

## The use of cetirizine in allergic contact dermatitis patients at Sekip Palembang Health Center

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### ABSTRACT

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World Allergy Organization (WAO) reported that 22% of the global population experiences allergies, and this prevalence continues to increase each year. The prevalence of dermatitis in Indonesia is quite high, at 6.78%, with the highest rate in South Kalimantan (11.3%) and the lowest in West Sulawesi (2.57%). In South Sumatra, approximately 2,584,000 people suffer from dermatitis. Therapy for allergic contact dermatitis patients includes medicamentous treatments, such as systemic antihistamines, with cetirizine being one of the options. This study aimed to determine the pattern of cetirizine use, including the frequency, duration of administration, and the characteristics of allergic contact dermatitis patients such as gender and age who received cetirizine therapy. The drug utilization study of cetirizine was conducted in December 2021 at the Sekip Palembang Community Health Center, involving 34 out of 49 patients who met the inclusion criteria. The sampling method used was total sampling. The majority of allergic contact dermatitis patients were late elderly individuals, aged 56-65 yr (32.4%), and women (58.8%). Rationality assessment showed good results in terms of diagnosis (100%), indication (100%), duration of drug administration (97.1%), frequency of drug administration (100%), and drug interactions (93.7%). This study hopefully can enhance the effectiveness of cetirizine usage, enabling healthcare providers to prescribe the medication more rationally according to the patients' allergic symptoms.

### ABSTRACT

*World Allergy Organization (WAO)* melaporkan sebanyak 22% populasi dunia mengalami alergi dan angka ini terus meningkat setiap tahun. Prevalensi dermatitis di Indonesia cukup tinggi, yaitu 6,78%, dengan prevalensi tertinggi di Kalimantan Selatan (11,3%) dan terendah di Sulawesi Barat (2,57%). Di Sumatera Selatan, sebanyak 2.584.000 orang mengalami dermatitis. Terapi yang dapat diberikan kepada pasien dermatitis kontak alergi meliputi pengobatan sistemik seperti antihistamin, salah satunya cetirizine. Studi ini bertujuan untuk mengetahui pola penggunaan cetirizine, yang mencakup frekuensi, durasi pemberian, serta karakteristik pasien dermatitis kontak alergi, seperti jenis kelamin dan usia, yang menerima terapi cetirizine. Penelitian ini menggunakan metode deskriptif dengan data sekunder berupa rekam medis di Puskesmas Sekip Palembang. Terdapat 34 dari 49 pasien yang memenuhi kriteria inklusi. Pengambilan sampel dilakukan dengan metode *total sampling*. Mayoritas penderita dermatitis kontak alergi adalah kelompok usia lansia akhir (56-65 tahun) sebanyak 32,4% dan perempuan sebanyak 58,8%. Rasionalitas penggunaan cetirizine menunjukkan hasil yang baik, yaitu tepat diagnosis (100%), tepat indikasi (100%), tepat durasi pemberian obat (97,1%), tepat frekuensi pemberian obat (100%), dan tepat interaksi obat (93,7%). Penelitian ini diharapkan dapat meningkatkan efektivitas penggunaan cetirizine agar tenaga kesehatan bisa memberikan obat yang rasional sesuai dengan gejala alergi dari pasien.

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## INTRODUCTION

Allergic contact dermatitis is a disease characterized by inflammation of the skin caused by certain allergen and included in a type IV hypersensitivity reaction.<sup>1</sup> The World Allergy Organization (WAO) reported that 22% of the world's population experiences allergies and this increases every year. The estimated global prevalence of atopic dermatitis is approximately 2.6%, affecting around 204 million people. This including 101.3 million adults (with a prevalence of 2.0%) and 102.8 million children (with a prevalence of 4.0%). The prevalence of dermatitis in Indonesia is quite high, about 6.78%, with the highest in South Kalimantan (11.3%) and the lowest in West Sulawesi (2.57%).<sup>2,3</sup> According to data from the Health Department of South Sumatra, out of a total population of 7,321,100 people in South Sumatra, 2,584,000 people (35.25%) are affected by dermatitis.<sup>4</sup>

Therapy that can be given to patients with allergic contact dermatitis includes using medical therapy in the form of systemic treatment. Systemic treatment that is usually given is by using antihistamines.<sup>5</sup> Antihistamines are substances that have the effect of reducing or blocking the effects of histamine that occur in the body by blocking histamine receptors.<sup>6</sup> First-generation H<sub>1</sub> antihistamines can easily cross the blood-brain barrier, leading to side effects such as sedation, drowsiness, fatigue, and difficulties with concentration and memory, all of which can negatively impact brain function. In contrast, newer second-generation H<sub>1</sub> antihistamines are considered safer, as they cause significantly less sedation than the first generation.<sup>7</sup>

Cetirizine is a second-generation antihistamine that can be used to treat several allergies, one of which is allergic contact dermatitis.<sup>8</sup> Cetirizine is a peripheral histamine H<sub>1</sub> receptor

antagonist that works quickly. Unlike first generation antihistamines such as diphenhydramine and doxylamine, cetirizine largely does not cross the blood-brain barrier and central nervous system neurons so cetirizine produces minimal sedation effects compared to first generation antihistamines.<sup>9</sup> Cetirizine is preferred over loratadine for faster allergy relief, as it works within an hour compared to loratadine's three hours. Cetirizine may provide better symptom relief but is more likely to cause drowsiness. Loratadine is less sedating but can still cause side effects like nervousness.<sup>10</sup>

A study conducted at the Tarub Community Health Center, Tegal City in 2022 demonstrated that, among 100 antihistamine prescriptions, 30 prescriptions used cetirizine. Another study conducted at the Kusuma Farma Kudus Pharmacy showed that the use of cetirizine during the period from January to July 2021 was 354 tablets (68.13%) compared to loratadine which was only 167 tablets (31.87%).<sup>11,12</sup>

Although the allergic contact dermatitis is the 10<sup>th</sup> most common disease in South Sumatra, especially in Palembang city, studies on the pattern of use of cetirizine in patients with allergic contact dermatitis are still limited. This study aimed to evaluate the pattern of cetirizine use in allergic contact dermatitis patients at the Sekip Palembang Community Health Center.

## MATERIAL AND METHODS

### Study design

This study was conducted using a descriptive method in the form of a study of drug use patterns using secondary data obtained from medical records at the Sekip Palembang Health Center. The study included patients diagnosed with allergic contact dermatitis at Sekip Palembang Health Center who received

cetirizine therapy between January 2021 and December 2021. Inclusion criteria required patients to be aged between 18 and 65 yr, with complete and readable medical records. Patients with complications from allergic contact dermatitis were excluded. Incomplete records were excluded from the analysis. The method used in this study is total sampling.

### Protocol of study

Patient medical record data were recorded on the data collection sheet, and processed on the pattern of cetirizine drug use based on age and gender characteristics, correct diagnosis, correct indication, duration of administration, frequency of administration, and drug interactions and evaluated according to the order on the data collection sheet which was quantitatively evaluated regarding the rationality of drug use including the accuracy of diagnosis, accuracy of indication, accuracy of duration of drug administration, accuracy of drug frequency and accuracy of drug interactions.

### Ethics approval

This study has been approved by Ethic Committee, Faculty of Medicine,

Universitas Sriwijaya with Number 259-2023. This study also received a permit from Palembang Public Health Office to carry out research at Sekip Health Center. Palembang with number 800.2/9464/DINKES/2023.

### Data analysis

The data were presented as percentage, analyzed by univariate analysis, and the results were analyzed descriptively.

## RESULTS

A total of 34 samples who met the inclusion and exclusion criteria were involved in this the study. The characteristics of allergic contact dermatitis patients are presented in TABLE 1. The most patients at the age of 56-65 yr (11 people) and the lowest at the age of 26-35 yr (4 people). The majority of patients with allergic contact dermatitis were female, accounting for 20 out of 34 patients (58.8%).

TABLE2 shows the rationality use of cetirizine based on the correct diagnosis, appropriate indication, appropriate duration of administration, appropriate of frequency of administration, and potency of drug interaction.

TABLE 1. Characteristics of allergic contact dermatitis patients

Variable	n (%)
Age (yr)	
• 18-25	5 (14.7)
• 26-35	4 (11.8)
• 36-45	7 (20.6)
• 46-55	7 (20.6)
• 56-65	11 (32.4)
Gender	
• Man	14 (41.2)
• Woman	20 (58.8)

**TABLE 2. Rationality of cetirizine use in allergic contact dermatitis patients at Sekip Palembang Health Center**

Rationality criteria	n (%)
<b>Diagnosis</b>	
• Correct diagnosis	34 (100.0)
• Incorrect diagnosis	0 (0.0)
<b>Indication</b>	
• Appropriate	34 (100.0)
• Inappropriate	0 (0.0)
<b>Duration of administration</b>	
• < 3 d	1 (2.9)
• ≥ 3 d	33 (97.1)
<b>Frequency of administration</b>	
• 1 time	34 (100.0)
• > 1 time	0 (0.0)
<b>Drug interaction</b>	
• Synergistic	0 (0.0)
• Potentiation	0 (0.0)
• Antagonistic	4 (6.3)
• No interaction	59 (93.7)

A diagnosis is considered correct if it is made in accordance with the symptoms experienced by the patient. The diagnosis of allergic contact dermatitis can be conducted by taking a thorough the patient history including daily work, diet, and physical examination of the area experiencing dermatitis based on the patient’s medical record. This study showed that diagnosis for allergic contact dermatitis is 100% correct (TABLE 2).

An indication is considered appropriate if the drug administration is adjusted based on the pathological and physiological conditions of the patient, including paying attention to drug contraindications, complications, pregnancy and elderly age.<sup>13</sup> Giving cetirizine is considered appropriate indication if it is given to patients who experience symptoms of allergic contact dermatitis. This study showed that

the cetirizine administration is 100% appropriate (TABLE 2).

Cetirizine can be administered with a minimum duration of 3 d.<sup>14</sup> Among the total allergic contact dermatitis patients who received cetirizine drug therapy, it was found that the total duration of drug administration for 33 patients (97.1%) was administered for more than 3 d (97.1%) and less than 3 d for one patient (2.9%) (TABLE 2). Furthermore, all patients (34 or 100%) were administered cetirizine once a day (TABLE 2).

Almost cetirizine is administered to allergic contact dermatitis patients in combination with other drugs (63 combination). However, most combinations did not exhibit the potential interaction (59 or 93.7%). Only 4 (6.3%) combinations that showed the potential interaction (antagonist) with cetirizine (TABLE 2).

## DISCUSSION

Elderly people experience allergic contact dermatitis more often than young people. This can be caused by changes in the function of the skin's protection and immune system as we age.<sup>16</sup> The combined effects of environmental and intrinsic (internal) aging factors throughout life weaken the epidermal barrier function, leading to significant health issues. As people age, their skin produces insufficient sweat, making it more vulnerable to widespread dryness, itching, infections, vascular problems and pigmentary changes.<sup>17</sup>

The results of this study are in line with a study conducted by Rehan *et al.*<sup>15</sup> at the Skin and Venereology Polyclinic at Meuraxa Regional Hospital, Banda Aceh City in 2020 for the period 2015-2018. It was reported that the largest number of patients suffering from dermatitis were in the age range 56- 65 yr (20.8%) followed by 46-55 yr (18.5%), and 36-45 yr (13.9%) with the smallest number being in the 0-5 y.o. range (0.6%).<sup>15</sup>

Women generally have thinner skin and produce less oil than men, which makes them more prone to skin damage and dermatitis. This difference is linked to hormonal factors, as women's skin tends to lose moisture more quickly, raising the risk of dermatitis, particularly in jobs that involve frequent exposure to water, such as cleaning and healthcare.<sup>18</sup>

The results of the study are in line with a study conducted by Marissa *et al.*<sup>19</sup> in the Allergy Division of the Skin and Venereology Outpatient Installation of Dr. Hospital. Soetomo, Surabaya for the 2014-2019 period in 2019. The results showed that the distribution of patients who experienced DKA was mostly 270 women (93.4%) and 19 men (6.57%).<sup>19</sup> Based on a study at the Dermatology and Venereology Clinic of Drs. H. Amri Tambunan General Hospital from January 2020 to December 2023, allergic contact dermatitis was most commonly

suffered by women, with a prevalence of 54.21%, compared to men with a prevalence of 45.79% of the total data from 2020 to 2023.<sup>20</sup>

The length of time a drug is administered is one of the key factors in rational drug use. A medication is considered rational if it is prescribed in line with the patient's condition. The duration of drug use can influence the effectiveness of the treatment in patients.<sup>21</sup> The duration of administration of cetirizine is at least 3 d to see whether the reaction given by the drug can reduce the symptoms experienced by the patient.<sup>22</sup>

The frequency of medication administration is an important factor in assessing the rationality of drug use. The determination of the medication frequency should be adjusted to the specific condition of the disease experienced by each patient.<sup>23</sup> Cetirizine has a duration of 12-24 hr and is included in the intermediate group and consists of 5 mg and 10 mg preparations.<sup>22</sup>

The frequency of administration of cetirizine is once a day because the maximum dose of cetirizine is 10 mg and the preparation used in this study is 10 mg.<sup>22</sup> Drug interactions are effects resulting from administration of drugs given with other drugs. Effects that can result from drug interactions include decreased effects, increased effects and toxicity.<sup>24</sup>

## CONCLUSION

In conclusion, the use of cetirizine in allergic contact dermatitis patients at Sekip Palembang Health Center is rationale. The rationality is based on correct diagnosis (100%), appropriate indication (100%), appropriate duration of drug administration (97.1%), appropriated frequency of drug administration (100%) and potency of drug interactions (93.7%). This study is expected to serve as an evaluation tool



to improve the effectiveness of cetirizine use so that healthcare professionals can provide the medication rationally based on the allergic symptoms of the patients.

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