Other Reviews - - Other Review

Comparison of Inhaled Antibiotics for the Treatment of Chronic Pseudomonas aeruginosa Lung Infection in Patients With Cystic Fibrosis: Systematic Literature Review and Network Meta-analysis.

Code: PM27692977 **Year:** 2016 **Date:** 2016 **Author:** Elborn JS

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

Systematic literature review and Bayesian network meta-analysis (NMA)

Participants

Randomized controlled trials comparing inhaled antibiotics (tobramycin, colistimethate sodium, aztreonam, and levofloxacin) for the treatment of chronic Pseudomonas aeruginosa lung infection in patients with cystic fibrosis (CF)

Interventions

Inhaled antibiotics (tobramycin, colistimethate sodium, aztreonam, and levofloxacin). Abbr. LIS= Levofloxacin inhalation solution; TIS= Tobramycin inhaled solution; TIP= Tobramycin inhaled powder

Outcome measures

Short-term (4 weeks) and long-term (24 weeks) outcomes : relative and absolute percent changes from baseline in forced expiratory volume in 1 second (FEV1%) predicted, change in P aeruginosa sputum density, respiratory symptoms score from the CF questionnaire-revised, hospitalization, additional antibiotics use, and study withdrawal rates.

Main results

Of the 685 articles identified, 7 unique studies were included in the 4 weeks' NMA and 9 unique studies were included in the 24 weeks' NMA. Aztreonam was predicted to result in the greatest numerically increase in FEV1% predicted at 4 weeks, whereas LIS were predicted to be numerically greater than colistimethate sodium, tobramycin inhaled solution (TIS), and tobramycin inhaled powder (TIP). However, all of the 95% credibility intervals (CrIs) of these comparisons included zero. At 24 weeks, none of the treatments was significantly more effective than LIS. The estimates for the mean change from baseline to 24 weeks in relative FEV1% versus LIS was -0.55 (95% CrI, -3.91 to 2.80) for TIS, -2.36 (95% CrI, -7.32 to 2.63) for aztreonam, -2.95 (95% CrI, -10.44 to 4.51) for TIP, and -9.66 (95% CrI, -15.01 to -4.33) for placebo. Compared with LIS, the odds ratio for hospitalization at 24 weeks was 1.92 (95% CrI, 1.01-3.30) for TIS, 2.25 (95% CrI, 1.01-4.34) for TIP, and 3.16 (95% CrI, 1.53-5.78) for placebo, all statistically worse than LIS. P aeruginosa sputum density scores, additional use of antipseudomonal antibiotics, and study withdrawal rates were comparable among all inhaled antibiotics at all times.

Authors' conclusions

Based on this NMA, the analyses for many of the outcomes did not provide significant evidence to indicate that the other approved inhaled antibiotics were more effective than LIS for the treatment of chronic P aeruginosa lung infection in patients with CF. Study withdrawal rates seemed to be comparable among these inhaled antibiotics.

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See also

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Keywords

Anti-Bacterial Agents; Bacterial Infections; Infection; Inhalation OR nebulised; Intranasal; nebuliser; non pharmacological intervention - devices OR physiotherapy; ological_intervention; Pseudomonas aeruginosa; Pseudomonas; Respiratory Tract Diseases; Respiratory Tract Infections; Aztreonam; Colistin; levofloxacin; Tobramycin; Exacerbation; Staphylococcus aureus; Aminoglycosides; Monobactams;

Cephalosporins; Quinolones; other anti-bacterial agents;