The Mortality Rate of Multi-drug Resistant *Acinetobacter Baumannii* Pneumonia Treated with Colistin Based Regimen: A Comparison of Sulbactam and Carbapenems

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**Background:** *Acinetobacter baumannii* (*A. baumannii*) is an important nosocomial pathogen with high mortality rate up to 49%. Respiratory tract infection is the most common cause. The trend of multi-drugs resistant (MDR) *A. baumannii* is increasing and threatening the rate of successful treatment. Current recommendations for treatment of MDR *A. baumannii* pneumonia are colistin based regimens (colistin plus carbapenems or sulbactam). Nonetheless, no previous study has compared the mortality rate of these two antibiotic regimens.

**Objective:** To compare mortality rate in MDR *A. baumannii* pneumonia patients treated with colistin plus carbapenems versus colistin plus sulbactam.

**Methods:** This prospective cohort study was conducted in hospitalized patients diagnosed of pneumonia with positive sputum culture for MDR *A. baumannii* at Phramongkutklao Hospital. The patients were randomized into 2 groups of treatment: colistin plus carbapenems versus colistin plus sulbactam. The patients were followed from July 2016 to September 2017. Primary end point was mortality rate. Secondary end points included length of stay, ventilator-dependence, and factor associated with mortality.

**Results:** One hundred and eighty-two patients were included: (92 colistin plus sulbactam and 90 colistin plus carbapenems). Demographic data were similar in both groups, except for the underlying conditions (cirrhosis and stroke). Overall mortality rate of patients with MDR *A. baumannii* pneumonia at 7, 14, and 28 days were 24.2%, 37.4%, and 53.3%, respectively. There was higher mortality rate in the colistin plus carbapenems group: at 7 days (19.6% vs 28.9% p = 0.142), 14 days (34.8% vs 40%, p = 0.467), and 28 days (51.1% vs 55.6%, p = 0.546). Length of stay and ICU day were not different. However, ventilator-dependent day was lower in the colistin plus sulbactam group (22.08+ 18.53 vs 41.92+40.56, p = 0.042). Complications of treatment such as acute kidney injury were not different (35.9% vs 35.6%, p = 0.965). In multiple logistic regression, factors associated with mortality rate in 28 days were gout (adjusted HR, 2.711; p = 0.022), APACHEII score >20 (adjusted HR, 2.503; p < 0.001), and septic shock (adjusted HR, 3.518; p < 0.001).

**Conclusion:** MDR *A. baumannii* pneumonia patients have a high mortality rate. Treatments of these 2 regimens were not significantly different in mortality rate. Predictors for 28-day mortality of patients with MDR *A. baumannii* pneumonia were gout, high APACHEII score (> 20), and septic shock.

**Keywords:** MDR *A. baumannii* pneumonia, Phramongkutklao Hospital, Mortality rate, Colistin based regimen