass index; Mean change in FEF25â^'75; Mean change in weight/height %; Mean percentage change in FEV1; Mean percentage change in FVC; Percentage change in creatinine with treatment

Main results

We identified 15 studies for possible inclusion in the review. Five studies reporting results from a total of 354 participants (aged 5 to 50 years) were included in this review. All studies compared once-daily dosing with thrice-daily dosing. One cross-over trial had 26 participants who received the first-arm treatment but only 15 received the second arm. One study had a low risk of bias for all criteria assessed; the remaining included studies had a high risk of bias from blinding, but for other criteria were judged to have either an unclear or a low risk of bias.There was little or no difference between treatment groups in: forced expiratory volume in one second, mean difference (MD) 0.33 (95% confidence interval (CI) -2.81 to 3.48, moderate-quality evidence); forced vital capacity, MD 0.29 (95% CI -6.58 to 7.16, low-quality evidence); % weight for height, MD -0.82 (95% CI -3.77 to 2.13, low-quality evidence); body mass index, MD 0.00 (95% CI -0.42 to 0.42, low-quality evidence); or in the incidence of ototoxicity, relative risk 0.56 (95% CI 0.04 to 7.96, moderate-quality evidence). Once-daily treatment in children probably improved the percentage change in creatinine, MD -8.20 (95% CI -15.32 to -1.08, moderate-quality evidence), but showed no difference in adults, MD 3.25 (95% CI -1.82 to 8.33, moderate-quality evidence). The included trials did not report antibiotic resistance patterns or quality of life.

Authors' conclusions

Once- and three-times daily aminoglycoside antibiotics appear to be equally effective in the treatment of pulmonary exacerbations of cystic fibrosis. There is evidence of less nephrotoxicity in children.

https://doi.org//10.1002/14651858.CD002009.pub7

See also

Bhatt J, Jahnke N, Smyth AR. Onceâ€•daily versus multipleâ€•daily dosing with intravenous aminoglycosides for cystic fibrosis. Cochrane Database of Systematic Reviews 2019, Issue 9. Art. No.: CD002009. DOI: 10.1002/14651858.CD002009.pub7.

Keywords

Adolescent; Adult; Aminoglycosides; Anti-Bacterial Agents; Bacterial Infections; Child; Combined Modality Therapy; Drug Administration

Schedule; Infection; Intravenous; pharmacological_intervention; Respiratory Tract Diseases; Respiratory Tract Infections; Tobramycin; Exacerbation; Pseudomonas aeruginosa; Pseudomonas;