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Outcomes and risk factors for mortality in community-onset bacteremia caused by extended-spectrum beta-lactamase-producing Escherichia coli, with a special emphasis on antimicrobial therapy.

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Abstract

BACKGROUND:

Although extended-spectrum beta-lactamase (ESBL)-producing Escherichia coli has emerged as a significant pathogen, there is little information regarding treatment outcomes in community-onset bacteremia due to ESBL E. coli. The purpose of this study was to evaluate treatment outcomes of community-onset bacteremia caused by ESBL-producing E. coli and the factors associated with mortality.

METHODS:

A retrospective cohort study was performed, including 92 adult patients with community-onset bacteremia caused by ESBL-producing E. coli.

RESULTS:

The 30-day mortality rate was 10.9% (10/92). Independent risk factors for mortality were underlying liver disease and severity of illness (e.g., high Pitt bacteremia score, the presence of severe sepsis or septic shock; $p < 0.05$). Mortality in patients receiving inappropriate initial antimicrobial therapy was not significantly higher than mortality in those receiving appropriate empirical antimicrobial therapy (10.9 vs 10.7%; $p = 0.975$), if antimicrobial therapy was adjusted appropriately according to susceptibility results. Carbapenems, piperacillin/tazobactam, fluoroquinolones, and amikacin were the most effective antibiotics for community-onset bacteremia caused by ESBL-producing E. coli, although susceptibility profiles confirmed that alternatives to carbapenems are limited. Of 68 isolates in which the ESBLs and their molecular relationships were studied, all isolates produced ESBLs from the CTX-M family (CTX-M-14, 30 isolates; CTX-M-15, 22; and other CTX-M, 16).

CONCLUSIONS:

In patients with community-onset bacteremia caused by ESBL-producing E. coli, severe sepsis and underlying liver disease were significantly associated with mortality, and a delay in appropriate antimicrobial therapy was not associated with a higher mortality if therapy was adjusted appropriately according to the susceptibility results.

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