

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.

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## See also

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# 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;