Purpose

The role of piperacillin/tazobactam in ampC producing bacteria remains unclear due to their instability nature in the presence of induced ampC beta-lactamase. The objective of this study was to compare clinical outcomes between piperacillin/tazobactam and cefepime in patients with bloodstream and/or respiratory infections due to Enterobacter spp., Serratia spp., Citrobacter spp., or Morganella morganii (ESCPM).

Methods

This single center, retrospective cohort study included patients admitted between January 2012 and June 2020. To be included, ESCPM isolates must exhibit an ampC inducible phenotype resistant to first-generation cephalosporins and susceptibility to third-generation cephalosporins, piperacillin/tazobactam, and carbapenems. The primary outcome was early clinical failure and secondary outcomes were 30-day mortality and 30-day readmission. A 1:1 nearest neighbor propensity score matching was performed to minimize differences in severity of illness and regression analysis to identify independent risk factors for early clinical failure.

Results

Of the 283 patients meeting inclusion criteria, a propensity score matching yielded 81 matched pairs. Early clinical failure occurred in 14 (17.3%) patients in the piperacillin/tazobactam group and 12 (14.8%) patients in the cefepime group ($p = .83$). Thirty-day mortality occurred in 8 (9.9%) patients in the piperacillin/tazobactam group and 12 (14.8%) patients in the cefepime group ($p = .47$). Thirty-day readmission occurred in 14 (17.3%) patients in the piperacillin/tazobactam group and 18 (22.2%) patients in the cefepime group ($p = .55$).

Conclusion

This study suggests that piperacillin/tazobactam is an appropriate empiric treatment when used in patients with bloodstream and/or respiratory infections due to ampC inducible ESCPM bacteria. There was no statistical difference in early clinical failure, 30-day mortality, and 30-day readmission rates between piperacillin/tazobactam and cefepime.