Poster #P124

[illegible] β-lactam/β-lactamase inhibitor combinations [illegible]

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Introduction

- Inducible AmpC resistance is caused by the derepression of the chromosomal AmpC in the presence of a -lactam and limits the use of these agents to treat infections caused by Enterobacterales species known to produce these enzymes (AmpC producers).
- Novel -lactam/ -lactamase inhibitors (BL/BLIs), such as meropenem-vaborbactam, ceftazidime-avibactam, and imipenem-relebactam, display activity against isolates producing serine-carbapenemases, extended-spectrum -lactamases, and AmpC enzymes.
- In this study, we evaluated the activity of novel BL/BLIs against a collection of AmpC producers collected in US hospitals during 2021.

Materials and Methods

- A total of 1,252 organisms of Enterobacterales species known to overexpress AmpC enzymes were consecutively collected in 31 US hospitals during 2021.
  - AmpC-producing species included in this study are displayed in Figure 1.
  - Isolate frequency by infection source is displayed in Figure 2.
  - Only 1 isolate per patient episode was included.
- Isolates were susceptibility tested against meropenem-vaborbactam, ceftazidime-avibactam, and comparator agents using the reference broth microdilution method as described by the Clinical and Laboratory Standards Institute (CLSI) M07 (2018) document.
  - Vaborbactam was tested at a fixed concentration of 8 mg/L.
  - Avibactam and relebactam were tested at a fixed concentration of 4 mg/L.
- Quality control (QC) was performed according to the CLSI M100 (2022) criteria.
  - All QC MIC results were within acceptable ranges.
- Categorical interpretations for all comparator agents were those criteria found in the CLSI M100 (2022), or the US Food and Drug Administration (FDA) website.

Conclusions

- Infections caused by AmpC-producing species often are challenging to treat.
- Understanding the activity of new BL/BLIs is critical, as the use of cefepime and meropenem can lead to resistance.
- Meropenem-vaborbactam, imipenem-relebactam, and ceftazidime-avibactam displayed good activity against AmpC producers.
  - When analyzing carbapenem-nonsusceptible or cefepime-resistant isolates, meropenem-vaborbactam was slightly more active and also more potent than other BL/BLI combinations.

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