



NEBULIZED ANTIBIOTIC-THERAPY VERSUS INSTILLED ANTIBIOTIC-THERAPY IN PATIENTS WITH TRACHEOBRONCHITIS

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Background and Importance

Ventilator-associated tracheobronchitis (VAT) is an intermediate stage between colonization of respiratory tract and Ventilator-associated pneumonia (VAP). Some patients with VAT progress to develop VAP. VAT could be treated with topical antibiotic-therapy alone

- ✓ **Vibrating mesh nebulizers** were included in Intensive Care Unit (ICU) in September 2022. These devices can be used with the ventilation systems, allowing nebulized antibiotic-therapy.
- ✓ Previously, antibiotics were administered by instillation.



Aim and Objectives

- 🎯 To assess whether **nebulized** antibiotic-therapy in VAT is associated with a decrease incidence of VAP compared to **instilled** antibiotic-therapy.

Materials and Methods

- ✓ Retrospective
- ✓ Non-interventional
- ✓ Longitudinal



Critical patients with VAT:



- ✓ Treated with instilled antibiotic-therapy from January 2021 to August 2022
 - ✓ Treated with nebulized antibiotic-therapy from September 2022 to June 2024.
- Patients receiving intravenous antibiotic therapy were excluded.

Variables analyzed: age, sex, date of admission to hospital, date of admission to ICU, date of diagnosis of VAT, nebulized/instilled antibiotic-therapy, duration of nebulized/instilled antibiotic, microorganism treated, patients progress to VAP and date of diagnosis of VAP.

Nebulized and instilled antibiotic-therapy was compared using the χ^2 test.

Results

Thirty-eight ICU admissions of thirty-four patients were included. **73.5% were male**. Age(median) was **65 years** (IQR:52.8-78). Days from ICU admission to development of VAT (mean \pm SD) was 44 \pm 5.8 days.

Mean duration of antibiotic-therapy was 7 \pm 5.9 days.
44.7%(n=17) used nebulized antibiotics and 55.3%(n=21) used instilled antibiotics.

Antibiotics	Instilled	Nebulized
Amikacin	14.3%	11.8%
Cefotaxime	9.5%	0.0%
Ceftazidime	9.5%	0.0%
Colistin	23.8%	35.3%
Gentamicin	23.8%	5.9%
Tobramycin	4.8%	5.9%
Vancomycin	14.3%	35.3%
Levofloxacin	0.0%	5.9%

Microorganisms treated were:

- ✓ Pseudomonas aeruginosa (26.3%)
- ✓ Methicillin-sensitive Staphylococcus aureus (18.4%)
- ✓ Serratia marcescens (13.2%)
- ✓ Stenotrophomonas maltophilia (13.2%)
- ✓ Methicillin-resistant Staphylococcus aureus (7.9%)
- ✓ Others (21%)

VAP occurred an average of 4.8 \pm 1.2 days after TAV diagnosis.
VAP was caused by the same microorganism in four of the five patients.

Five patients with VAT developed VAP, three received inhaled therapy and two received nebulized therapy (p=1).

Conclusion and Relevance

- ✓ Progression of VAP in patients with VAT treated with nebulized and instilled antibiotic-therapy is low.
- ✓ In this study, there is no difference between instilled and nebulized antibiotic-therapy.

