Cochrane Database of Systematic Reviews - - Cochrane Review

Standard versus biofilm antimicrobial susceptibility testing to guide antibiotic therapy in cystic fibrosis

Code: CD009528 **Year:** 2020 **Date:** 2012 - updated: 7 APR 2020 **Author:** Waters Valerie

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

Randomized controlled trials

List of included studies (2)

Moskowitz 2011; Yau 2014

Participants

Adults and children (with all levels of disease severity) with CF, who have P. aeruginosa isolated from respiratory specimens (sputum, throat swabs or bronchoalveolar lavage specimens).

Interventions

Biofilm antimicrobial susceptibility testing-driven therapy vs conventional antimicrobial susceptibility testing-driven therapy.

Outcome measures

Primary outcomes: FEV1, FVC, FEF25-75, number of pulmonary exacerbations, time between pulmonary exacerbations, time to subsequent exacerbation, adverse events (n of events, % patients withdrawing and % patients changing therapy) classified in mild, moderate and severe

Main results

The searches identified two multicentre, double-blind RCTs eligible for inclusion in the review with a total of 78 participants (adults and children); one RCT was undertaken in people who were clinically stable, the second was in people experiencing pulmonary exacerbations. Both RCTs prospectively assessed whether the use of biofilm antimicrobial susceptibility testing improved microbiological and clinical outcomes in participants with cystic fibrosis who were infected with Pseudomonas aeruginosa. The primary outcome was the change in sputum Pseudomonas aeruginosa density from the beginning to the end of antibiotic therapy. Although the intervention was shown to be safe, the data from these two RCTs did not provide evidence that biofilm susceptibility testing was superior to conventional susceptibility testing either in terms of microbiological or lung function outcomes. One of the trials also measured risk and time to subsequent exacerbation as well as quality of life measures and did not demonstrate any difference between groups in these outcomes. Both RCTs had an overall low risk of bias and the quality of the evidence using GRADE criteria was deemed to be moderate to high for the outcomes selected.

Authors' conclusions

The current evidence is insufficient to recommend choosing antibiotics based on biofilm antimicrobial susceptibility testing rather than conventional antimicrobial susceptibility testing in the treatment of Pseudomonas aeruginosa pulmonary infections in people with cystic fibrosis. Biofilm antimicrobial susceptibility testing may be more appropriate in the development of newer, more effective formulations of drugs which can then be tested in clinical trials.

https://doi.org//10.1002/14651858.CD009528.pub5

See also

Waters V, Ratjen F. Standard versus biofilm antimicrobial susceptibility testing to guide antibiotic therapy in cystic fibrosis. Cochrane Database of Systematic Reviews 2017, Issue 10. Art. No.: CD009528. DOI: 10.1002/14651858.CD009528.pub5

Keywords

Anti-Bacterial Agents; pharmacological_intervention; Respiratory Tract Infections; Respiratory Tract Diseases; Infection; Bacterial Infections; Exacerbation; Pseudomonas aeruginosa; Pseudomonas;