

RESEARCH ARTICLE

OPEN ACCESS

RATIONALITY PROFILE THE USE OF ANTIBIOTICS IN THYPOID FEVER PATIENTS AT HOSPITALIZATION BPM CLINIC (BHAKTI PRATAMA MAYANG)

Novi Ahdina¹, Sutrisno², Firdha Aprilia³

^{1,3}Faculty of Health Sciences, Dr Soebandi University Jember and Postal Code 68111

²Department of Nursing, Politeknik Kesehatan Kementerian Kesehatan, Malang, Indonesia

Submitted: 1 Oktober 2023

Accepted: 15 Oktober 2023

Published: 20 Januari 2023

ABSTRACT

Background: Typhoid fever is an infectious disease. In Bhakti Pratama Mayang Clinic (BPM) is first from 10 diseases treated, for the first 6 months in 2022. In the treatment, the 3rd generation cephalosporin class is the main choice at BPM clinic. Irrationality in accuracy of the drug, accuracy of the dose, including the duration of antibiotic administration at BPM Clinic may occur. The purpose this study is to provide an overview the rationality using antibiotics in typhoid fever patients. **Method:** descriptive research design with secondary data population medical record of typhoid fever patients at BPM Clinical Inpatient in 2022. The sample used 96 medical record with total population technique, checklist measuring instrument and data recapitulation sheet with descriptive analysis of frequency distribution and percentage. **Results:** The types of antibiotics used for typhoid fever inpatients at BPM Clinic are almost all of cephalosporin class, namely most (53%) cefotaxime and (44%) ceftriaxone. The rationality of antibiotics used in typhoid fever inpatients all rational, namely Right Diagnosis, Right Patient, Right Route of Administration, and almost all for Right Dosing Regimen (95%) and Right Time of Administration (88%). **Discussion:** Chloramphenicol is the first-line antibiotic for the treatment for typhoid fever, in BPM Clinic 3rd generation cephalosporin used. **Conclusion:** Cephalosporin class (cefotaxim and ceftriaxone) are the main choice of antibiotics for typhoid fever patients at BPM Clinic and the rationality of giving antibiotic therapy for 3 appropriate ones is all 100% (Diagnosis, Patient, Route of Administration), and the other 2 are almost all for the Dosage Regimen (95%) and duration of administration (88%)

Keywords: Antibiotic, Rationality, Typhoid Fever

INTRODUCTION

Typoid fever is generally known by public as thypus. Typoid fever is an acute systemic infectious disease caused by the microorganism *Salmonella enterica serotype typhi* (*S. Typhi*). This disease attacks the digestive tract in children and adults through infected food, feces, urine and water. Theoretically, according to the 2021 Minister of

Health, empirical therapy for typhoid fever is divided into 3 options, and chloramphenicol is the first choice for typhoid fever.

Law number 6 of 1962 concerning epidemics states that typhoid fever is an infectious disease. To reduce the outbreak of typhoid fever cases, the rational and appropriate use of antibiotics is very important (Melarosa, 2019). The results of a preliminary study conducted by researchers at the Bhakti Pratama Mayang (BPM) Clinic were obtained from the top 10 diseases treated, typhoid fever was in first place during the first 6 months of 2022. With a total of 96 patients (14%) out of 711 inpatients in 2022 at the Bhakti Pratama Mayang Clinic. In terms of treatment, cefotaxime and ceftriaxone are antibiotics which often given to typhoid fever patients in inpatient BPM clinics. Irrationality accuracy of the medication, accuracy of the dose, including the duration of antibiotic administration at the BPM Clinic may occur. To ensure that typhoid fever patients receive effective drug therapy and reduce infectious disease outbreaks and death rates due to typhoid fever, this is the reason why the author examines about the rationality profile the use of antibiotics in typhoid fever patients. So that the purpose of this research is to know the rationality profile the use of antibiotics in typhoid fever patients who are hospitalized at the BPM clinic.

METHODS

This research is a descriptive study with a secondary data population of medical records of Typhoid fever patients inpatients at the BPM Clinic in 2022. The total of samples used in this research was 96 patient medical record data and sampling technique used total population. Retrieval of patient medical record data was carried out in the medical records room of the BPM (Bhakti Pratama Mayang) clinic with an ethical statement (No.401/KEPK/UDS/VI/2023) in August. Data analysis was carried out descriptively analytically with the help of the Microsoft Office Excel 2016 program and then presented in the form of a percentage table (%) and explained textually.

RESULTS

The data obtained from research consists of general data and special data. The following are the characteristics of Typhoid fever patients who have been hospitalized and received antibiotic therapy at the BPM Clinic based on gender, age and length of stay. Then the specific data is the type of antibiotic used by inpatients with typhoid fever, and the rationality of the antibiotic given to the patient.

During the first 6 months of 2022, based on gender, the number of typhoid fever patients was found to be mostly female, 53 patients (55%), then based on the patient's age group, the majority were teenagers, 32 patients (33%), and based on length of stay. , typhoid fever patients stay at the BPM Clinic (74%) 3-6 days.

Table 1. Characteristics of Typhoid Fever Patients During the First 6 Months of 2022
Based on Gender, Age and Length of Stay at BPM Clinic Jember

Characteristics	Total n=96	Percentage %
Gender		
Male	43	45%
Female	53	55%
Age		
Toddler (0-5 Tahun)	10	10%
Children (6-11 Tahun)	9	9%
Teenager (12-25 Tahun)	32	33%
Mature (26-45 Tahun)	25	26%
Elderly (46-65 Tahun)	16	17%
Seniors >65 Tahun	4	4%
Length of Hospitalization		
<3 Days	15	16%
3-6 Days	71	74%
7 Days+	10	10%

Table 2. Classes and Types of Antibiotics Given to Thypoid Fever Patients
During the First 6 Months of 2022 at BPM Clinic Inpatient

No	Classes of antibiotic	Types of antibiotic	Total	percentage
1	B-Lactam	Amoxcilin	3	3%
2	Cephalosporins	Cefotaxime	51	53%
		Ceftriaxone	42	44%
Total			96	100%

The results of the research showed that almost all 93 patients (97%) were given cephalosporin class drugs, including Cefotaxime (53%) and Ceftriaxon (44%), and 3 patients (3%) were given B-Lactam class drugs.

Table 3. An overview the rationality for antibiotics in typhoid fever patients based
on the 2021 Permenkes treatment standards

Category	Right Diagnose	Right Patiens	Right Dosage Regimen	Right Route of Administration	Right Duration of Administration
Right	96 Patiens (100 %)	96 Patiens (100 %)	91 Patiens (95%)	96 Patiens (100 %)	84 Patiens (88%)
Not Exactly	-	-	5 Patiens (5%)	-	12 Patiens (12%)

The rationality of antibiotics used in typhoid fever inpatients all rational, namely Right Diagnosis, Right Patient, Right Route of Administration, and almost all for Right Dosing Regimen (95%) and Right Time of Administration (88%).

Table 4. Results of Rationality The Use of Antibiotics in Typhoid fever Patients During The First 6 Months of 2022 at BPM Clinic Inpatient

No	Results	Total Patiens	percentage
1	Rational	79	82%
2	Irrational	17	18%
Total		96	100%

From the rationality results, it was found that almost all 79 patients (82%) had used antibiotics rationally, and 17 patients (18%) had used antibiotics irrationally.

DISCUSSION

Chloramphenicol is the first line antibiotic for the treatment of typhoid fever, in the BPM Clinic the 3rd generation cephalosporin is more used. Almost all 93 patients (97%) typhoid fever patients at BPM Clinic are given 3rd generation cephalosporin antibiotics, where the drug works by inhibiting and killing bacteria without disturbing human body cells. This drug has a broad spectrum, and its resistance to bacteria is still limited, so it is considered an effective antibiotic for treating typhoid fever in the short term so that the cost of typhoid fever therapy is lower (Pratiwi, 2022).

In this research, the widal laboratory was used to support the presence of *S.thypi* bacteria, and 96 patients (100%) had right diagnosis of typhoid fever. The description right of diagnosis in this study is supported by the results of research conducted by Hayati and Emilia which also produced a 100% correct diagnosis (Hayati et al., 2021). According to researchers, in establishing a diagnosis, anamnesis and physical examination showed symptoms of fever, gastrointestinal disorders and impaired consciousness. Suspicion of typhoid fever is supported by laboratory findings showing typhus. Then the right patient, also has result in 96 patients (100%). With consideration of comorbidities, special groups such as neonates, children, pregnant women, and patients with a history of allergies who are categorized as right patients (Minister of Health Regulation, 2021). It is also supported by research conducted by Hayati and Emilia which also resulted in 100% right patient outcomes (Hayati et al., 2021). The result for the right dose is 91 patients (95%) received the right dose, and 5 patients (5%) did not receive the right dosage antibiotic regimen. This could be happened because of differences in the literature used between researchers and medical practitioners in the field. A similar study regarding the correct dose of antibiotics given to hospitalized typhoid fever patients resulted in 4.6% did not receive the right dosage antibiotic regimen, both overdose and underdose. It is necessary to pay attention to the dose of antibiotics given to patients in order to obtain rational drug therapy so that the desired effect is achieved.

Regarding the route of administration, oral administration is the main choice wherever possible, however the intravenous injection route in the treatment of typhoid fever is recommended in BNF (2012). This research all 96 patients (100%) received right route of administration. Supported by research wich did by Sumawati et al 2020. The use of injection provides a faster working effect because it directly enters the systemic circulation without any absorption process so it is faster to reach therapeutic level.

Giving antibiotic that are too long or too short will affect the results of treatment and cause resistance and side effects to the antibiotic used. The results of this research is 84 patients (88%) were right duration of administrations and 12 patients (12%) were not

use right duration of administrations. This is supported by research which did by Putri and Okavilantika, there were more patients who received antibiotic therapy with the right duration of administration than patients who received therapy that did not receive the right duration of administration (Instalasi et al., 2021). One factor in giving antibiotics that is too short is the patient's request to go home, not a request for referral.

In this research, an overview of the rationality of antibiotic in typhoid fever patient was carried out based on the rationality standard for antibiotic according to the 2021 Minister of Health. This is different from previous research which did by (Siti et al., 2019) discussing the evaluation of the use of antibiotics in typhoid fever patients the standard of treatment used as a comparison was the Typhoid Fever Control Guidelines issued by the Indonesian Department of Health (Depkes) in 2006 and WHO in 2011. The result of the use antibiotic rationality in BPM clinics were that almost all (82%) used antibiotics rationally. As for Research Limitations

- 1) The research was carried out retrospectively by researchers taking into account special patient groups based on patient age, body weight and comorbidities
- 2) There has been no direct confirmation between researchers and doctors or clinics
- 3) Researchers carried out analysis only when the patient was hospitalized, so it did not involve observing the patient's clinical outcome data
- 4) Determination of the rationality of antibiotic use is determined by the researchers themselves

CONCLUSIONS

Based on the results of research describing the rationality of antibiotic use in Typhoid fever patients at the BPM (Bhakti Pratama Mayang) inpatient clinic, the conclusions were obtained:

- 1) The types of antibiotics used for inpatients with typhoid fever at the BPM clinic are almost all cephalosporins, namely mostly (53%) cefotaxime and (44%) ceftriaxone.
- 2) The rationality of administering antibiotic therapy for the 3 correct ones is all 100% (Diagnosis, Patient, Route of Administration), and the other 2 correct ones are almost all for the Correct Dosage Regimen (95%) and the Correct Duration of Administration (88%).

REFERENCE

- Belinda et al., 2021; Idrus, 2020; Installation et al., 2021; Kemenkes RI, 2021; KEPMENKES, 2006; Kinanta et al., 2020; Levani & Prastya, 2020; Los, n.d.; Manalu & Rantung, 2021; Normaidah, 2020; Rahmasari & Lestari, 2018; Salsabilla et al., 2019; Sultan et al., 2015)
- Belinda, R., Subarnas, A., & Mutiara, I. (2021). Rasional penggunaan antibiotik menggunakan metode Gyssens pada pasien poli bedah mulut. *Farmaka*, 20(2), 53–59.
- Gina Hamu Rizka, Esy Nansy, R. S. (2015). Analisis Efektivitas Seftriakson dan Sefotaksim pada Pasien Rawat Inap Demam Tifoid. *Analisis Efektivitas Seftriakson Dan Sefotaksim Pada Pasien Rawat Inap Demam Tifoid Anak Di RSUD Sultan Syarif Mohamad Alkadrie Kota Pontianak*.
- Hayati, N., Emelia, R., Kartika, R. S., Tambun, H., Piksi, P., & Bandung, G. (2021). Evaluasi Penggunaan Antibiotik Terhadap Pasien Demam Typoid Di Rs. Kartika Husada Tambun. *Jurnal Ilmiah Indonesia*, Februari, 2022(2), 319–329. <http://cerdika.publikasiindonesia.id/index.php/cerdika/indexDOI:10.36418/cerdika.v2i2.348><http://cerdika.publikasiindonesia.id/index.php/cerdika>
- Idrus, H. H. (2020). *Buku demam tifoid Hasta 2020*. 1(July), 4–105.

- <https://www.researchgate.net/publication/343110976>
- Installation, I., Hospitalization, O., With, X. I., Method, G., & Indonesia, D. (2021). *Evaluasi Rasionalitas Penggunaan Antibiotik Pada Pasien Demam Tifoid Di Instalasi Rawat Inap Rumah Sakit “ X ” Indramayu Dengan Metode Gyssens Evaluation Of The Rationality Of Antibiotic Use In Thypoid Fever Patients In pencernaan tifoid di Indonesia menca.* 1(1), 1–13.
- Kemenkes RI. (2021). Pedoman Penggunaan Antibiotik. *Pedoman Penggunaan Antibiotik*, 1–97.
- KEPMENKES. (2006). *Kepmenkes_2006.pdf*.
- Kinanta, P. B. S., Santhi, D. G. D. D., & Subawa, A. A. N. (2020). Profil pemberian antibiotik dan perbaikan klinis demam pada pasien anak dengan demam tifoid di RSUP Sanglah Denpasar. *Jurnal Medika Udayana*, 9(3), 10–14.
- Levani, Y., & Prastya, A. D. (2020). Demam Tifoid: Manifestasi Klinis, Pilihan Terapi Dan Pandangan Dalam Islam. *Al-Iqra Medical Journal : Jurnal Berkala Ilmiah Kedokteran*, 3(1), 10–16. <https://doi.org/10.26618/aimj.v3i1.4038>
- Los, U. M. D. E. C. D. E. (n.d.). *14 Bekal Dasar Dokter Puskesmas*.
- Manalu, T. N., & Rantung, J. (2021). Faktor-Faktor yang Mempengaruhi Kejadian Demam Tifoid. *Jurnal Penelitian Perawat Profesional*, 3(November), 653–660.
- Normaidah, I. (2020). Review : Patogenesis Dan Diagnosa Laboratorium Demam Tifoid. *Klinikal Sains : Jurnal Analisis Kesehatan*, 8(2), 51–61. https://doi.org/10.36341/klinikal_sains.v8i2.1409
- Pratiwi, R. I., & Anggy Rima Putri. (2022). Perbandingan Efektivitas Ceftriaxone Dan Cefotaxime Pada Pasien Anak Demam Tifoid Di Rumah Sakit Mitra Siaga. *Jurnal Ilmiah Manuntung*, 8(1), 8–13. <https://doi.org/10.51352/jim.v8i1.461>
- Rahmasari, V., & Lestari, K. (2018). Review: Manajemen Terapi Demam Tifoid: Kajian Terapi Farmakologis Dan Non Farmakologis. *Farmaka*, 16(1), 184–195.
- Salsabilla, N., Addawiyah, L., & Fadillah, R. (2019). Pemeriksaan Laboratorium untuk Penunjang Diagnostik Demam Tifoid. *Jurnal Kesehatan Cehadum*, 1(3), 61–68.
- Sultan, R., Mohamad, S., Kota, A., Rizka, G. H., Nansy, E., Susanti, R., Farmasi, P., Kedokteran, F., & Pontianak, U. T. (2015). Demam tifoid merupakan penyakit infeksi yang disebabkan oleh bakteri *Salmonella typhi* pada usus halus yang di transmisikan melewati makanan dan minuman yang terkontaminasi oleh besar di Indonesia , kasus demam tifoid menunjukkan kecendrungan meningkat dar. *RSUD Sultan Syarif*.