Susceptibility rates of P. aeruginosa and Acinetobacter spp. Collected worldwide (2015) HS SADER, DJ FARRELL, RK FLAMM, RN JONES JMI Laboratories, North Liberty, Iowa, USA

Amended Abstract

Background: WCK 5222 consists of cefepime (FEP) combined with zidebactam (ZID), a biacyclohexadepsipeptide with a broad-spectrum Pseudomonas aeruginosa, due to its

Introduction

Zidebactam is a monobactam that has been under investigation for a possible new parenteral antimicrobial activity against many bacterial species, including mortality in Pseudomonas aeruginosa. Zidebactam is a parenteral fourth-generation semisynthetic monobactam with broad-spectrum activity against aerobic and

Methods

S. pneumoniae isolates from 146 medical centers (21 countries) in 2015 by the SENTRY Antimicrobial Surveillance Program (SASP) and susceptibility (S) tested by a reference broth microdilution method confirming FEP (ZID 1:1 or 1:0.5 ratios) and comparator agents.

Results: FEP was very active against P. aeruginosa (MIC ≤ 0.25 µg/mL in 32/35.5% isolates, 4.7% resistance, and 4.5% susceptibility). FEP was also active against Acinetobacter spp. from all centers (98.9-100% susceptibility). FEP was very active against P. aeruginosa from all centers (96.8% susceptible, 99.9%), P. aeruginosa a.

Success

S. pneumoniae isolates from 146 medical centers (21 countries) in 2015 by the SENTRY Antimicrobial Surveillance Program (SASP) and susceptibility (S) tested by a reference broth microdilution method confirming FEP (ZID 1:1 or 1:0.5 ratios) and comparator agents.

Results: FEP was very active against P. aeruginosa with MICs ≤ 0.12 µg/mL (14/16.3%, 0.5% resistant, and 98.7% susceptible). FEP was also active against Acinetobacter spp. from all centers (99.7% susceptible, 99.9%). FEP was very active against P. aeruginosa from all centers (99.7% susceptible, 99.9%).

Conclusions

Susceptibility testing MIC values were determined using Clinical and Laboratory Standards Institute (CLSI) broth microdilution (Etest) as per CLSI document M07-A10. The combination of cefepime (WCK 5222) for both MICs ≤ 0.12 µg/mL and MIC > 0.5 µg/mL were tested in both each and the inoculum density was monitored by color counts. QC ranges and interpretive criteria for the comparator compounds were established (CLSI M100-2015). The tested MIC criteria included the following: FEP, WCK 5222, ZID (MIC ≤ 0.12 µg/mL), and tazobactam (MIC > 0.5 µg/mL).

Organism collection

A total of 1,291 P. aeruginosa and 69 Acinetobacter spp. isolates were consecutively collected from 14 medical centers (21 countries) as part of the SENTRY Antimicrobial Surveillance Program. All isolates were collected in 2015, except those from Brazilian laboratories which were collected in 2013. Isolates were collected from medical centers located in the United States (US) and rates from 35 medical centers. (Table 4). The most active compounds tested against P. aeruginosa were COL (MIC ≤ 0.12 µg/mL against Acinetobacter spp. (Table 2).

The results indicate that P. aeruginosa isolates from different global settings are highly susceptible to the most active agents tested, including FEP, WCK 5222, ZID, and tazobactam, with 97.4% susceptible to FEP, 96.8% susceptible to WCK 5222, 99.7% susceptible to ZID, and 99.7% susceptible to tazobactam. The high level of susceptibility to these agents highlights the potential utility of these compounds for the treatment of P. aeruginosa infections, especially in settings with high levels of resistance to other antimicrobial agents.

Table 1. Activity of cefepime-zidebactam 1:1, cefepime-zidebactam 1:2, and cefepime and zidebactam tested against P. aeruginosa and Acinetobacter spp.

Table 3. Activity of cefepime-zidebactam 1:1, cefepime-zidebactam 1:2, and cefepime alone tested against P. aeruginosa and Acinetobacter spp.

Acknowledgments

This study was sponsored by Wockhardt UK Ltd.

References

1. S. pneumoniae isolates from 146 medical centers (21 countries) in 2015 by the SENTRY Antimicrobial Surveillance Program (SASP) and susceptibility (S) tested by a reference broth microdilution method confirming FEP (ZID 1:1 or 1:0.5 ratios) and comparator agents.

Results: FEP was very active against P. aeruginosa with MICs ≤ 0.12 µg/mL (14/16.3%, 0.5% resistant, and 98.7% susceptible). FEP was also active against Acinetobacter spp. from all centers (99.7% susceptible, 99.9%). FEP was very active against P. aeruginosa from all centers (99.7% susceptible, 99.9%).

Conclusions

Susceptibility testing MIC values were determined using Clinical and Laboratory Standards Institute (CLSI) broth microdilution (Etest) as per CLSI document M07-A10. The combination of cefepime (WCK 5222) for both MICs ≤ 0.12 µg/mL and MIC > 0.5 µg/mL were tested in both each and the inoculum density was monitored by color counts. QC ranges and interpretive criteria for the comparator compounds were established (CLSI M100-2015). The tested MIC criteria included the following: FEP, WCK 5222, ZID (MIC ≤ 0.12 µg/mL), and tazobactam (MIC > 0.5 µg/mL).

Organism collection

A total of 1,291 P. aeruginosa and 69 Acinetobacter spp. isolates were consecutively collected from 14 medical centers (21 countries) as part of the SENTRY Antimicrobial Surveillance Program. All isolates were collected in 2015, except those from Brazilian laboratories which were collected in 2013. Isolates were collected from medical centers located in the United States (US) and rates from 35 medical centers. (Table 4). The most active compounds tested against P. aeruginosa were COL (MIC ≤ 0.12 µg/mL against Acinetobacter spp. (Table 2).

The results indicate that P. aeruginosa isolates from different global settings are highly susceptible to the most active agents tested, including FEP, WCK 5222, ZID, and tazobactam, with 97.4% susceptible to FEP, 96.8% susceptible to WCK 5222, 99.7% susceptible to ZID, and 99.7% susceptible to tazobactam. The high level of susceptibility to these agents highlights the potential utility of these compounds for the treatment of P. aeruginosa infections, especially in settings with high levels of resistance to other antimicrobial agents.

Table 1. Activity of cefepime-zidebactam 1:1, cefepime-zidebactam 1:2, and cefepime alone tested against P. aeruginosa and Acinetobacter spp.

Table 3. Activity of cefepime-zidebactam 1:1, cefepime-zidebactam 1:2, and cefepime alone tested against P. aeruginosa and Acinetobacter spp.

Acknowledgments

This study was sponsored by Wockhardt UK Ltd.