Cochrane Database of Systematic Reviews - - Cochrane Review

Shortâ€•acting inhaled bronchodilators for cystic fibrosis.

Code: CD013666 **Year:** 2022 **Date:** 2020 - updated: 12 APR 2022 **Author:** Smith S

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

Randomised controlled trials (RCTs) or quasiâ€•RCTs

Participants

Children and adults with CF

Interventions

Shortâ€•acting inhaled bronchodilators (Terbutaline, Inhaled Bronchodilator Therapy, Fenoterol, Salbutamol, Ipratropium Bromide). For this review 'inhaled' includes the use of pressurised metered dose inhalers (MDIs), with or without a spacer, dry powder devices and nebulisers.

Outcome measures

Clinical outcomes and safety. CF Pulmonary Exacerbation, Quality of Life, FEV1, CF Quality of Life, CF Questionnaire-Revised

Main results

11 trials from the systematic search, with 191 participants meeting inclusion criteria; three of these trials had three treatment arms. Eight trials compared shortâ€•acting inhaled betaâ€•2 agonists to placebo and four trials compared shortâ€•acting inhaled muscarinic antagonists to placebo. Three trials compared shortâ€•acting inhaled betaâ€•2 agonists to shortâ€•acting inhaled muscarinic antagonists. All were crossâ€•over trials with only small numbers of participants. Shortâ€•acting inhaled betaâ€•2 agonists versus placebo. All eight trials (six singleâ€•dose trials and two longerâ€•term trials) reporting on this comparison reported on forced expiratory volume in 1 second (FEV1), either as per cent predicted (% predicted) or L. Authors were able to combine the data from two trials in a metaâ€•analysis which showed a greater per cent change from baseline in FEV1 L after betaâ€•2 agonists compared to placebo (mean difference (MD) 6.95%, 95% confidence interval (CI) 1.88 to 12.02; 2 trials, 82 participants). Only one of the longerâ€•term trials reported on exacerbations, as measured by hospitalisations and courses of antibiotics. Only the second longerâ€•term trial presented results for participantâ€•reported outcomes. Three trials narratively reported adverse events, and these were all mild. Three singleâ€•dose trials and the two longer trials reported on forced vital capacity (FVC), and five trials reported on peak expiratory flow, i.e. forced expiratory flow between 25% and 75% (FEF25-75). One trial reported on airway clearance in terms of sputum weight. We judged the certainty of evidence for each of these outcomes to be very low, meaning we are very uncertain about the effect of shortâ€•acting inhaled betaâ€•2 agonists on any of the outcomes assessed. Shortâ€•acting inhaled muscarinic antagonists versus placebo: All four trials reporting on this comparison looked at the effects of ipratropium bromide, but in different doses and via different delivery methods. One trial reported FEV1 % predicted; three trials measured this in L. Two trials reported adverse events, but these were few and mild. One trial reported FVC and three trials reported FEF25-75. None of the trials reported on quality of life, exacerbations or airway clearance. The certainty of evidence for each of these outcomes was very low, meaning we are very uncertain about the effect of shortâ€•acting inhaled muscarinic antagonists on any of the outcomes we assessed. Shortâ€•acting inhaled betaâ€•2 agonists versus shortâ€•acting inhaled muscarinic antagonists. None of the three singleâ€•dose trials reporting on this comparison provided data we could analyse. The original papers from three trials report that both treatments lead to an improvement in FEV1 L. Only one trial reported on adverse events; but none were experienced by any participant. No trial reported on any of our other outcomes. The certainty of evidencewas very low, meaning we are very uncertain about the effect of shortâ€•acting inhaled betaâ€•2 agonists compared to shortâ€•acting inhaled muscarinic antagonists on any of the outcomes we assessed.

Authors' conclusions

All included trials in this review are small and of a crossâ€•over design. Most trials looked at very shortâ€•term effects of inhaled bronchodilators, and therefore did not measure longerâ€•term outcomes. The certainty of evidence across all outcomes was very low, and therefore we have been unable to describe any effects with certainty.

https://doi.org//10.1002/14651858.CD013666.pub2

See also

Smith S, Rowbotham NJ, Edwards CT. Shortâ€•acting inhaled bronchodilators for cystic fibrosis. Cochrane Database of Systematic

Reviews 2022, Issue 6. Art. No.: CD013666. DOI: 10.1002/14651858.CD013666.pub2. Accessed 25 July 2022.

Keywords

Adrenergic beta-Agonists; Adult; Albuterol; Bronchodilator Agents; Child; Salbutamol; Inhalation OR nebulised; Ipratropium; pharmacological_intervention; Respiratory System Agents; Anticholinergic Agents; Respiratory Tract Diseases;