Use of piperacillin/tazobactam and meropenem in Danish ICU patients.

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Introduction

Severe infections including sepsis and septic shock often require admission to the intensive care unit (ICU). Early empirical treatment with broad-spectrum antibiotics is considered standard of care in these patients. We aimed to describe the use of the two broad-spectrum antibiotics piperacillin/tazobactam and meropenem in a broad ICU population admitted to the Department of Intensive Care at Copenhagen University Hospital - Rigshospitalet in Denmark.

Methods

We prospectively screened all patients admitted to the Department of Intensive Care at Copenhagen University Hospital -Rigshospitalet, Denmark from 1 November 2022 to 23 January 2023. Patients were eligible for inclusion if they received piperacillin/tazobactam and/or meropenem upon admission to the ICU or during admission in the ICU. Data were collected using RedCap and included data on demographic and baseline characteristics, source of infection, use of life support, antibiotic resistance, daily use of antibiotics including piperacillin/tazobactam and meropenem, length of stay in ICU and in hospital, readmissions, mortality. The primary outcome was 90-day mortality. Data will be presented descriptively, i.e. categorical variables will be presented as numbers (%) with 95% confidence intervals, and continuous variables will be presented as medians with interquartile ranges.

Results

Data collection will be completed by 22 April 2023. Preliminary results: 286 patients have been admitted to the ICU in inclusion period. Of these, 184 (64%) received piperacillin/tazobactam and/or meropenem. Our cohort consisted of 72 (39%) women and 112 (61%) men. A total of 80 (28%) received piperacillin/tazobactam, 76 (27%) received meropenem, and 28 (10%) received both agents within 90 days. 11 patients (14%) who received piperacillin/tazobactam, died during their admission in the ICU. The mortality in ICU for patients who received meropenem and for those who received both agents were 14 (18%), and 4 (14%) respectively.

Conclusion

In this preliminary report, 64% of ICU patients admitted to a general large Danish ICU received piperacillin/tazobactam and/or meropenem upon ICU admission; 28% received piperacillin/tazobactam, 27% received meropenem, and 10% received both agents within 90 days. The findings will inform the design of a randomized clinical trial comparing meropenem vs. piperacillin/tazobactam in ICU patients with sepsis – the “Empirical Meropenem vs. Piperacillin/Tazobactam for Adult Patients with Sepsis (EMPRESS) trial”.