



INTISARI

Latar Belakang: Peningkatan resistansi bakteri, khususnya *difficult-to-treat resistance* (DTR), menyulitkan penatalaksanaan infeksi berat seperti sepsis. *Difficult-to-treat resistance* merupakan fenotipe *intermediate* atau resistan terhadap semua antibiotik yang dilaporkan dalam kategori β -laktam (termasuk karbapenem dan kombinasi *β -lactamase inhibitor*) dan fluorokuinolon, sehingga meningkatkan risiko kegagalan terapi empiris dan mortalitas. Faktor risiko, seperti riwayat penggunaan antibiotik, tindakan medis/operasi dalam 90 hari terakhir, penggunaan *device* invasif, dan perawatan di ruang intensif dapat berperan dalam munculnya DTR. Identifikasi faktor risiko yang berperan penting dalam kejadian bakteremia DTR di RS Dr. Sardjito menjadi krusial untuk upaya pencegahan dan pengendalian.

Tujuan: Mengevaluasi faktor risiko bakteremia *multidrug-resistant - difficult-to-treat resistance* pada pasien sepsis di RS Dr. Sardjito.

Metode: Penelitian dilakukan dengan desain kasus-kontrol pada pasien dewasa sepsis dengan bakteremia *multidrug-resistant* (MDR) (Januari 2021-Desember 2024). Subjek dengan hasil kultur patogen polimikrobia atau data tidak dicantumkan lengkap sesuai variabel yang diteliti, dieksklusi. Kelompok kasus adalah pasien bakteremia MDR-DTR dan kontrol adalah bakteremia MDR lain. Faktor risiko yang dianalisis, meliputi riwayat penggunaan antibiotik dan tindakan medis/operasi dalam 90 hari terakhir dan penggunaan *device* invasif. Analisis menggunakan uji *Chi-square* dan *Fisher's exact, odds ratio* (OR) bivariat dan multivariat, dengan $p < 0,05$ dianggap bermakna secara statistik.

Hasil: Sebanyak 120 pasien (60 bakteremia MDR-DTR dan 60 bakteremia MDR lain) dianalisis. Mayoritas subjek berusia 45-64 tahun, dan $\geq 50\%$ memiliki komorbid dan imunokompromais. Sebagian besar memiliki riwayat penggunaan antibiotik (82,5%) dan antibiotik paling banyak digunakan adalah sefalosporin (51,5%). Organisme MDR terbanyak adalah *Acinetobacter baumannii* (39,2%). Hasil penelitian menunjukkan bahwa riwayat penggunaan antibiotik 90 hari terakhir (OR 18,73; $p=0,007$; 95% CI 2,22-157,74) dan penggunaan *device* invasif (OR 4,44; $p=0,001$; 95% CI 1,77-11,13) merupakan faktor independen bakteremia MDR-DTR, sedangkan riwayat tindakan medis/operasi 90 hari terakhir tidak bermakna mengindikasikan faktor risiko (OR=1,28; $p=0,639$; 95% CI 0,489-3,42).

Simpulan: Riwayat penggunaan antibiotik dalam 90 hari terakhir dan penggunaan *device*/alat kesehatan invasif signifikan meningkatkan risiko bakteremia MDR-DTR pada pasien sepsis, sedangkan riwayat tindakan medis/operasi 90 hari terakhir tidak terbukti.

Kata kunci: faktor risiko, *difficult-to-treat resistance*, sepsis, bakteremia



ABSTRACT

Background: Increasing bacterial resistance, particularly difficult-to-treat resistance (DTR), complicates the management of severe infections such as sepsis. Difficult-to-treat resistance is an intermediate or resistant phenotype to all reported antibiotics in the β -lactam (including carbapenems and combined β -lactamase inhibitors) and fluoroquinolone categories, increasing the risk of empiric therapy failure and mortality. Risk factors such as history of antibiotic use, medical/surgical procedures within the last 90 days, use of invasive devices, and intensive care may play a role in DTR. Identification of risk factors that play an important role in the incidence of DTR bacteremia at Dr. Sardjito Hospital is crucial for prevention and control efforts.

Objective: To evaluate the risk factors of multidrug-resistant - difficult-to-treat resistance bacteremia in sepsis patients at Dr. Sardjito Hospital.

Methods: Case-control study with subjects of adult clinical sepsis patients with multidrug-resistant (MDR) bacteremia (January 2021-December 2024). Subjects with polymicrobial pathogen culture results or incomplete data according to the variables studied were excluded. The case group was MDR-DTR bacteremia and the control group was other MDR bacteremia. Risk factors analyzed included history of antibiotic use and history of medical/surgical procedures in the last 90 days and use of invasive devices. Analysis used Chi-square and Fisher's exact tests, bivariate and multivariate odds ratio (OR), with $p < 0.05$ considered statistically significant.

Results: A total of 120 patients (60 MDR-DTR bacteremia and 60 other MDR bacteremia) were analyzed. The majority of subjects were 45-64 years old, and $\geq 50\%$ had comorbidities and immunocompromise. Most had a history of antibiotic use (82.5%) and the most commonly used antibiotics were cephalosporins (51.5%). The most MDR organism was *Acinetobacter baumannii* (39.2%). The results showed that a history of antibiotic use in the past 90 days (OR 18.73; $p=0.007$; 95% CI 2.22–157.74) and the use of invasive devices (OR 4.44; $p=0.001$; 95% CI 1.77–11.13) were independent risk factors for MDR-DTR bacteremia, while a history of medical procedures/surgeries in the past 90 days was not significant as a risk factor (OR=1.28; $p=0.639$; 95% CI 0.489–3.42).

Conclusion: History of antibiotic use in the past 90 days and use of invasive medical devices significantly increased the risk of MDR-DTR bacteremia in sepsis patients, while history of medical/surgical procedures in the past 90 days was not proven.

Keywords: risk factors, difficult-to-treat resistance, sepsis, bacteremia