primary studies - published RCT

Intravenous versus oral antibiotics for eradication of Pseudomonas aeruginosa in cystic fibrosis (TORPEDO-CF): a randomised controlled trial.

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

Multicentre, parallel group, open-label, randomised controlled trial

Participants

72 cystic fibrosis centres (70 in the UK and two in Italy). Eligible participants were older than 28 days with an isolate of P aeruginosa (either the first ever isolate or a new isolate after at least 1 year free of infection). Participants were excluded if the P aeruginosa was resistant to, or they had a contraindication to, one or more of the trial antibiotics; if they were already receiving P aeruginosa suppressive therapy; if they had received any P aeruginosa eradication therapy within the previous 9 months; or if they were pregnant or breastfeeding.

Interventions

A web-based randomisation assigned patients to 14 days intravenous ceftazidime and tobramycin or 12 weeks oral ciprofloxacin. Both were combined with 12 weeks inhaled colistimethate sodium. Randomisation was stratified by centre and because of the nature of the interventions, blinding was not possible.

Outcome measures

The primary outcome was eradication of P aeruginosa at 3 months and remaining free of infection to 15 months. Primary analysis used intention to treat (powered for superiority). Safety analysis included patients who received at least one dose of study drug.

Main results

Between Oct 5, 2010, and Jan 27, 2017, 286 patients were randomly assigned to treatment: 137 to intravenous antibiotics and 149 to oral antibiotics. 55 (44%) of 125 participants in the intravenous group and 68 (52%) of 130 participants in the oral group achieved the primary outcome. Participants randomly assigned to the intravenous group were less likely to achieve the primary outcome, although the difference between groups was not statistically significant (relative risk 0·84, 95% CI 0·65-1·09; p=0·18). 11 serious adverse events occurred in ten (8%) of 126 participants in the intravenous antibiotics group and 17 serious adverse events in 12 (8%) of 146 participants in the oral antibiotics group.

Authors' conclusions

Compared with oral therapy, intravenous antibiotics did not achieve sustained eradication of P aeruginosa in a greater proportion of patients with cystic fibrosis and was more expensive. Although there were fewer hospitalisations in the intravenous group than the oral group during follow-up, this confers no advantage over oral treatment because intravenous eradication frequently requires hospitalisation. These results do not support the use of intravenous antibiotics to eradicate P aeruginosa in cystic fibrosis.

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See also

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Keywords

Bacterial Infections; Infection; Pseudomonas aeruginosa; Pseudomonas; Respiratory Tract Diseases; Respiratory Tract Infections; Intravenous;