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Email : editorijhess@gmail.com

Analysis of Antibiotic Use In Ispa Patients At UPTD. Tanah Luas Community Health Center, North Aceh Regency

Sri Wastuti[1)*], Nurhasanah Rumanda[2)], Tasya Humaira[3)]
[1,2,)] Program Studi Farmasi, Universitas Sains Cut Nyak Dhien Langsa, Jl Perumnas No.45, Paya Bujok Seuleumak, Aceh, 24451, Indonesia

*Corresponding Author
Email : sriwastuti76@gmail.com

Abstract

Upper respiratory tract infection (URTI) is an acute infection that attacks the nose, paranasal sinuses, pharynx, trachea, bronchi, lungs, and epiglottis. Bacteria, viruses, and microbes are the causes of URTI. Antibiotics are the most widely used class of drugs to treat infections. This study aims to determine the rationality of the use of antibiotics used by patients with upper URTI at the Tanah Luas Health Center, North Aceh Regency based on the right indication, right drug selection, right dose, and right patient. This type of research is a non-experimental study with a descriptive analytical research type. Data collection was carried out retrospectively on patient medical records. Data were obtained by analyzing data on the distribution of age, gender, antibiotic therapy, right indication, right drug, right dose and right patient. The results of this study indicate the rationality of antibiotic use in outpatient URTI patients at the UPTD Tanah Luas Health Center, North Aceh Regency, seen based on the criteria of right indication of 100%, right dose of 100%, right drug of 100%, and right patient of 100%.

Keywords : URTI, Drug use, Antibiotic

INTRODUCTION

Acute Respiratory Infection (ARI) is a disease that infects the nose, throat, and lungs. ARI can be divided into two according to the area of infection, namely upper respiratory tract infections consisting of rhinitis, pharyngitis, sinusitis, epiglottitis, otitis media, tonsillitis, and laryngitis. Lower respiratory tract infections consisting of bronchi, pneumonia, bronchitis, and bronchiolitis. An infection caused by an attack by viruses or bacteria on the upper respiratory tract is called upper ARI. Viruses that cause respiratory tract infections are from the coronavirus, adenovirus, myxovirus, herpesvirus, and picomavirus groups. Bacteria that cause respiratory tract infections are from the staphylococcus, streptococcus, pneumococcus, bordetella, hemovilus, and corynebacterium groups (Umar et al., 2017).

Upper respiratory tract infection is a disease that is often suffered and has dangerous complications, namely pharyngitis, sinusitis, and otitis media, so it requires proper treatment. If not treated immediately, it will cause difficulty breathing and worsen into pneumonia which can cause the patient to die (Priwahyuni et al., 2020).

According to the results of RISKESDAS (Basic Health Research), the prevalence of ARI in Indonesia increased from 2013 with an average prevalence of 9.3% to 25.0% in 2018. This number has a range of incidence of around 16.0% -42.0% with 29 provinces having a prevalence above 20%. There are five provinces with the highest prevalence of ARI, namely East Nusa Tenggara (42.0%), Papua (34.0%), Aceh (30.0%), West Nusa Tenggara (29.5%), and East Java (29.0%) (Ministry of Health of the Republic of Indonesia, 2019).

ARI patients are often prescribed antibiotics by doctors, but it turns out that not all ARI patients can be given antibiotics. The use of antibiotics for ARI patients is only given to ARI patients caused by bacteria. If ARI patients who are not caused by bacteria use antibiotics, this is included in the irrationality of drugs. Irrational use of antibiotics can increase medical costs, increase the chances of resistance and increase the chances of side effects (Lalu, S.T, Akili, R.H, Maddusa, S.S, 2020).

Improper use of antibiotics can cause health problems and become a global threat to health, especially the problem of bacterial resistance to antibiotics. Resistance is the ability of bacteria to

neutralize and weaken the effectiveness of antibiotics (Nurbariyah S, et al 2022). This occurs due to inappropriate and repeated use of antibiotics. According to Utami (2011), the availability of antibiotics whose dosage is not clearly understood by clinicians in dealing with a case also plays a role in increasing resistance.

Based on research conducted by Nawawi., et al (2018) at Sultan Syarif Mohammad Pontianak Hospital. Showing that the lack of rationality in the use of antibiotics is seen from the parameters of correct indication (91.72%), correct patient (99.71%), correct drug (72.94), correct regimen consisting of correct route (100%), correct frequency (96.50%), correct dose (72.62%), and correct duration (56.76%). Rational treatment can lead to a decrease in the incidence of antibiotic resistance. The lack of placement of appropriate antibiotic use standards is one of the consequences of irrational antibiotic use, namely antibiotic resistance.

The results of the data obtained at the North Aceh Health Office, the prevalence of non-Pneumonia ARI with the highest number of cases was at the Tanah Luas Health Center with a total of 3994 cases. Patients with respiratory tract infections at the Tanah Luas Health Center in January were 288 cases, February 252 cases, March 415 cases, April 360 cases, May 437 cases, June 270 cases, July 398 cases, August 283 cases, and September 336 cases. Based on the results of an initial survey at the Tanah Luas Health Center, North Aceh Regency, respiratory tract infections were among the 10 biggest diseases in 2023. Antibiotics that are often prescribed for ARI patients at the Tanah Luas Health Center are amoxicillin and Ciprofloxacin.

Based on the description above, the researcher is interested in conducting research on the Analysis of the Rationality of Antibiotic Use in Outpatient ISPA Patients at the Regional Technical Implementation Unit (UPTD) of Tanah Luas Health Center, North Aceh Regency.

RESEARCH METHODS

This type of research is a non-experimental study with a descriptive analytical research type. Data collection was carried out retrospectively on patient medical records. Data were obtained by analyzing data on age distribution, gender, antibiotic therapy, appropriate indications, appropriate drugs, appropriate doses and appropriate patients. The sampling technique in this study was carried out using the total sampling technique, namely all members of the population were used as research samples. The sample used was the medical records of upper respiratory tract infection patients at the Tanah Luas Health Center for the period July-September 2023.

RESULTS AND DISCUSSION

This research was conducted in February 2024 at Tanah Luas Health Center, North Aceh Regency. In this study, the number of samples was 91 respondents. By calculating the percentage of the data, the results are described as follows:

Respondent Characteristics Based on Gender

The gender of respondents is divided into 2 groups, namely male and female, this can be seen in table 1.

Table 1. Frequency Distribution of Respondents' Gender

No.	Gender	Amount	Percentage
1.	Male	35	38,46%
2.	Female	56	61,54%
Total		**91**	**100%**

Based on table 1, it is explained that of the 91 respondents, they were divided into 2 types of groups, namely male and female. It can be seen that there were 56 female respondents (61.54%) and 35 male respondents (38.46%). This study is not in line with the theory that explains the risk factor for increasing the incidence of ARI is with male gender. In boys and girls, when aged 15-24 years, the risk of ARI is not too far. This is related to the need for oxygen where men need more oxygen than women. However, the risk will be doubled in men after the age of 25 years. This is related to outdoor activities, smoking behavior and nicotine (Nelson and Williams, 2014).

Respondent Characteristics Based on Age

Table 2. Frequency Distribution of Respondents' Age

No.	Age	Amount	Percentage
1.	0-5 year	26	28,57%
2.	6-11 year	18	19,78%
3.	12-16 year	9	9.89%
4.	17-25 year	8	8,79%
5.	26-35 year	7	7,69%
6.	36-45 year	6	6,59%
7.	46-55 year	10	10,99%
8.	56-65 year	7	7,69%
Total		**91**	**100 %**

Based on table 4.2, it explains that respondents aged 0-5 years were 16 people (28.57%), aged 6-11 years were 18 people (19.78%), aged 12-16 years were 9 people (9.98%), aged 17-25 years were 8 people (8.79%), aged 26-35 years were 7 people (7.69%), aged 36-45 years were 6 people (6.59%), aged 46-55 years were 10 people (10.99%), and aged 56-65 years were 7 people (7.69%). Acute respiratory tract infections are included in the category of severe infections. ISPA can attack all ages, especially those under 5 years of age because toddlers' immune systems are lower than adults, making them susceptible to ISPA. Age is thought to be related to their immune systems. Infants and toddlers are groups whose immune systems are not yet perfect, so they are still susceptible to various infectious diseases. Suwendra expressed the same thing, in fact, the younger the child, the more often they get ISPA attacks (Hermawan, 2014).

Antibiotic Therapy

Antibiotic therapy in upper ARI patients is grouped with the aim of determining the number of antibiotics used as upper ARI therapy. The grouping can be seen in table 3.

Table 3. Patient demographic data based on antibiotic therapy

No.	Drug Name	Amount	Percentage
1.	Amoxicillin	81	89,01%
2.	Ciprofloxacin	10	10,99%
Total		**91**	**100 %**

Based on table 3, it can be seen that from 91 samples of medical records of ISPA patients at Tanah Luas Health Center, the antibiotic therapy mostly used was amoxicillin antibiotic as many as 81 (89.01%), while ciprofloxacin antibiotic as many as 10 (10.99%). This shows that the penicillin group, namely amoxicillin, is the most widely used antibiotic group of all antibiotic groups. This group is used because it is effective against a variety of bacteria including most gram-positive organisms and is an inexpensive and well-tolerated drug for some infections (Ernyasih, 2018).

Based on the research results, it is known that the use of ciprofloxacin amounted to 10.99% or 10 patients. Where ciprofloxacin is a second-generation agent, which is a type of synthetic drug derived from quinolone. The way this type of antibiotic works is by inhibiting the activity of bacterial DNA gyrase which is bactericidal in nature, and has a broad spectrum in both gram-positive and gram-negative bacteria. Absorption (absorption process) of ciprofloxacin can be carried

out properly by the digestive tract. As with its main function, ciprofloxacin works effectively when used in several diseases including osteomyelitis, soft tissue infections, patyphoid and typhoid fever, urinary tract infections, and respiratory tract infections (Rieuwpassa and Hatta, 2016).

Right Indication

Appropriate indication, namely the accuracy of drug administration seen from the diagnosis made to the patient, if the patient has been diagnosed with upper ARI then it is definitely indicated to use antibiotics (Ministry of Health of the Republic of Indonesia, 2011). The results of the study can be seen in table 4

Table 4. Evaluation of antibiotics based on appropriate indications

No.	Category	Amount	Percentage
1.	Exact	91	100 %
2.	Not Exact	0	0 %
Total		**91**	**100 %**

In table 4 above, it shows that the precise indication indicator is stated as rational, namely 100%. Evaluation of the appropriateness of indications is the process of assessing the administration of drugs that are in accordance with the indications needed by the patient. The appropriateness of indications in administering antibiotics is based on the diagnosis made by the doctor. Evaluation of the appropriateness of indications is seen from whether or not the patient needs to receive antibiotics. The use of antibiotics is said to be appropriate if it is in accordance with the signs or symptoms and the existing diagnosis. The appropriateness of antibiotic use greatly affects the success of therapy in ARI patients (Grasella et al., 2019).

Right Medicine

Right medicine is a way to find out the type of medicine given is in accordance with the patient's needs. Data from research on the evaluation of the use of ISPA drugs based on right medicine can be seen in table 5.

Table 5. Results of Drug Evaluation

No.	Drug Dosage Form	Amount	Percentage
1.	Exact	91	100 %
2.	Not Exact	0	0 %
Total		**91**	**100 %**

In table 5 above, it shows that the appropriate drug indicator is stated as rational, namely 100%. Rationality in the use of drugs is essential to increase the effectiveness and efficiency of medical costs. Facilitate the rights of all people to obtain affordable drugs. Prevent the impact of inappropriate drug use that can harm patients. Increase public (patient) trust in the quality of health services (Pulungan et al., 2019). Inappropriate use of drugs can have various negative impacts on patients, such as worsening the patient's condition, reducing the patient's quality of life, causing side effects and excessive costs (Ministry of Health, Ri, 2011).

Right Dosage

The right dose is the accuracy of administering medication according to the prescribed dose. Data from research on the evaluation of ISPA medication use based on the right medication can be seen in table 6.

Table 6. Results of Correct Drug Dosage Evaluation

No.	Drug Dosage Form	Amount	Percentage
1.	Exact	91	100 %
2.	Not Exact	0	0 %
Total		**91**	**100 %**

In table 6 above, it shows that the appropriate drug indicator is stated as rational, namely 100%. In all antibiotics, incorrect dosing results in patient non-healing, increased risk of drug side effects, increased treatment costs, and bacterial resistance to antibiotics. The use of antibiotics with insufficient doses will result in non-healing of the disease, bacterial resistance, and increased treatment costs, while if the antibiotic dose given is excessive, it will result in increased drug side effects and increased drug toxicity (Hanum, 2018).

Right Patient

The correct way of administering medication is a rule of drug use that must be considered by patients in providing rational treatment. Data from research on the evaluation of ISPA drug use based on the correct way of administering medication can be seen in table 7.

Table 7. Results of Patient Accurate Evaluation

No.	Drug Dosage Form	Amount	Percentage
1.	Exact	91	100 %
2.	Not Exact	0	0 %
Total		**91**	**100 %**

In table 7 above, it shows that the appropriate drug indicator is stated as rational, namely 100%. Patient accuracy is to see whether or not there are drug contraindications with the patient's condition. In this study, the types of antibiotics amoxicillin and ciprofloxacin have met the criteria for patient accuracy with a percentage of accuracy of 100%. The results showed that no patients had a history of allergies to antibiotics or had comorbidities that were contraindicated for the antibiotic. The antibiotics given were in accordance with the pathological conditions or the process of the disease or the physiology of the patient and there were no contraindications.

CONCLUSION

Based on the results of the research and discussion, it can be concluded that the analysis of the rationality of antibiotic use in outpatient ISPA patients at the Tanah Luas Health Center UPTD, North Aceh Regency, is as follows, based on the results of determining the characteristics of ISPA patients at Tanah Luas Health Center, it shows that out of 91 ISPA patients, there were 16 respondents aged 0-5 years (28.57%), 18 respondents aged 6-11 years (19.78%), 9 respondents aged 12-16 years (9.98%), 8 respondents aged 17-25 years (8.79%), 7 respondents aged 26-35 years (7.69%), 6 respondents aged 36-45 years (6.59%), 10 respondents aged 46-55 years (10.99%), and 7 respondents aged 56-65 years (7.69%). There were 56 female respondents (61.54%) and 35 male respondents (38.46%) dan the rationality of antibiotic use in outpatients with acute respiratory infection at the Tanah Luas Health Center UPTD, North Aceh Regency, was seen based on the criteria of 100% correct indication, 100% correct dose, 100% correct drug, and 100% correct patient.

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