Characteristics and risk factors of treatment failure with intravenous tigecycline monotherapy among adult patients with severe Clostridioides difficile infection: results of a single-centre, observational cohort study

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Background: Severe Clostridium difficile infection (sCDI) poses significant morbidity, mortality worldwide. Tigecycline has potent in vitro activity against C. difficile and the current ESCMID guideline recommends it as an alternative for sCDI (grade C-III). Although recent studies reported on successful applications, authors also documented therapeutic failures. Our aim was to analyse characteristics and risk factors of treatment failure with intravenous tigecycline monotherapy among adult patients hospitalized for sCDI.

Materials/methods: A single-center, observational cohort study of patients receiving tigecycline for ≥48 hours between January, 2014–October, 2018 at our centre was executed. Data were collected by reviewing medical charts, diagnosis and disease severity were determined following the current ESCMID guideline. Primary outcome was treatment failure, defined as symptom persistence, introduction of additional anti-CDI therapy or death during therapy. Secondary outcomes were in-hospital mortality and relapse, colectomy and complication (sepsis, ileus, toxic megacolon) rates. Mann–Whitney and Fisher’s tests were used, independent predictors of failure were identified using logistic regression.

Results: Altogether 110 patients (median age 75.0±14.4 years, 50.9% men) were included, 69/110 (62.7%) had treatment success and 41/110 (37.3%) had failure. Median starting days from admission (8.0±7.0 vs. 3.5±5.3, p=0.01) and durations of tigecycline therapy differed significantly (10.0±2.0 vs. 8.5±5.0, p=0.01). Patients with failure frequently had chronic heart (72.5 vs. 92.7%, p=0.01) and pulmonary diseases (18.8 vs. 41.5%, p=0.01), shorter symptom durations (12.0±14.0 vs. 7.0±9.8 days, p=0.01) and higher ICU admittance rates (10.1 vs. 34.1%, p=0.01). In addition, total parenteral nutrition (20.3 vs. 46.3%, p=0.01) and vasopressor support (15.9 vs. 36.6%, p=0.02) were commonly administered among them. All-cause mortality was lower among successful cases (7.2 vs. 75.6%, p<0.01), CDI-specific mortality (1.5 vs. 34.1%, p=0.37), in-hospital relapse (4.3 vs. 4.9%, p=1.0) and sepsis (13.0 vs. 26.8%, p=0.07) rates were similar. Among patients with failure, ileus (7.2 vs. 26.8%, p=0.01), toxic megacolon (1.4 vs. 24.4%, p=0.01) were prevalent, and colectomy (0 vs. 12.2%, p<0.01) was frequently needed. Chronic pulmonary disease, duration of therapy, ileus, total parenteral nutrition were independent predictors of failure in regression modelling.

Conclusions: Our data suggests that sCDI cases with higher risk for tigecycline monotherapy failure might be identifiable by some contributing factors.