L A M P I R A N

Lampiran 1. Jurnal Rasionalitas Antibiotik

Jurnal Sains Farmasi & Klinis
p-ISSN: 2407-7062 | e-ISSN: 2442-5435
homepage: http://jsfk.ffarmasi.unand.ac.id

ORIGINAL ARTICLE Vol. 5 No. 2 (Agustus 2018) | pp. 102–111 |

Evaluasi Penggunaan Antibiotik Pada Pasien Ulkus Diabetikum di Instalasi Rawat Inap (IRNA) Penyakit Dalam Rsup Dr.M.Djamil Padang

(Evaluation of Antibiotic Usage Among Diabetic Foot Ulcer Patients In Internal Medicine Ward of Dr. M. Djamil Padang Hospital)

Yelly Oktavia Sari*, Dedy Almasdy, & Anggun Fatimah

Departemen Farmakologi dan Farmasi Klinis, Fakultas Farmasi, Universitas Andalas

ABSTRACT: A rationality of antibiotic usage is needed to reduce bacterial resistance, infection severity, minimize expenditures, and patient's length of stay among diabetic foot ulcer patients. The aimed of the study was to obtain an overview of demography and clinical characteristics, usage of antibiotics, appropriateness of antibiotic, and association between demography and clinical characteristics of *clinical outcome* and rationality of antibiotics usage. The prospective method is applied. A total of 28 diabetic foot ulcer patients in Internal Medicine Ward of Dr. M. Djamil Padang Hospital were met the inclusion criteria. The demography characteristics showed the majority of patient were females (60,72%), 45-60 years old (46,44%). The clinical characteristics showed the majority of patiens have been suffered from diabetes < 10 years old (71,43%), length of stay 3-7days (53,57%), suffered from foot ulcer 1-3 months (60,72%), severe infection (71,43%), *clinical outcome* is improving (71,43%). Overview of antibiotic usage showed majority was Ceftriaxone (13%), Metronidazole (13%), and combination of Ceftriaxone + Metronidazol (26,1%) with appropriate indication (100%), appropriate patient (100%) appropriate drug (89,28%), appropriate dosage regimen (57,14%), and no potential of drugs interaction (67,85%). Statistical analysis showed no significant correlation between demography and clinical characteristics values of *clinical outcome* and rationality antibiotics (p>0,05). The study concluded that the usage of antibiotics among diabetic foot ulcer patients are irrational.

Keywords: diabetic foot ulcer; antibiotic; rational; *clinical outcome*.

ABSTRAK: Penggunaan antibiotik yang rasional sangat diperlukan untuk mengurangi terjadinya resistensi, tingkat keparahan penyakit, biaya pengobatan dan lama waktu perawatan bagi penderita infeksi ulkus diabetikum. Penelitian ini bertujuan untuk memperoleh gambaran karakteristik demografi dan klinis pasien ulkus diabetikum di Instalasi Rawat Inap (IRNA) Penyakit Dalam RSUP Dr. M. Djamil Padang, pola penggunaan antibiotik, ketepatan penggunaan antibiotik dan hubungannya terhadap *clinical outcome* dan rasionalitas antibiotik. Penelitian dilakukan secara prospektif. Sebanyak 28 pasien memenuhi kriteria inklusi. Karakteristik demografi menunjukkan mayoritas pasien adalah perempuan (60-72 %), umur 45-60 tahun (46,44 %). Karakteristik klinis pasien menunjukkan mayoritas pasien dengan lama rawatan 3-7 hari (53,57 %), riwayat tukak 1-3 bulan (60,72 %), infeksi berat (71,43 %), *clinical outcome* membaik (71,43 %). Pola penggunaan antibiotik tunggal terbanyak adalah Seftriakson (13 %), Metronidazol (13%) dan kombinasi antibiotik Seftriakson + Metronidazol (26,1 %). Penilaian rasionalitas penggunaan antibiotik adalah tepat indikasi (100 %), tepat pasien (100%), tepat obat (89,28 %), tepat regimen dosis (57,14 %) dan potensi interaksi obat (67,85 %). Berdasarkan analisa statistik, tidak ada hubungan yang bermakna antara karakteristik demografi dan klinis terhadap *clinical outcome* dan rasionalitas antibiotik (p>0,05). Dapat disimpulkan bahwa penggunaan antibiotik pada pasien ulkus diabetikum belum rasional.

Kata kunci: ulkus diabetikum; antibiotik; rasional; *clinical outcome*.

Jurnal Kesehatan Bakti Tunas Husada
Volume 17 Nomor 1 Februari 2017

EVALUASI KERASIONALAN PENGOBATAN DIABETES MELITUS TIPE 2 PADA PASIEN RAWAT INAP DI RSUD dr. SOEKARDJO TASIKMALAYA

Nur Rahayuningsih, Ilham Alifiar, Elis Sri Mulyani
Program Studi S1 Farmasi
Sekolah Tinggi Ilmu Kesehatan Bakti Tunas Husada Tasikmalaya

Abstrak

Penelitian ini bertujuan untuk Mengevaluasi kerasionalan pengobatan Diabetes Melitus tipe 2 pada pasien rawat inap di RSUD dr. Soekardjo Tasikmalaya periode Juli-Desember 2013. Penelitian ini dilakukan terhadap 62 catatan rekam medik pasien penderita Diabetes Melitus tipe 2. Hasilnya menunjukkan bahwa dari 62 pasien Diabetes Melitus tipe 2 di RSUD dr. Soekardjo Tasikmalaya periode Juli- Desember 2013 adalah berusia 17-60. Pasien Diabetes Melitus tipe 2 terdiri sebanyak (30,9%) pasien laki-laki dan (69,3%) pasien perempuan, obat antidiabetik yang paling banyak digunakan pada periode Juli 2013 – Desember 2013 yaitu Insulin sebanyak 35 pasien (56,45%), obat hipoglikemik tunggal sebanyak 14 pasien (22,58%), kombinasi (OHO) dengan Insulin sebanyak 13 pasien (29.96%). Penggunaan obat DM bisa di katakan rasional tepat indikasi (88,71%), tepat obat (100%), tepat dosis (100%), dan tepat pasien (100%) dan tepat cara pemberian (100%).

Kata Kunci : Evaluasi kerasionalan obat, Diabetes Melitus, antidiabetik

Abstract

This study aimed to evaluate the rationality treatment of type 2 diabetes mellitus in hospitalized patients in dr. Soekardjo Tasikmalaya period of July-August 2013. The study was conducted on 62 patients with a medical record of diabetes mellitus type 2. The results showed that of 62 patients with type 2 diabetes mellitus in dr. Soekardjo Tasikmalaya period of July-August 2013 were aged 17-60. Patients with type 2 diabetes mellitus comprising as many (30.9%) patients were males and (69.3%) patients were female, antidiabetic drugs most widely used in the period July 2013 - December 2013, namely Insulin total of 35 patients (56.45%), single hypoglycemic drugs as many as 14 patients (22.58%), combination (OHO) with Insulin as many as 13 patients (29.96%). The use of drugs rationally DM can say right indication (88.71%), the right medication (100%), the right dosage (100%), right tdan patients (100%) and appropriate mode of administration (100%).
Keyword *:Evaluation of rationality medicine, Diabetes Mellitus, Antidiabetik.*

ANTIBIOGRAM STUDY AND ANTIBIOTIC USE EVALUATION USING GYSSEN METHOD IN PATIENTS WITH DIABETIC FOOT

Umul Fadlilah[1], Didik Hasmono[1], Yudi Agung Wibisono[2], Mia Melinda[2]
[1]Department of Clinical Pharmacy, Faculty of Pharmacy, Universitas Airlangga
[2]Department of Internal Medicine, Mardi Waluyo Hospital, Blitar

ABSTRAK

Latar belakang. Infeksi kaki adalah masalah umum dan serius pada orang dengan diabetes, yang memerlukan pengelolaan tepat (pendekatan diagnostik dan terapetik) agar dapat disembuhkan. Regimen antibiotika empiris harus didasarkan pada data klinis dan pola kuman yang tersedia, tetapi terapi definitif harus didasarkan pada hasil kultur jaringan yang terinfeksi. Kesulitan untuk pemilihan antibiotika pada terapi awal dan penggunaan yang kurang bijak menjadi masalah tersendiri dan beresiko pada munculnya resistensi antibiotika. Perlu adanya evaluasi penggunaan antibiotika untuk mendorong penggunaan yang lebih bijak. Tujuan. Menganalisis pola kuman pada kaki diabetik dan uji sensitifitasnya terhadap antibiotika, menganalisis antibiotika empiris yang dapat direkomendasikan, dan menganalisis penggunaan antibiotika dengan metode Gyssen. Metode. Penelitian ini adalah studi analisis observasional (deskriptif non-eksperimental), retrospektif dan prospektif pada pasien infeksi kaki diabetik yang memenuhi kriteria inklusi. Data tetrospektif digunakan untuk mengenalisis pola kuman dan uji sensitifitas terhadap antibiotika dan data prospektif digunakan untuk mengevaluasi penggunaan antibiotika berdasarkan pola kuman yang ada, selama periode akhir Maret-awal Agustus 2015 di RSUD Mardi Waluyo Kota Blitar. Evaluasi dilakukan dengan metode Gyssen. Hasil, sampel data retrospektif diperoleh 30 temuan kuman infecting selama bulan Agustus 2014-Maret 2015. Prevalensi kuman gram negatif sebanyak 53,33% dengan jenis kuman terbanyak E.coli dan Klebsiella oxytoca (13,33%), dan gram positif sebanyak 46,67% dengan kuman terbanyak Staphylococcus spp. dan Streptococcus spp. Dari data prospektif yang memenuhi kriteria inklusi sebanyak 13 pasien dengan prevalensi kuman terbanyak gram negatif adalah Klebsiella oxytoca (28,57%), dan terbanyak gram positif adalah Staphylococcus auerus (35,71%). Sementara analisis kualitatif penggunaan antibiotika dilakukan terhadap 50 jenis pemberian antibiotika. Hasil analisis kualitatif menggunakan metode Gyssens didapatkan penggunaan kategori sebanyak 62%, penggunaan kategori sebanyak 2%, kategori sebanyak 14%; kategori 2B sebanyak 26%; kategori 3A sebanyak 10%; kategori 4A sebanyak 52%, kategori 4B sebanyak 6%; kategori 4C sebanyak 8% dan tidak ada penggunaan antibiotika yang masuk kategori V dan kategori VI. Simpulan. Dari analisis gyssen ini dapat diperoleh data bahwa penggunaan antibiotika pada pasien kaki diabetik di RSUD Maerdi Waluyo Kota Blitar didominasi oleh ketidak tepatan dalam pemilihan antibiotika, dan ketidaktepatan dalam interval pemberian antibiotika. ***(FMI 2016;52:198-208)***

Kata kunci: *pola kuman, antibiotik, infeksi kaki diabetik, metode Gyssen*

ABSTRACT

Foot infection is a common and serious problem in people with diabetes, which require proper management (diagnostic and therapeutic approaches) that can be cured. Empiric antibiotic regimen should be based on clinical data and bacteria pattern that are available, but definitive therapy should be based on the results of the infected tissue culture. The selection of initial antibiotic therapy was difficult and unwise use can lead to antibiotic-resistant. Evaluation is needed for using antibiotics to benefit wisely. The aim of this research is to analyzed the pattern of bacteria in diabetic foot and to its sensitivity test to antibiotics, analyze empiric antibiotics that can be recommended, and analyzed the use of antibiotics by Gyssen method. Data was analyzed with observational studies (descriptive non-experimental), retrospectively and prospectively in patients diabetic foot infection that met inclusion criteria. Retrospective data are used to analyzed bacteria pattern and its sensitivity test, while prospective data are used to evaluated the use of antibiotics based on bacteria pattern, during the period of late March-early August 2015 at Mardi Waluyo Hospital. Evaluation was conducted by Gyssen method. The results, retrospective data samples obtained 30 infection bacteria during August 2014-March 2015. The prevalence of gram-negative bacteria as 53.33% with most types of bacteria E.coli and Klebsiella oxytoca (13.33%), and gram-positive bacteria as 46.67% with the highest bacteria are Staphylococcus spp. and Streptococcus spp. From the prospective data in inclusion criteria, 13 patients with the highest prevalence of gram-negative bacteria are Klebsiella oxytoca (28.57%), and most gram-positive Staphylococcus auerus (35.71%). While the qualitative analysis of antibiotic use was conducted on 50 types of antibiotics. The results of the qualitative analysis using Gyssens method obtained category as 62%, 2%, 14%, 2B category as 26%, 3A category as 10%, 4A category 52%, 4B category as 6%, 4C category as 8% and there are no use of antibiotics in the category V and VI. Conclusions, Gyessen method can show that the use of antibiotics in diabetic foot patients in Mardi Waluyo hospital is dominated by inaccuracy in choice of antibiotic, and inaccuracies in the interval antibiotics. ***(FMI 2016;52:198-208)***

Keywords: *bacteria patterns, antibiotics, diabetic foot infections, Gyssens method*

Correspondence: Umul Fadlilah, Department of Clinical Pharmacy, Faculty of Pharmacy, Universitas Airlangga, Jalan Dharmawangsa Dalam, Surabaya 60286.

PHARMACON Jurnal Ilmiah Farmasi – UNSRAT Vol. 3 No. 2 Mei 2014 ISSN 2302 - 2493

EVALUASI KERASIONALAN PENGOBATAN DIABETES MELITUS TIPE 2 PADA PASIEN RAWAT INAP DI RSUP PROF. Dr. R. D. KANDOU MANADO TAHUN 2013

Arnold Hongdiyanto[1)], **Paulina V. Y. Yamlean**[1)] **dan Hamidah Sri Supriati**[1)]
[1)]Program Studi Farmasi FMIPA UNSRAT Manado, 95115

ABSTRACT

This study aimed to evaluating the rational of in patients Diabetes Mellitus type 2 medication in RSUP Prof. dr. R.D. Kandou Manado at 2013. This study was conducted on 46 medical record of patients of Diabetes Mellitus type 2. The result showed that 46 in patient Diabetes Mellitus type 2 in RSUP Prof. dr. R.D. Kandou Manado at 2013 were 51-60 years old (58,7%). Diabetes Mellitus type 2 patients comprised 16 men and 30 women. 15 cases (32,6%) were Diabetes Mellitus type 2 without complication diseases and 31 cases (67,4%) Diabetes Mellitus type 2 with complication diseases. Patients had indication appropriate were 40 patients (86,96%), drug choise appropriate 40 patients (100%). Dosis appropriate were 36 patients (97,32%), patient appropriate were 40 patients (100%), while for drug interaction not interaction.

Key words : Rational evaluation, Diabetes Mellitus type 2, RSUP Prof. dr. R.D. Kandou Manado

ABSTRAK

Penelitian ini bertujuan untuk Mengevaluasi kerasionalan pengobatan Diabetes Melitus tipe 2 pada pasien rawat inap di RSUP Prof. dr. R.D. Kandou Manado tahun 2013. Penelitian ini dilakukan terhadap 46 catatan rekam medik pasien penderita Diabetes Melitus tipe 2. Hasilnya menunjukkan bahwa dari 46 pasien Diabetes Melitus tipe 2 di RSUP Prof. dr. R.D. Kandou Manado tahun 2013 adalah berusia 51-60 tahun (58,7%). Pasien Diabetes Melitus tipe 2 terdiri dari 16 pasien pria dan 30 pasien wanita, dengan 15 (32,6%) kasus pasien Diabetes Melitus tipe 2 tanpa penyakit komplikasi dan 31(67,4%) kasus pasien Diabetes Melitus tipe 2 dengan penyakit komplikasi. Pasien yang memeliki tepat indikasi adalah 40 pasien (86,96%), tepat pemilihan obat adalah 40 pasien (100%), tepat dosis adalah 36 pasien (97,32%), tepat pasien sebanyak 40 pasien (100%), sedangkan untuk interaksi obat tidak terjadi interaksi.

Kata kunci : Evaluasi Kerasionalan, Diabetes Melitus tipe 2, BLU RSUP Prof. dr. R.D. Kandou Manado

Lampiran 2. Jurnal Sensitivitas Antibiotik

JURNAL ILMIAH SIMANTEK **Vol. 4 No. 4**
ISSN. 2550-0414 **November 2020**

POLA BAKTERI PADA ULKUS PENDERITA DIABETES MELITUS DAN UJI KEPEKAAN TERHADAP ANTIBIOTIK CEFTRIAXONE DAN COTRIMOXAZOLE DI RUMAH SAKIT MURNI TEGUH MEDAN

[1]DWINDA RAHMATUN AZHARI PINEM, [2]ANCE ROSLINA
[1,2]UNIVERSITAS MUHAMMADIYAH SUMATERA UTARA
[1]azhariwindarocketmail.com, [2]anceroslina.umsu.ac.id

ABSTRACT

Ulcers are a chronic complication of diabetes mellitus with a risk of ulcers as much as 12-25%. Antibiotics are used to treat existing ulcers, but already resistance to antibiotic broad spectrum of penicillin and cephalosporin. An antibiotic sensitivity test is carried out to choose which one to use according to the causative bacteria, to cut down the cost of drugs, hospitalization days, and the incidence of amputation. This study is an observasional descriptive study using a cross-sectional design by taking ulcer swab in DM patients in Murni Teguh Hospital Medan. The results of the study were obtained from 22 samples identified as gram-negative bacteria were 72,8% and gram-positive bacteria which was 27,2). The two largest bacteria were Klebsiella sp (31,8%) and Staphylococcus aureus (27,2%). All samples were resistant to ceftriaxone and cotrimoxazole antibiotics. The most identified bacteria in the ulcer of patients with DM are Gram-negative bacteria with the type Klebsiella sp and have been resistant to ceftriaxone and cotrimoxazole antibiotics.

Keywords : DM, Ulcer, Bacteria, Antibiotics Sensitivity

JMU Jurnal medika udayana

ISSN: 2597-8012 JURNAL MEDIKA UDAYANA, VOL. 9 NO.10,OKTOBER, 2020

Diterima:08-08-2020 Revisi:15-08-2020 Accepted: 01-09-2020

POLA BAKTERI PADA PASIEN KAKI DIABETIK DAN RESISTENSINYA TERHADAP ANTIBIOTIK DI RUMAH SAKIT UMUM PUSAT SANGLAH PERIODE 1 JANUARI 2017 – 28 FEBRUARI 2018

Sonia Elvira Salim[1], I Dewa Made Sukrama[2], Ni Nengah Dwi Fatmawati[2], Made Agus Hendrayana[2]

[1]Program Studi Pendidikan Dokter, Fakultas Kedokteran Universitas Udayana
[2]Departemen Mikrobiologi, Fakultas Kedokteran Universitas Udayana
Email : Soniaelvirasalim@ymail.com

ABSTRAK

Diabetes adalah salah satu penyakit kronis di dunia. Diabetes sendiri jika tidak segera ditangani dapat menyebabkan berbagai komplikasi, kaki diabetik merupakan salah satu komplikasinya. Dimana pada umumnya kaki diabetik ini disebabkan oleh adanya infeksi bakteri. Adanya ketidaktepatan pemberian antibiotik pada pasien kaki diabetik menyebabkan terjadinya resistensi antibiotic pada beberapa bakteri. Oleh karena itu pola bakteri dan resistensinya terhadap antibiotik pada pasien kaki diabetik perlu diketahui. Tujuan dari penelitian ini untuk mengetahui pola bakteri pada pasien kaki diabetik dan resistensinya terhadap antibiotik di Rumah Sakit Umum Pusat Sanglah pada periode 1 Januari 2017 – 28 Februari 2018. Potong lintang deskriptif digunakan pada penelitian ini. Pengumpulan data menggunakan teknik *total sampling*, dimana semua data uji kultur pasien kaki diabetik yang ada pada buku Registrasi Pemeriksaan Pasien Laboratorium Klinik Mikrobiologi RSUP Sanglah pada periode 1 Januari 2017 - 28 Februari 2018 digunakan pada penelitian ini. Sebanyak 118 data hasil kultur bakteri pada pasien kaki diabetik ditemukan pada buku Registrasi Pemeriksaan Pasien Laboratorium Klinik Mikrobiologi RSUP Sanglah periode 1 Januari 2017 - 28 Februari 2018, dengan 84 isolat bakteri yang berhasil tumbuh. Bakteri *klebsiella pneumoniae ssp pneumonia, proteus mirabilis, acinetobacter baumannii* merupakan tiga bakteri yang mendominasi. Bakteri-bakteri yang ditemukan juga resisten terhadap beberapa antibiotik.

Kata kunci: Kaki Diabetik, Antibiotik, Pola Bakteri, Pola Resistensi

ABSTRACT

Diabetic is one from many chronic disease in the world. Diabetic itself if not treated immediately can cause various complications, one of the complication of diabetes mellitus that is often found is diabetic foot. In general, diabetic foot is caused by a bacterial infection. The inaccuracy from given antibiotics for patient diabetic foot caused bacteria resistance in some antibiotics. Therefore, bacterial pattern and their resistance to antibiotics in diabetic foot patients need to be known. This study aims to determine the pattern of bacteria in diabetic foot patients and their resistance to antibiotics at the Sanglah Central General Hospital on 1st January 2017 – 28th February 2018. Descriptive *cross-sectional* used fot this research. Data collection used total sampling technique, where all culture data of diabetic foot patient test in the book of Patient Examination Laboratory of Microbiology Clinics in RSUP Sanglah on 1st January 2017 – 28th February 2018 was used in this study.A total of 118 data on bacterial culture results in diabetic foot patients were found in the Patient Clinical Laboratory Laboratory Patient Registration Laboratory Sanglah period 1 January 2017 - 28 February 2018, with 84 bacterial isolates successfully growing. The bacterium *klebsiella pneumoniae ssp pneumonia, proteus mirabilis, acinetobacter baumannii* are the three bacteria that dominate. The bacteria found are also resistant to several antibiotics.

Keywords: Diabetic Foot, Antibiotics, Bacterial Pattern, Resistance Pattern

https://ojs.unud.ac.id/index.php/eum
doi:10.24843.MU.2020.V9.i10.P17

Artikel Penelitian

Pola Resistensi Bakteri Aerob pada Ulkus Diabetik Terhadap Beberapa Antibiotika di Laboratorium Mikrobiologi RSUP Dr. M. Djamil Padang Tahun 2011 - 2013

Yohanna Eclesia Lumban Gaol[1], Erry[2], Elmatris Sy[3]

Abstrak

Ulkus diabetik adalah salah satu bentuk komplikasi kronik dari diabetes melitus berupa luka terbuka pada permukaan kulit yang disertai dengan adanya kematian jaringan setempat. Bakteri aerob adalah bakteri patogen yang paling umum ditemukan pada ulkus diabetik. Tujuan penelitian ini adalah menentukan pola resistensi bakteri aerob pada ulkus diabetik terhadap beberapa antibiotika di Laboratorium Mikrobiologi RSUP Dr. M. Djamil Padang tahun 2011- 2013. Jenis penelitian ini adalah deskriptif retrospektif yang dilakukan pada bulan April sampai Mei 2014 di Laboratorium Mikrobiologi RSUP Dr. M. Djamil Padang. Seluruh populasi dijadikan sampel penelitian yang memenuhi kriteria inklusi dan eksklusi. Jumlah sampel penelitian sebanyak 148 kasus dengan menggunakan *total sampling*. Hasil penelitian didapatkan dari 148 kasus, jumlah pasien laki-laki lebih banyak (54%) dibandingkan dengan perempuan (46%) dan rentang usia pasien terbanyak adalah 50-59 tahun (45%). Tiga bakteri aerob terbanyak pada ulkus diabetik adalah Klebsiella sp (34%), diikuti Staphylococcus aureus (30%), dan Proteus mirabilis (12%). Hasil uji resistensi menunjukkan Klebsiella sp sensitif terhadap Meropenem (43%), Staphylococcus aureus sensitif terhadap Netilmicin (80%), dan Proteus mirabilis sensitif terhadap Sulbactam + Cefeperazone (100%). Simpulan penelitian ini adalah ulkus diabetes terbanyak terjadi pada usia 50-59 tahun dengan bakteri terbanyak Klebsiela sp.

Kata kunci: antibiotika, bakteri, resistensi

Abstract

Diabetic ulcer is the one of chronic complication of diabetic melitus such as open wound with the necrotic tissues. Aerobic bacteria is the most common bacterial pathogens found in diabetic ulcer. The objective of this study was to determine resistance pattern of aerobic bacteria in diabetic ulcer to some antibiotics in Microbiologi Laboratory RSUP Dr. M. Djamil Padang period 2011 to 2013. The research method was descriptive and retrospective that was conducted from April to May 2014 in Microbiologi Laboratory RSUP Dr. M. Djamil Padang. All of population used as the research samples who fulfilled the inclusion and exclusion criteria. The results showed that from 148 cases, men (54%) had a higher number compared to women (46%) and the age range of most patients is about 50-59 years (45%). Three most aerobic bacteria that cause diabetic ulcer are Klebsiella sp (34%), Staphylococcus aureus (30%), and Proteus mirabilis (12%). Resistancy test showed that Klebsiella sp sensitive to Meropenem (43%), Staphylococcus aureus sensitive to Netilmicin (80%), and Proteus mirabilis sensitive to Sulbactam + Cefeperazone (100%). It can be concluded that diabetic ulcer mostly occurred at 50-59 years old and Klebsiela sp is the most aerobic bacteria founded in diabetic ulcer.

Keywords: *antibiotics, bacteria, resistance*

Affiliasi penulis: 1. Prodi Profesi Dokter FK Unand (Fakultas Kedokteran Universitas Andalas Padang), 2. Bagian Mikrobiologi FK Unand, 3. Bagian Kimia FK Unand

Korespondensi :Yohanna Eclesia, Email: Yohanna_Eclesia@yahoo.co.id, Telp:081363021323

G Model
DSX-429; No. of Pages 4
ARTICLE IN PRESS
Diabetes & Metabolic Syndrome: Clinical Research & Reviews xxx (2014) xxx–xxx
Contents lists available at ScienceDirect
Diabetes & Metabolic Syndrome: Clinical Research & Reviews
journal homepage: www.elsevier.com/locate/dsx

Original Article

Antibiotic therapy for diabetic foot infections in a tertiary care hospital in Jakarta, Indonesia

Maksum Radji [a,*], Corry Shirleyana Putri [a], Siti Fauziyah [b]

[a] Laboratory of Microbiology and Biotechnology, Faculty of Pharmacy, University of Indonesia, Depok 16424, Indonesia
[b] Department of Pharmacy, Dr. Mintohardjo Navy Hospital, Bendungan Hilir No. 17, Jakarta 10210, Indonesia

ARTICLE INFO

Keywords:
Diabetic foot infections
Antibiotic
Clinical pharmacy
Indonesia

ABSTRACT

Aims: The purpose of this study was to determine the microbiology of diabetic foot infections and to assess the antibiotic susceptibility patterns.
Materials and methods: A cross sectional retrospective study of 35 patients with diabetic foot infections hospitalized at the internal medicine clinic of Dr. Mintohardjo Navy Hospital, Jakarta. The data were collected from patient medical records retrospectively. The classification of the diabetic foot infections was evaluated according to Meggit–Wagner's Classification. Identification of causative microorganisms was performed by standard microbiologic methods. Antibiotic susceptibility testing was performed using disk-diffusion method.
Results: During January to December 2012, a total of 288 of diabetic patients were admitted to hospital, and 35 patients had diabetic foot infections. According to Meggit–Wagner's classification the most common disease was grade 3 in 31.4% patients, followed by grade 2 in 25.7%, and grade 4 in 17.3% of patients. Conservative diabetic control care was carried out in 37.1% of patients, and surgical intervention was carried out in 62.9% of patients. A total of 59 pathogens were identified. The most common infecting microorganism isolated on pus cultures was *Staphylococcus aureus* (47.5%), followed by *Pseudomonas* spp (16.9%), *E. coli*(10.2%), *Streptococcus* spp. (8.5%), *Enterobacter* spp. (7.0%), *Proteus* spp. (6.7%), and *Acinetobacter* spp. (3.2%). Overall, 37.2% of the diabetic foot infection caused by a single microorganism, and 62.8% had polymicrobial infections. The most frequently administrated antibiotic was ceftriaxone (40.0%), followed by ciprofloxacin (11.4%), and meropenem (8.6%).
Conclusion: Diabetic foot infections (62.8%) were polymicrobial. *S. aureus* was most commonly found in the foot infection. Most of the microorganisms isolated from diabetic foot infection were resistant to many types of antibiotics.

1. Introduction

Diabetes mellitus is a serious and complex illness that affects almost all the vital organs in the body. Approximately 382 million people worldwide suffer from diabetes and it has been estimated that it will increase to 592 million by 2035. In 2013, diabetes caused more than 5.1 million deaths, where every 6 s a person dies from diabetes [1]. The disease is known to have many complications and one of the most severe is diabetic foot infection that affects 15% of people with diabetes, and leading to amputation

Indonesia is the seventh largest country in the case of diabetes mellitus incidence in the world after China, India, USA, Brazil, Russia and Mexico. The incidence of diabetes mellitus in Indonesia is estimated at about 8.5 million in 2013 [1].

For the treatment of diabetes mellitus, the Infectious Diseases Society of America (IDSA) has recommended a guideline that the treatment of diabetic foot infection should be performed by a team of multidisciplinary diabetic foot care consisting of an infectious disease specialist, specialist of clinical microbiology, foot surgeons, and wound-care specialists [4]

JURNAL BIOLOGI PAPUA
Volume 6, Nomor 2
Halaman: 53–59

ISSN: 2086-3314
Oktober 2014

Sensitivitas Antibiotik Terhadap Bakteri yang Diisolasi dari Ulkus Diabetika di RSUD Abepura, Kota Jayapura

SULISTIANINGSIH[1]* DIRK Y.P. RUNTUBOI[2] DAN LUCKY V. WAWORUNTU[2]
[1]*Mahasiswa Program Pascasarjana Biologi, Universitas Cenderawasih, Jayapura*
[2]*Staf Pengajar Pascasarjana Biologi, Universitas Cenderawasih, Jayapura*

Diterima: tanggal 11 Juli 2014 - Disetujui: tanggal 16 September 2014

ABSTRACT

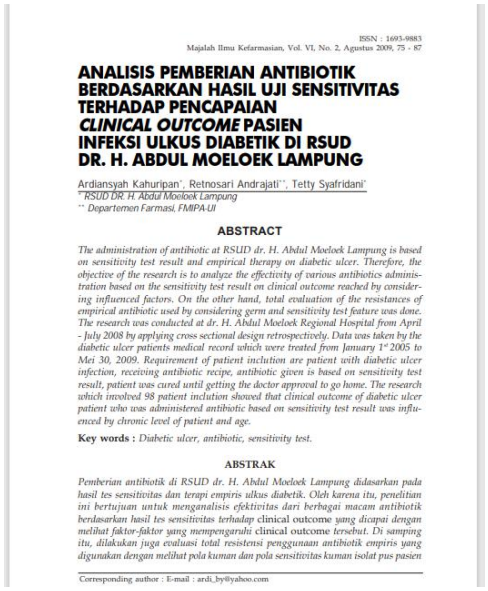
Diabetic ulcer is a complication of Diabetes mellitus that is often found on the legs and easily develop into an infection. For the prevention of this symtomps, antibiotic is required to accelerate the wound healing process. The purpose of this study was to determine the bacteria that infect diabetic ulcers and antibiotic sensitivity test against the bacterial isolates in Abepura hospitals, Jayapura. This study used exploratory laboratory and was conducted at the Regional Health Laboratory (*Labkesda*) in Jayapura. The results of the isolation and identification showed that 6 species of bacteria have been found. The bacteria which most infected patients with diabetic ulcers in hospitals Abepura was *Escherichia coli* (38%). The result of antibiotic sensitivity test in hospitals Abepura ceftazidime therapy, showed that antibiotic sensitivity of Siprofloxacin therapy was only 16.7%. Imipenem choice of antibiotics had a sensitivity of 100% againts 6 types of bacteria that cause infections in patients with diabetic ulcers. Other choices of antibiotics which had a sensitivity of over 50% is Nitrofurantoin (83.3%), Gentamicin, Kanamycin and Polymyxin B and 66.7% respectively.

Key words: Bacterial infections, diabetic ulcers, antibiotic sensitivity.

PENDAHULUAN

Diabetes melitus (DM) merupakan penyakit yang disebabkan oleh adanya gangguan kronik atau menahun terutama pada sistem metabolisme karbohidrat, lemak, dan juga protein dalam tubuh. Gangguan metabolisme tersebut disebabkan kurangnya produksi insulin yang diperlukan dalam proses pengubahan gula menjadi tenaga, sehingga gula (glukosa) yang dikonsumsi di dalam tubuh tidak dapat diproses sempurna, yang menunjukkan bahwa penderita DM adalah penduduk usia muda yaitu antara 20-60 tahun. Data tersebut juga menunjukkan bahwa Indonesia termasuk ke dalam daftar 5 negara terbanyak penderita DM. Cina menempati urutan pertama (54,2 juta), India (32,1 juta), Amerika Serikat (6,68 juta), Brazil (6,14 juta) dan Indonesia (4,43 juta) (IDF, 2012).

Prevalensi nasional penyakit DM adalah 1,1% (berdasarkan diagnosis tenaga kesehatan dan gejala pada penderita DM). Terdapat 17 Provinsi



ISSN : 1693-9883
Majalah Ilmu Kefarmasian, Vol. VI, No. 2, Agustus 2009, 75 - 87

ANALISIS PEMBERIAN ANTIBIOTIK BERDASARKAN HASIL UJI SENSITIVITAS TERHADAP PENCAPAIAN *CLINICAL OUTCOME* PASIEN INFEKSI ULKUS DIABETIK DI RSUD DR. H. ABDUL MOELOEK LAMPUNG

Ardiansyah Kahuripan*, Retnosari Andrajati**, Tetty Syafridani*
* RSUD DR. H. Abdul Moeloek Lampung
** Departemen Farmasi, FMIPA-UI

ABSTRACT

The administration of antibiotic at RSUD dr. H. Abdul Moeloek Lampung is based on sensitivity test result and empirical therapy on diabetic ulcer. Therefore, the objective of the research is to analyze the effectivity of various antibiotics administration based on the sensitivity test result on clinical outcome reached by considering influenced factors. On the other hand, total evaluation of the resistances of empirical antibiotic used by considering germ and sensitivity test feature was done. The research was conducted at dr. H. Abdul Moeloek Regional Hospital from April - July 2008 by applying cross sectional design retrospectively. Data was taken by the diabetic ulcer patients medical record which were treated from January 1st 2005 to Mei 30, 2009. Requirement of patient incluiton are patient with diabetic ulcer infection, receiving antibiotic recipe, antibiotic given is based on sensitivity test result, patient was cured until getting the doctor approval to go home. The research which involved 98 patient inclution showed that clinical outcome of diabetic ulcer patient who was administered antibiotic based on sensitivity test result was influenced by chronic level of patient and age.

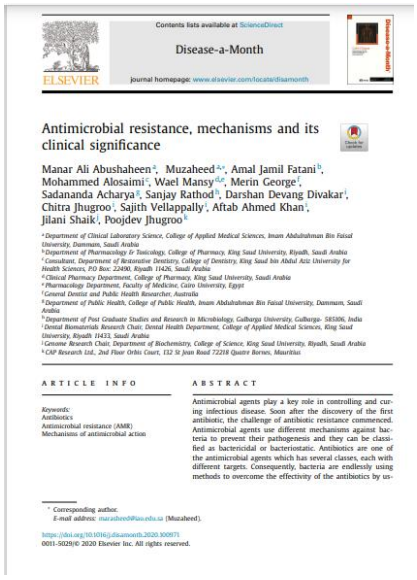
Key words : *Diabetic ulcer, antibiotic, sensitivity test.*

ABSTRAK

Pemberian antibiotik di RSUD dr. H. Abdul Moeloek Lampung didasarkan pada hasil tes sensitivitas dan terapi empiris ulkus diabetik. Oleh karena itu, penelitian ini bertujuan untuk menganalisis efektivitas dari berbagai macam antibiotik berdasarkan hasil tes sensitivitas terhadap clinical outcome *yang dicapai dengan melihat faktor-faktor yang mempengaruhi* clinical outcome *tersebut. Di samping itu, dilakukan juga evaluasi total resistensi penggunaan antibiotik empiris yang digunakan dengan melihat pola kuman dan pola sensitivitas kuman isolat pus pasien*

Corresponding author : E-mail : ardi_by@yahoo.com

Lampiran 3. Jurnal Mekanisme Resistensi



Contents lists available at ScienceDirect
Disease-a-Month
journal homepage: www.elsevier.com/locate/disamonth

Antimicrobial resistance, mechanisms and its clinical significance

Manar Ali Abushaheen[a], Muzaheed[a,*], Amal Jamil Fatani[b], Mohammed Alosaimi[c], Wael Mansy[d,e], Merin George[f], Sadananda Acharya[g], Sanjay Rathod[h], Darshan Devang Divakar[i], Chitra Jhugroo[j], Sajith Vellappally[i], Aftab Ahmed Khan[i], Jilani Shaik[i], Poojdev Jhugroo[k]

[a] Department of Clinical Laboratory Science, College of Applied Medical Sciences, Imam Abdulrahman Bin Faisal University, Dammam, Saudi Arabia
[b] Department of Pharmacology & Toxicology, College of Pharmacy, King Saud University, Riyadh, Saudi Arabia
[c] Consultant, Department of Restorative Dentistry, College of Dentistry, King Saud bin Abdul Aziz University for Health Sciences, PO Box: 22490, Riyadh 11426, Saudi Arabia
[d] Clinical Pharmacy Department, College of Pharmacy, King Saud University, Saudi Arabia
[e] Pharmacology Department, Faculty of Medicine, Cairo University, Egypt
[f] General Dentist and Public Health Researcher, Australia
[g] Department of Public Health, College of Public Health, Imam Abdulrahman Bin Faisal University, Dammam, Saudi Arabia
[h] Department of Post Graduate Studies and Research in Microbiology, Gulbarga University, Gulbarga- 585106, India
[i] Dental Biomaterials Research Chair, Dental Health Department, College of Applied Medical Sciences, King Saud University, Riyadh 11433, Saudi Arabia
[j] Genome Research Chair, Department of Biochemistry, College of Science, King Saud University, Riyadh, Saudi Arabia
[k] CAP Research Ltd., 2nd Floor Orbis Court, 132 St Jean Road 72218 Quatre Bornes, Mauritius

ARTICLE INFO

Keywords:
Antibiotics
Antimicrobial resistance (AMR)
Mechanisms of antimicrobial action

ABSTRACT

Antimicrobial agents play a key role in controlling and curing infectious disease. Soon after the discovery of the first antibiotic, the challenge of antibiotic resistance commenced. Antimicrobial agents use different mechanisms against bacteria to prevent their pathogenesis and they can be classified as bactericidal or bacteriostatic. Antibiotics are one of the antimicrobial agents which has several clases, each with different targets. Consequently, bacteria are endlessly using methods to overcome the effectivity of the antibiotics by us-

* Corresponding author.
E-mail address: marashed@iau.edu.sa (Muzaheed).

https://doi.org/10.1016/j.disamonth.2020.100971

J Anaesthesiol Clin Pharmacol. 2017 Jul-Sep; 33(3): 300–305.
doi: 10.4103/joacp.JOACP_349_15
PMCID: PMC5672523
PMID: 29109626

Action and resistance mechanisms of antibiotics: A guide for clinicians

Garima Kapoor, Saurabh Saigal,[1] and Ashok Elongavan[2]

Abstract

Go to:

Infections account for a major cause of death throughout the developing world. This is mainly due to the emergence of newer infectious agents and more specifically due to the appearance of antimicrobial resistance. With time, the bacteria have become smarter and along with it, massive imprudent usage of antibiotics in clinical practice has resulted in resistance of bacteria to antimicrobial agents. The antimicrobial resistance is recognized as a major problem in the treatment of microbial infections. The biochemical resistance mechanisms used by bacteria include the following: antibiotic inactivation, target modification, altered permeability, and "bypass" of metabolic pathway. Determination of bacterial resistance to antibiotics of all classes (phenotypes) and mutations that are responsible for bacterial resistance to antibiotics (genetic analysis) are helpful. Better understanding of the mechanisms of antibiotic resistance will help clinicians regarding usage of antibiotics in different situations. This review discusses the mechanism of action and resistance development in commonly used antimicrobials.

Keywords: Antibiotics, antimicrobial resistance, bacterial cell wall, mechanism of action

BIOCHEMISTRY
including biophysical chemistry & molecular biology
Current Topic
pubs.acs.org/biochemistry

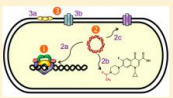
Mechanism of Quinolone Action and Resistance

Katie J. Aldred,[†] Robert J. Kerns,[§] and Neil Osheroff*[,†,‡]

[†]Department of Biochemistry and [‡]Department of Medicine (Hematology/Oncology), Vanderbilt University School of Medicine, Nashville, Tennessee 37232-0146, United States

[§]Division of Medicinal and Natural Products Chemistry, University of Iowa College of Pharmacy, Iowa City, Iowa 52242, United States

ABSTRACT: Quinolones are one of the most commonly prescribed classes of antibacterials in the world and are used to treat a variety of bacterial infections in humans. Because of the wide use (and overuse) of these drugs, the number of quinolone-resistant bacterial strains has been growing steadily since the 1990s. As is the case with other antibacterial agents, the rise in quinolone resistance threatens the clinical utility of this important drug class. Quinolones act by converting their targets, gyrase and topoisomerase IV, into toxic enzymes that fragment the bacterial chromosome. This review describes the development of the quinolones as antibacterials, the structure and function of gyrase and topoisomerase IV, and the mechanistic basis for quinolone action against their enzyme targets. It will then discuss the following three mechanisms that decrease the sensitivity of bacterial cells to quinolones. Target-mediated resistance is the most common and clinically significant form of resistance. It is caused by specific mutations in gyrase and topoisomerase IV that weaken interactions between quinolones and these enzymes. Plasmid-mediated resistance results from extrachromosomal elements that encode proteins that disrupt quinolone−enzyme interactions, alter drug metabolism, or increase quinolone efflux. Chromosome-mediated resistance results from the underexpression of porins or the overexpression of cellular efflux pumps, both of which decrease cellular concentrations of quinolones. Finally, this review will discuss recent advancements in our understanding of how quinolones interact with gyrase and topoisomerase IV and how mutations in these enzymes cause resistance. These last findings suggest approaches to designing new drugs that display improved activity against resistant strains.



Over a period of a few decades, quinolones have transformed from a small and unimportant class of drugs used primarily to treat urinary tract infections to some of infections caused by enteric bacteria.[1] By the 1970s, several first-generation quinolones, oxolinic acid being the most notable, had been synthesized and introduced into the clinic