Etiology, clinical course, and antimicrobial resistance of bacterial agents of ventilator-associated tracheobronchitis in surgical and medical intensive care units in Hamedan, Iran

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Background: Ventilator-associated tracheobronchitis (VAT) is an important cause of mortality and morbidity in the hospitalized patients in the ICUs. Appropriate and early onset antibiotic therapy leads to better outcome. This study was conducted to determine the frequency of bacterial agents and antimicrobial resistance, clinical course and response to treatment of VAT in the hospitalized patients in a surgical and a medical intensive care unit (ICU) of teaching hospitals in Hamedan, Iran.

Methods & Materials: In a cross-sectional study in 2014, hospitalized patients who had the criteria for the diagnosis of VAT in medical ICU of Sina Hospital and surgical ICU of Besat Hospital in Hamedan were enrolled. Tracheal samples of patients were investigated in terms of smear, culture and antibiotic sensitivity. Furthermore, demographic characteristics, underlying diseases, clinical aspects, progression to pneumonia and response to the treatment were collected by checklist. Data were analyzed by using SPSS-16.

Results: In this study, 69 patients were included, of whom, 28 patients (40%) were female and 21 (41%) were male. The incidence of VAT was 6/44%. The mean age of the patients was 21/98 years. The most isolated bacteria consisted of Acinetobacter baumannii (30/4%), Pseudomonas aeruginosa (20/3%), and Enterobacter (13%). In surgical ICU, Pseudomonas aeruginosa and Enterobacter spp. were the most common isolates. In medical ICU, Acinetobacter baumannii and Klebsiella pneumoniae were the most common bacteria. Over all, 63/3% of the isolates were multidrug resistant, out of which 71% related to the medical ICU and 29% to the surgical ICU. All the isolates of Acinetobacter baumannii and Citrobacter freundii were multidrug resistance. Also, 23 patients (33/3%) progressed to pneumonia. The mean time of response to treatment was 4/7 days, and 27/5% of the patients were discharged after tracheostomy. Thirty-eight patients (98.6%) died in spite of antimicrobial therapy.

Conclusion: Multidrug resistant pathogens are common causes of VAT. A high proportion of VAT patients lead to pneumonia and death. Considering the difference between the kind of pathogens and antibiotic resistance in different ICUs, it is necessary to utilize the intended data of each region for defining the appropriate empirical treatment protocol.

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