Ceftaroline—An Anti-MRSA Cephalosporin and Its Implications for Singapore

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Abstract

Introduction: Ceftaroline is a fifth-generation cephalosporin with activity against methicillin-resistant Staphylococcus aureus (MRSA) that was recently launched in Singapore. It received approval from the United States (US) Food Drug Administration (FDA) and European Commission for the treatment of adult patients with community-acquired pneumonia (CAP) and complicated skin and soft tissue infections (cSSTI). This study aimed to review current published data and determine its clinical role, particularly in the local setting. Materials and Methods: A literature review on published articles in English on ceftaroline, focusing in particular on clinical trials and other clinical reports. Susceptibility testing was also performed on a limited sample of local MRSA and Streptococcus pneumoniae isolates. Results: Ceftaroline has an extensive spectrum of activity, including coverage of MRSA and multidrug-resistant S. pneumoniae. However, it has limited activity against non-fermenting Gram-negative bacteria and is susceptible to hydrolysis by extended spectrum beta-lactamases. It is only available for intravenous delivery, with a reconstituted stability of just 6 hours, rendering it unavailable for use for outpatient antibiotic therapy. Clinical trials demonstrate non-inferiority compared to first-line comparators in the treatment of CAP and cSSTI. Published case reports/series suggest a potential greater role in the treatment of MRSA bacteremia and endocarditis. No resistance was found among local archived MRSA and S. pneumoniae isolates. Conclusion: We believe ceftaroline will occupy primarily niche roles for culture-directed treatment of various infections—in particular those caused by MRSA—until further clinical trial data become available. A variety of factors render it less useful or appealing for empirical treatment of CAP or healthcare-associated infections.

Key words: Antimicrobial agent, Bacteremia, Pharmacodynamics, Pharmacokinetics, Vancomycin hetero-resistant Staphylococcus aureus