primary studies - published RCT

Deposition of carbenicillin aerosols in cystic fibrosis: effects of nebuliser system and breathing pattern.

Code: PM3406919 **Year:** 1988 **Date:** 1988 **Author:** Newman SP

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

Randomised cross-over study.

Participants

7 adults with CF. Age 22 to 48 years. On regular aerosolised antibiotics. FEV1 16%-57% predicted.

Interventions

aerosols delivered from two commercially available nebuliser systems (the Turret nebuliser plus Maxi compressor and the Inspiron nebuliser plus Traveller compressor) during tidal breathing. The aerosol mass median diameters were 3.2 and 7.3 microns. In addition, the aerosol from the Turret-Maxi nebuliser system was inhaled by a combination of tidal and deep breathing. two minutes' breathing via a mouthpiece

Outcome measures

deposition patterns of carbenicillin aerosols

Main results

After two minutes' breathing via a mouthpiece the mean (SEM) deposition in the lungs was 15.60 (1.5) mg carbenicillin with the Turret nebuliser plus Maxi compressor, but only 6.54 (1.09) mg with the Inspiron nebuliser plus Traveller compressor; the distribution pattern within the lung was significantly more peripheral with the former nebuliser system. These differences may be ascribed partly to the smaller droplet size from the Turret system and partly to the higher nebulisation rate from the more powerful Maxi compressor. Tidal plus deep breathing produced a further small but non-significant increase in lung aerosol deposition. A seventh patient, who failed to complete the trial, had little aerosol deposited in his lungs because he inhaled through his nose.

Authors' conclusions

These results emphasise the importance of correct selection of nebuliser equipment for antibiotic aerosol treatment.

http://www.mrw.interscience.wiley.com/cochrane/clcentral/articles/118/CN-00208118/frame.html

See also

Thorax YR: 1988 VL: 43 DE: RCT NO: 4

Keywords

Anti-Bacterial Agents; carbenicillin; Inhalation OR nebulised; nebuliser; non pharmacological intervention - devices OR physiotherapy; pharmacological_intervention; Bacterial Infections; Respiratory Tract Infections; Respiratory Tract Diseases; Infection; Pseudomonas aeruginosa; Pseudomonas; Penicillins;