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Editorial

Cefepime, A New Generation Antibiotic

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Cefepime is a fourth-generation cephalosporin antibiotic. It has an extended spectrum of activity against Gram-positive and Gram-negative bacteria, with greater activity against both types of organisms than third-generation agents. Studies suggested that cefepime may prove to have a valuable carbapenem-sparing option for empirical treatment of serious Gram-negative infections. Cefepime is useful for treating infections caused by Enterobacteriaceae. Cefepime has entered clinical trials to assess safety and efficacy in patients with complicated urinary tract infections. Further results will help establish susceptibility [1]. The proposed broth microdilution and disk diffusion ranges for Cefepime were approved by Subcommittees on Antimicrobial Susceptibility Testing at the June 2017 and January 2019 meetings, and ensure that clinical laboratories can reliably and reproducibly assess appropriate assay performance of cefepime. Efforts to limit resistance development in Gram-negative pathogens recognize the importance of developing new "carbapenem-sparing" options as Empirical Therapy for Xtended-Spectrum-Lactamases (ESBL)-producing Enterobacteriaceae [2]. Cefepime is often safe and efficacious even in high doses when administered as an extended or continuous infusion. Therapeutic drug monitoring is warranted in special populations, including patients with critical illness, renal insufficiency, and underlying neurological disorders. In these cases, monitoring is suggested to avoid underdosing and to prevent adverse neurological effects due to an accumulation of cefepime in patients with neurological conditions or renal insufficiency [3]. Cefepime is an effective antimicrobial option for the treatment of urinary tract infections, particularly those caused by Extended-Spectrum β-Lactamases (ESBL). There may be potential uses for cefepime/enmetazobactam for the treatment of reproductive tract infections, abdominal infections and neonatal sepsis. However, additional non-clinical and clinical studies are required before the use in these settings. It should be noted, however, that available clinical data for this drug remains limited to one Phase III trial, and further data informing clinical use will be welcome [4].

Furthermore, cefepime was not associated with adverse outcomes compared to carbapenems, and there is evidence to support the use of cefepime as a safe treatment strategy, particularly in clinically stable patients without initial renal impairment or increased susceptibility to neurological adverse events. Fewer neurological adverse events were reported in patients receiving cefepime versus those receiving carbapenems (5.2% vs 21.0%). The overall length of hospital stay was shorter for survivors taking cefepime [5]. Careful attention should be paid when administering cefepime to patients with end-stage renal disease. Patients showing signs of encephalopathy should not be on cefepime any longer, and more aggressive measures may be taken, such as prompt hemodialysis, assessment of cefepime blood levels, and Electroencephalogram (EEG) to monitor for signs of seizures. Prolonging hemodialysis in patients with signs of cefepime neurotoxicity can pose a danger for more serious sequelae, such as status epilepticus. Close monitoring of patients at high risk of developing adverse events from cefepime administration can ensure patient safety and well-being [6]. The use of cefepime as a safe treatment strategy, particularly in clinically stable patients without initial renal impairment or increased susceptibility to neurological adverse events. There is further evidence that cefepime is a useful carbapenem-sparing agent. Results indicate that cefepime treatment may not be associated with a negative impact on relevant clinical outcomes, including mortality, recurrent infections, and length of hospital stay. These findings present further evidence to support treatment with cefepime as a safe strategy, particularly in clinically stable patients without initial renal impairment or increased susceptibility to neurological adverse events. Randomized controlled trials should be conducted to validate these findings [5].

As a Urologist, I welcome every progress and innovation that helps patients and health providers.

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