Carbapenem

Carbapenems are antibiotics used for the treatment of infections known or suspected to be caused by multidrug-resistant (MDR) bacteria. Their use is primarily in people who are hospitalized.

Like the penicillins and cephalosporins, they are members of the beta lactam class of antibiotics, which kill bacteria by binding to penicillin-binding proteins and inhibiting cell wall synthesis. They exhibit a broader spectrum of activity compared to cephalosporins and penicillins. Their effectiveness is less affected by many common mechanisms of antibiotic resistance than other beta lactams.

Carbapenem antibiotics were originally developed at Merck & Co. from the carbapenem thienamycin, a naturally derived product of Streptomyces cattleya.

Concern has arisen in recent years over increasing rates of resistance to carbapenems, as there are few therapeutic options for treating infections caused by carbapenem-resistant bacteria (such as the carbapenem-resistant Enterobacteriaceae and Klebsiella pneumoniae.

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ventilator-associated pneumonia (VAP) and hospital-acquired pneumonia (HAP) induced by Stenotrophomonas maltophilia (SM) and Klebsiella pneumoniae (KP) and compared differences between two bacteria in mortality, duration of ventilator use, length of stay, and risk factors for infection.

This study aimed to evaluate the prognosis and to find risk factors of SM-HAP/VAP versus KP-HAP/VAP in the intensive care unit (ICU).

This retrospective cohort study included patients admitted to the ICU between June 2019 and June 2021 and diagnosed with SM-HAP/VAP or KP-HAP/VAP. The primary outcome was 28-day mortality.

Ninety-two HAP/VAP patients (48 with SM-HAP/VAP and 44 with KP-HAP/VAP) were included. The 28-day mortality was 16.7% (8/48 patients) in SM-HAP/VAP and 15.9% (7/44 patients) in KP-HAP/VAP (P = 0.922). After adjustment for potential confounders, the hazard ratios for 28-day mortality in SM-HAP/VAP were 1.3 (95% CI:0.5-3.7), 1.0 (95% CI:0.4-3.0), 1.4 (95% CI:0.5-4.0), and 1.1 (95% CI:0.4-3.4), respectively.

The risk factors of Stenotrophomonas maltophilia-hospital-acquired pneumonia/ventilator-associated pneumonia versus Klebsiella pneumoniae-hospital-acquired pneumonia/ventilator-associated pneumonia might be the artificial airway, ventilator use, gastric tube placement, acid suppressant and antibiotics (especially carbapenem) [1)].

Carbapenem-resistant Enterobacteriaceae

Carbapenem-resistant Enterobacteriaceae.

Carbapenem-resistant Klebsiella pneumoniae

Carbapenem-resistant Klebsiella pneumoniae

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Chen S, Zou D. Prognosis of hospital-acquired pneumonia/ventilator-associated pneumonia with Stenotrophomonas maltophilia versus Klebsiella pneumoniae in intensive care unit: A retrospective cohort study. Clin Respir J. 2022 Aug 31. doi: 10.1111/crj.13537. Epub ahead of print. PMID: 36045483.