ABSTRAK

Infeksi saluran kemih (ISK) merupakan penyakit infeksi yang sangat umum terjadi. Angka kejadian kasus ISK di Indonesia diperkirakan sebesar 180.000 kasus pertahun dan dapat menjangkit semua orang dari segala usia. Sedangkan untuk wilayah Jawa Timur jumlah kasus Infeksi Saluran Kemih mencapai 3-4 kasus per 100.000 penduduk per tahun. Bakteri *Escherichia coli* dari golongan gram negatif *multidrugresiten,* seperti penghasil *Extended Spectrum Beta Lactamases* (ESBL) yang paling dominan menyebabkan infeksi saluran kemih. *Extended Spectrum Beta- Lactamases* (ESBL) adalah enzim *Beta- Lactamase* yang kemampuanya dapat menyebabkan bakteri resisten terhadap penisilin, sefalosporin generasi 1, 2, dan 3, serta aztreonam (tetapi tidak terhadap sefamisin dan karbapenem). Penyebab bakteri menghasilkan enzim ESBL karena adanya gen yang mengkode ESBL. Kelompok gen ESBL yang bertanggungjawab menghasilkan ESBL dalam menghidrolisis antibiotik *beta-lactamase* salah satunya adalah enzim *temoneira* (TEM). Tujuan penelitian ini yaitu untuk mengetahui keberadaan gen TEM pada isolat klinis *Escherichia coli* penghasil *Extended Spectrum Beta-Lactamases* (ESBL) dari urin pasien ISK di RSPAL Dr. Ramelan Surabaya. Jenis penelitian ini yaitu obervasional deskriptif dengan pendekatan *cross sectional*. Total sampel penelitian ini yaitu sebanyak tiga puluh isolat klinis *Escherichia coli* ESBL. Deteksi gen TEM menggunakan metode PCR (*Polymerase Chain Reaction*). Hasil deteksi gen TEM yang berhasil ditemukan sebesar 3% (1/30) di RSPAL. Dr. Ramelan Surabaya. Analisis penyebaran bakteri *Escherichia coli* ESBL di ruang perawatan didapatkan 54% (16/30) di ruang ICU, 43% (13/30) Non ICU, 3% (1/30) PICU serta tidak ditemukan 0% di ruang NICU, dan klinik rawat jalan. Kesimpulan pada penelitian ini adalah itemukan Gen TEM pada isolat Klinis E.coli dari urine pasien ISK sebnyak satu isolat (3%) di ruang perawatan Non ICU.

Kata Kunci: Infeksi Saluran Kemih (ISK), Resistensi Antimikroba, Isolat Klinis *Escherichia coli*, ESBL, dan gen TEM (*temoneira*)

ABSTRACT

Urinary tract infection (UTI) is a most common infectious disease. The prevalence of UTIs in Indonesia is estimated at 180.000 per year and can affect people of all ages. In East Java, the number of cases of Urinary Tract Infection reaches 3-4 cases per 100,000 population per year. The most dominant urinary tract infection is caused by Escherichia coli bacteria from the multidrug-resistant Gram-negative group, such as producing of Extended Spectrum Beta Lactamases (ESBL). Extended Spectrum Beta-Lactamases (ESBLs) are Beta-Lactamase enzymes which ability can cause bacteria resistant to penicillin, cephalosporin generation 1, 2 and 3, and aztreonam (but not cefamycin and carbapenem). The causes of bacteria producing ESBL enzymes is the presence of ESBL gene. The one of ESBL gene groups which responsibility to producing ESBLs to hydrolyzing beta-lactamase antibiotics is temoneira enzyme (TEM). This study aim to determine the presence of TEM gene in Escherichia coli clinical isolates producing Extended Spectrum Beta-Lactamases (ESBL) from UTI patients urine in RSPAL Dr. Ramelan Surabaya. This type of research is descriptive observational with cross sectional approach. The sample used in this study was the clinical isolate Escherichia coli ESBL, as many as thirty isolates from UTIs patient urine in RSPAL Dr. Ramelan Surabaya. The detection of TEM gene used the PCR (Polymerase Chain Reaction) method. The result of the detection of TEM gene found were 3% (1/30) in RSPAL. Dr Ramelan Surabaya. The analysis of distribution of Escherichia coli ESBL bacteria in patient care room was obtained 54% (16/30) in ICU rooms, 43% (13/30) Non ICU, 3% (1/30) PICU rooms, and not found 0% in the NICU rooms, and outpatient clinic.

Keyword: *Urinary Tract Infection (UTI), Antimicrobial Resistance, Escherichia coli clinical isolate, ESBL, and TEM (temoneira) gene*