

INTISARI

Latar belakang: Penyakit infeksi merupakan salah satu masalah besar di Indonesia, terutama infeksi yang disebabkan oleh bakteri. Pemberian antibiotika yang tidak tepat, seperti pemilihan jenis antibiotika, dosis, frekuensi, rute pemberian, dan durasi pemberian serta kepatuhan pasien untuk mengonsumsi antibiotika dikhawatirkan dapat menyebabkan resistensi bakteri. Bakteri gram negatif, seperti *Escherichia coli* merupakan salah satu bakteri yang paling sering menyebabkan terjadinya resistensi terhadap antibiotika golongan beta laktam. *Extended-spectrum beta lactamase* (ESBL) merupakan enzim yang diproduksi oleh bakteri gram negatif seperti *Escherichia coli* yang dapat menghidrolisis beberapa antibiotika seperti penisilin, sefalosporin generasi pertama, kedua, ketiga, dan aztreonam kecuali sefamisin dan karbapenem, sehingga dapat menyebabkan pilihan antibiotika menjadi semakin sempit, kegagalan terapi, lama rawat inap, meningkatnya biaya rumah sakit, serta meningkatnya mortalitas dan morbiditas.

Tujuan: Penelitian ini dilakukan untuk mengetahui prevalensi dan pola kepekaan antibiotika *Escherichia coli* penghasil ESBL di RSUP Dr. Sardjito.

Metode: Penelitian ini menggunakan metode retrospektif potong lintang dengan menggunakan data sekunder dari sistem informasi laboratorium di Instalasi Laboratorium Terpadu RSUP Dr. Sardjito mulai dari Januari - Juni 2020. Sampel yang digunakan adalah isolat bakteri *Escherichia coli* yang berasal dari berbagai contoh bahan klinik. Analisis data menggunakan statistik deskriptif.

Hasil: Prevalensi *Escherichia coli* penghasil ESBL di RSUP Dr. Sardjito sebesar 54,90%. Berdasarkan tempat perawatan, *Escherichia coli* penghasil ESBL lebih banyak ditemukan di perawatan non intensif 81,43%. Pada sampel urin prevelensinya lebih tinggi sebesar 38,57%. Kemudian, prevelensi *Escherichia coli* penghasil ESBL lebih tinggi pada kategori lansia akhir sebesar 21,43%. Dari 27 antibiotika yang diujikan untuk *Escherichia coli* penghasil ESBL, hanya ada 5 antibiotika yang sensitivitasnya di atas 50%, yaitu meropenem (98,57%), amikasin (98,26%), ertapenem (96,43%), tigesiklin (85%), dan tazobaktam (67,14%).

Kesimpulan: Prevalensi *Escherichia coli* penghasil ESBL (ESBL positif) nilainya lebih tinggi dari ESBL negatif. *Escherichia coli* ESBL positif prevalensinya lebih tinggi di tempat perawatan non intensif. Dari berbagai jenis sampel, prevelensinya tinggi pada sampel urin. Prevelensi *Escherichia coli* ESBL positif lebih banyak ditemukan pada kategori usia lansia akhir. Pola kepekaan antibiotika *Escherichia coli* penghasil ESBL memiliki sensitivitas yang cukup baik pada antibiotika meropenem, amikasin, ertapenem, tigesiklin, dan tazobaktam.

Kata kunci: Prevalensi, ESBL, *Escherichia coli*, pola kepekaan antibiotika.

ABSTRACT

Background: Infectious disease is one of the biggest problems in Indonesia, especially infections caused by bacteria. Inappropriate use of antibiotics, such as the choice of antibiotic type, dosage, frequency, route of administration, duration of administration and patient adherence to antibiotic is feared to cause bacterial resistance. Gram-negative bacteria, such as *Escherichia coli*, is one of the bacteria that most often causes resistance to beta-lactam antibiotics group. Extended-spectrum beta lactamase (ESBL) is an enzyme produced by gram-negative bacteria such as *Escherichia coli* which can hydrolyse several antibiotics such as penicillin, first-second-third generation of cephalosporins, and aztreonam except for cefamycin and carbapenem. Hence, antibiotic choices become narrower, more therapy failure, increased length of stay, increased hospital costs, and increased mortality as well as morbidity.

Objective: This study was conducted to determine the prevalence and susceptibility patterns of antibiotics ESBL-producing *Escherichia coli* in Dr. Sardjito General Hospital.

Methods: This study used a cross-sectional retrospective method using secondary data from the laboratory information system in the Integrated Laboratory Installation of Dr. Sardjito General Hospital from January to June 2020. The samples used were *Escherichia coli* isolates from various samples of clinical materials. Then, the data was analysed using descriptive statistics.

Results: This study observed that the prevalence of ESBL-producing *Escherichia coli* in Dr. Sardjito General Hospital was 54.90%. Based on the place of treatment, ESBL-producing *Escherichia coli* was more frequent in non-intensive care for 81.43%. In the urine sample, the prevalence was higher at 38.57%. Then, the prevalence of ESBL-producing *Escherichia coli* was more frequent in the late elderly category by 21.43%. From the 27 antibiotics tested for ESBL-producing *Escherichia coli*, there were only 5 antibiotics with a sensitivity above 50%, namely meropenem (98.57%), amikacin (98.26%), ertapenem (96.43%), tigecycline (85 %), and tazobactam (67.14%).

Conclusion: The prevalence of ESBL-producing *Escherichia coli* (positive ESBL) was higher than negative ESBL with most of the cases occurred in non-intensive care settings. Based on various types of samples, the prevalence was higher in urine samples. Furthermore, ESBL-producing *Escherichia coli* was more frequent in the late elderly age category. The susceptibility pattern of ESBL-producing *Escherichia coli* has a fairly good sensitivity to the antibiotics meropenem, amikacin, ertapenem, tigecycline, and tazobactam.

Keywords: *Prevalence, ESBL, Escherichia coli, antibiotic sensitivity*