primary studies - published RCT

A comparison of peak sputum tobramycin concentration in patients with cystic fibrosis using jet and ultrasonic nebulizer systems. Aerosolized Tobramycin Study Group.

Code: PM9106575 **Year:** 1997 **Date:** 1997 **Author:** Eisenberg J

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

multicenter, open-label, randomized, crossover study.

Participants

10 tertiary care, university-affiliated, teaching hospitals in the United States. 68 patients recruited from 10 CF Foundation centers and who were at least 8 years of age, had a diagnosis of CF, and expectorated daily sputum. No control subjects enrolled.

Interventions

Each patient received one administration of aerosolized tobramycin from each of the three nebulizer systems in random order. Each administration was separated by a minimum of 48 h. The two jet nebulizer systems tested were the Sidestream (Medic-Aid; Sussex, UK), and the Pari LC (Pari Respiratory Equipment; Richmond, Va), with a DeVilbiss Pulmoaide compressor (DeVilbiss Health Care; Somerset, Pa), both administering 300 mg tobramycin in 5 mL of 1/4 normal saline solution (NS). Patients were also administered 600 mg tobramycin in 30 mL of 1/2 NS with the UltraNeb 99/100 (DeVilbiss).

Outcome measures

Sputum and serum tobramycin concentration and pulmonary function were monitored. An adequate peak sputum tobramycin concentration was defined as > 128 microg/g sputum at any of three time points (10, 60, or 120 min) after completion of treatments.

Main results

The peak tobramycin concentrations in expectorated sputum were 687+/-663 microg/g (mean+/-SD) with the Pari LC and 489+/-402 microg/g with the Sidestream. Adequate peak sputum tobramycin concentration was achieved in 93% of the patients with the Sidestream, and in 87% of the patients with the Pari LC. Peak sputum concentrations were found to be substantially higher when patients received tobramycin administered with the UltraNeb 99/100, 1,498+/-1,331 microg/g with 30% of patients having levels exceeding 2,000 microg/g. Serum tobramycin concentrations were

Authors' conclusions

Adequately high sputum tobramycin concentrations were documented in sputum in > 85% of patients following the administration of 300 mg/5 mL formulation of tobramycin aerosolized by the two jet nebulizer delivery systems, Sidestream and Pari LC. The single tobramycin administration delivered by these two systems is well-tolerated.

http://dx.doi.org/10.1378/chest.111.4.955

See also

Chest. 1997 Apr;111(4):955-62.

Keywords

Adolescent; Adult; Anti-Bacterial Agents; Child; Inhalation OR nebulised; nebuliser; non pharmacological intervention - devices OR physiotherapy; pharmacological_intervention; Tobramycin; Bacterial Infections; Respiratory Tract Infections; Respiratory Tract Diseases; Infection; Aminoglycosides;