Antimicrobial Activity of Ceftaroline Combined with Avibactam Tested Against Bacteria Collected from Patients with Acute Bacterial Skin and Skin Structure Infections in USA Medical Centers (2011)

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Abstract

Background: Ceftaroline, the active form of ceftaroline furoate, is a β-lactam antibiotic with a broad spectrum of activity, including recently emerging resistance. Avibactam is a novel non-β-lactamase inhibitor currently in clinical development. This study aimed to assess the in vitro activity of ceftaroline-avibactam against a large number of isolates collected from acute bacterial skin and skin structure infections in USA medical centers.

Methods: A total of 6,648 isolates were consecutively collected in 3601 medical centers in 51 states of the USA during 2011. Isolates were sent to the coordinator laboratory (JMI Laboratories) and were tested for susceptibility to ceftaroline-avibactam (avibactam at fixed 4 µg/mL). Conclusions: Ceftaroline-avibactam was active against 87.5% of staphylococci (CoNS; 340), viridans group streptococci (VGS; 264) and Enterobacteriaceae (1,233). Highest ceftaroline-avibactam MIC values were observed against Enterobacteriaceae (MIC50/90, 0.5/1 µg/mL). Ceftaroline-avibactam was also active against CoNS and viridans group streptococci (MIC50/90, 0.5/1 µg/mL). Ceftaroline-avibactam was also active against all MRSA (MIC50/90, 0.5/1 µg/mL). Ceftaroline-avibactam was also active against strains expressing carbapenemases and β-lactamases.

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Results: The most frequently isolated organisms were Escherichia coli (2,898; 43.5%), Klebsiella pneumoniae (1,233; 18.5%), and Staphylococcus aureus (1,089; 16.3%). Beta-lactamase producing strains were also isolated. Ceftaroline-avibactam MIC values were below the breakpoints established by CLSI for Enterobacteriaceae (MIC50, ≤0.12 µg/mL) and β-lactamase producing staphylococci (MIC50, ≤0.5 µg/mL) when breakpoints established by CLSI.

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