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Introduction

- Delafloxacin in an enzootic fowl typhoid (ET) antimicrobial that was approved in 2015 for the treatment of community-acquired upper respiratory tract infections (CARTI).
- The present study in microorganism technology (MOT) for delafloxacin and comparator agents determined for CARTI pathogens, including pneumococcus, influenzae, parainfluenzae, catarrhalis, and others.
- The study was conducted in 2014-2018 at 363 US medical centers.

Materials and Methods

- A total of 41,575 S. pneumoniae, 2,928 H. influenzae, and 63 M. catarrhalis isolates were collected from community-acquired respiratory tract infections (CARTI) during 2014-2018 from 363 centers.
- Each isolate was identified by catalase test and Gram-stain, and antibiotic susceptibility testing was conducted at JMI Laboratories.
- Other antimicrobials tested included levofloxacin and moxifloxacin (not tested in the study).
- Distribution of resistant phenotypes by census division

Table 1. Activity of delafloxacin, levofloxacin, and moxifloxacin against β-LEV-R, levofloxacin resistant; BL, erythromycin-resistant; MDR, multidrug-resistant (amoxicillin-clavulanate, erythromycin, and tetracyline-NS); PEN-NS, penicillin nonsusceptible; S. pneumoniae – resistance determining region (QRDR) was examined to identify the mutations in

Results

- The activities of the 3 antimicrobials against CARTI pathogens are shown in Table 1.
- For S. pneumoniae, 0.015/0.03 mg/L of delafloxacin was active for levofloxacin resistance (β-LEV-R).
- S. pneumoniae isolates with levofloxacin resistance (MIC >4 mg/L) had a delafloxacin MIC50 value of 0.25 mg/L.
- Delafloxacin was active against MDR S. pneumoniae isolates that were NS to 3 or more first-line agents.
- The activity of delafloxacin against various resistant phenotypes, including levofloxacin-, moxifloxacin-, and penicillin-resistant S. pneumoniae is shown in Table 1 for 363 centers.
- Table 2. Percentage of phenotypes by census division

Conclusions

- Delafloxacin was active against MDR S. pneumoniae isolates that were NS to the agents commonly used as treatments for CARTI (erythromycin, penicillin/sulbactam, and tetracycline).
- Levofloxacin resistance was more frequent than delafloxacin resistance in S. pneumoniae (4.7%).
- Levofloxacin resistance in H. influenzae was 6.2%.
- These data support delafloxacin as a potential treatment for CARTI.

Acknowledgements

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References

Clinical and Laboratory Standards Institute (2016). CLSI M24-A2, Standard for antimicrobial susceptibility testing of infrequently isolated or fastidious bacteria. Wayne, PA.
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Figure 1 Delafloxacin MIC distribution for CARTI pathogens

Figure 2 S. pneumoniae resistant phenotypes by census division

Table 2. Percentage of phenotypes by census division

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