

primary studies - published RCT

Effects of treadmill exercise versus Flutter(R) on respiratory flow and sputum properties in adults with cystic fibrosis: a randomised, controlled, cross-over trial.

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

Open-label randomised crossover pilot trial

Participants

16 adults with CF and *P. aeruginosa* infection. Median [IQR] age was 29.5 [24.5-32.5], mean \pm SD forced expiratory volume in 1 second (FEV1) was 52.4 ± 14.7 % predicted.

Interventions

Participants were randomised to sequentially receive 14 days of inhaled aztreonam lysine plus IV colistimethate (AZLI+IV), or dual IV antibiotics (IV+IV).

Outcome measures

Primary outcome was absolute change in % predicted FEV1. Other outcomes evaluated changes in quality of life, bacterial load and the lung microbiota.

Main results

The difference between mean change in lung function at day 14 between AZLI+IV and IV+IV was +4.6% (95% CI 2.1-7.2, $p=0.002$). The minimum clinically important difference of the Cystic Fibrosis Revised Questionnaire (CFQ-R) was achieved more frequently with AZLI+IV (10/12, 83.3%) than IV+IV (7/16, 43.8%), $p=0.05$. No differences were observed for modulation of serum white cell count, C-reactive protein or sputum bacterial load. Microbiome compositional changes were observed with IV+IV (Bray-Curtis $r(2)=0.14$, $p=0.02$), but not AZLI+IV ($r(2)=0.03$, $p=0.64$).

Authors' conclusions

In adults with CF and *P. aeruginosa* infection experiencing an acute pulmonary exacerbation, AZLI+IV improved lung function and quality of life compared to the current standard treatment. These findings support the need for larger definitive trials of inhaled antibiotics in the acute setting.

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See also

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Keywords

Anti-Bacterial Agents; Aztreonam; Bacterial Infections; Colonization; Infection; Inhalation OR nebulised; pharmacological_intervention; Pseudomonas aeruginosa; Pseudomonas; Respiratory Tract Diseases; Respiratory Tract Infections; Monobactams; Powders; Tobramycin; Aminoglycosides; Exacerbation;