primary studies - published RCT

Effect of tonicity of nebulised colistin on chest tightness and pulmonary function in adults with cystic fibrosis.

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

double blind RCT

Participants

27 adult patients with cystic fibrosis and a mean forced expiratory volume in one second (FEV1) of 54% predicted (range 24-98) were studied.

Interventions

They inhaled a nebulised solution of hypertonic, isotonic, and hypotonic colistin over three consecutive days in random order

Outcome measures

Measurements of chest tightness, using a visual analogue scale (VAS), and FEV1 were recorded before and 0, 15, 30, 60, and 90 minutes following inhalation. The solution preferred by each patient was determined at the end of the three days.

Main results

All tonicities caused a significant fall in FEV1 % predicted and an increase in chest tightness, with no differences between the solutions. However, the mean (SE) time to the maximum fall in FEV1 % predicted was significantly different between the solutions (hypertonic 7.8 (2.1) min, isotonic 19.2 (5.5) min, and hypotonic 34.2 (5.9) min) with a mean difference (95% CI) between hypotonic and hypertonic solutions of 28.04 (14.6 to 41.5) min, between isotonic and hypertonic solutions of 12.0 (-0.1 to 24.1) min, and between hypotonic and isotonic solutions of 15.6 (1.8 to 29.4) min. Positive correlations existed for the maximum fall in FEV1 % predicted between the hypertonic and isotonic solutions (r = 0.62, p

Authors' conclusions

All tonicities of colistin caused equal symptoms of chest tightness and reduction in pulmonary function. It is recommended that the patient is challenged with nebulised colistin before prescription of the drug and that the challenge is preceded by an inhaled bronchodilator. Most of the patients preferred the isotonic or hypotonic solutions. The isotonic solution reflects a fall in FEV1 representative of all the solutions. The fall in FEV1 to the hypotonic solution occurred over a longer period and may be better tolerated by some patients.

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See also

Thorax. 1997 Jul;52(7):656-8.

Keywords

Adolescent; Adult; Anti-Bacterial Agents; Colistin; hydration; Hypertonic Solutions; Inhalation OR nebulised; Isotonic Solutions; pharmacological_intervention; Bacterial Infections; Respiratory Tract Infections; Infection; other anti-bacterial agents; Respiratory System Agents; Respiratory Tract Diseases;