primary studies - published RCT

Nebulized gentamicin in children with cystic fibrosis: Enhancing antibiotic lung deposition by increasing flow rate and fill volume.

Code: CN-00195584 **Year:** 1997 **Date:** 1997 **Author:** Mallol J

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

randomized, cross-over trial

Participants

adolescents with cystic fibrosis (CF)

Interventions

For System A, gentamicin 80 mg labeled with 4 mCi Tc 99m DTPA, diluted to 2 ml were placed in a jet nebulizer (JN) driven by an airflow of 5.5 l/min. For System B, the volume fill was 4 ml and the flow 10 l/min.

Outcome measures

The mass median diameter (MMD) of aerosol, aerosol volume released by the two systems, intrathoracic deposition, lung deposition

Main results

The mass median diameter (MMD) of aerosol in System A and B was 4.4 m and 3.1 m, respectively. The nebulizer in System B released twice the volume (3.47 plus or minus 0.04 ml) of gentamicin solution compared to System A (1.71 plus or minus 0.03 ml) during similar nebulization time. Intrathoracic deposition was 4.0 plus or minus 2.7% for System A and 7.1 plus or minus 2.8% for System B. Lung deposition in patients inhaling from System A and B was 3.2 plus or minus 1.8% and 6.2 plus or minus 2.1%, respectively (p

Authors' conclusions

This study demonstrates that operating conditions of the JN can markedly affect the dose of antibiotic deposited in the lung. using greater volume fill and higher flow rate markedly increases the intra pulmonary deposition of antibiotic in adolescents.

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See also

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Keywords

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