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Paper Poster Session

Best practices of hospital antimicrobial stewardship interventions

Alternatives to carbapenems in ventilator-associated pneumonia due to ESBL-producing Enterobacteriaceae: a retrospective observational cohort.

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Background: In 2010, EUCAST changed recommendations for the interpretation of antibiograms of ESBL-producing *Enterobacteriaceae* (ESBL-PE), allowing prescription of third-generation cephalosporins, or betalactam/betalactamase inhibitor combinations as alternatives to carbapenems. We evaluated frequency and factors associated with prescription of alternatives in adults with ESBL-PE ventilator-associated pneumonia (VAP).

Material/methods: Between 2010 and 2015, all 56 consecutive patients exhibiting ESBL-PE VAP in our ICU were included in a retrospective cohort study.

Results: Our patients were predominantly male (71%), with median age of 62.5 years (range: 33-83). Upon VAP onset, the median SAPS II was 45 (range: 17-89), and 35 patients exhibited shock. Sixteen ESBL-PE strains (29%) were susceptible to at least one alternative. Twenty-three patients (41%) received empirical alternatives. Fifty patients (89%) experienced clinical cure, 21 (91%) treated with empirical alternatives, and 29 (88%) treated with empirical carbapenems ($p=0.99$). Empirical antibiotic treatment was appropriate in 13 patients (57%) treated with alternatives, and 33 (100%) treated with carbapenems ($p<0.001$). After antibiogram results were obtained, a definitive treatment was prescribed in 52 patients, with an alternative to carbapenems in 15 patients (29%). Four patients treated with empirical carbapenems received definitive alternatives. Eleven patients treated with empirical alternatives continued to receive alternatives as definitive treatment, despite VAP due to ESBL-PE with intermediate susceptibility to alternatives in 8 patients. Factors associated with empirical prescription of an alternative rather than a carbapenem were older age (66 ± 12 vs 60 ± 11 years, $p=0.03$), McCabe score ≥ 2 (79% vs 45%, $p=0.006$), and absence of prior ESBL-PE colonization (30% vs 6%, $p=0.03$). Factors associated with definitive prescription of an alternative were polymicrobial infection (60% vs 24%, $p=0.02$), ESBL-PE susceptibility to at least one alternative (53% vs 19%, $p=0.02$), empirical prescription of an alternative (73% vs 27%, $p=0.004$), adequate initial empirical treatment (100% vs 76%, $p=0.045$).

Conclusions: In our cohort of adults with ESBL-PE VAP, prescriptions of alternatives as empirical treatment were frequent and led to numerous inadequate initial treatments. Alternatives were prescribed as definitive treatment in almost one third of patients. One approach to promote prescription of alternatives to carbapenems could be systematic performance of susceptibility testing on ESBL-PE colonization strains reducing proportion of inadequate empirical treatment.