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Clinical Profile of Contact Dermatitis Patients at the Allergy-Immunology Division of Dermatology and Venereology Outpatient Clinic

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ABSTRACT

Background: Contact dermatitis is an inflammatory skin response that can be caused by several things. This inflammatory reaction is most often caused by external compounds that become allergens or irritants to the body. **Purpose:** To evaluate the clinical profile of contact dermatitis patients at the allergy-immunology division of dermatology and venereology outpatient clinic of Dr. Soetomo general academic hospital. **Methods:** The sampling technique used in this study is a total sampling technique and was processed with Excel descriptively. **Result:** The most frequent age group diagnosed with contact dermatitis was the 20–45-year-old age group (45.5%). The most frequent gender was female (72.2%). The most frequent occupation was private employee (30.8%). The most frequent suspected causal factor was cosmetics (35.2%). Itching was the most common type of patient complaint (44.1%). Face was the most frequent location (30.8%). Erythematous macules were the most frequent clinical manifestation (45.9%). The diagnosis of contact dermatitis was divided into allergic contact dermatitis ACD (60.4%) and irritant contact dermatitis ICD (39.6%). The most frequent topical therapy was corticosteroid (53.2%). Meanwhile, the most systemic therapy is antihistamine (73.8%). **Conclusion:** ACD is more prevalent than ICD and is more prevalent in women between the ages of 20 and 45. The most prevalent occupation distribution is among private employees. Cosmetics are the most frequently suspected cause factor. Itch is the most common patient complaint. The face is where contact dermatitis occurs most frequently. Erythematous macules are the most frequent clinical symptom. Corticosteroids and antihistamines are the most commonly given medication.

Keywords: profile, contact dermatitis, sensitive skin, human and health.

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BACKGROUND

Contact dermatitis is an inflammatory skin response that can be caused by several things. This inflammatory reaction is most often caused by external compounds that become allergens or irritants to the body. Exudation, papules, and peeling can be signs of contact dermatitis. Symptoms of irritant contact dermatitis may include burning, itching, stinging, aches, and pains, especially in the early clinical period, whereas pruritus is more common in allergic contact dermatitis.[1] Contact dermatitis is also often referred to as "eczema". This disease is not included in the class of infectious diseases.[2]

Contact dermatitis can be divided into two categories, namely Irritant Contact Dermatitis (ICD) and Allergic Contact Dermatitis (ACD). ICD is an inflammatory response that is nonspecific. The sensitization process does not occur in patients with ICD. Meanwhile, ACD is a hypersensitivity to stimulation. In patients, ACD can be detected by the presence of skin inflammation mediated by T-cell antigens.[3]

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Research on contact dermatitis has also been carried out by Dr. Soetomo General Academic Hospital. The research was conducted using a retrospective method using existing secondary data. According to research conducted from 2014-2017 at the Dr. Soetomo General Academic Hospital Surabaya, the number of cases that occurred can be said to be quite linear and did not show a significant increase from year to year. In 2014, there were 228 cases; in 2015, there were 344 cases; in 2016, there were 252 cases; and in 2017, there were 281 cases of contact dermatitis at the Outpatient Clinic.[4]

This retrospective study was carried out from January 2020 to December 2021. According to Beibl et al., contact dermatitis is often underdiagnosed because the patient can just stop using the suspected causative agent to prevent it from happening again. Also, there are not many data points available regarding contact dermatitis that occurs in the general population. According to an article written by Rundle, synthetic detergents are one of the biggest contributors to cases of dermatitis on the hands. It was also mentioned that chemicals that can trigger dermatitis are fragrances, preservatives, and surfactants.[5]

With the data above, the clinical profile of contact dermatitis patients at the allergy-immunology division, dermatology and venereology outpatient clinic of Dr. Soetomo General Academic Hospital during January 2020-December 2021, which will be carried out using a descriptive method, needs to be done.

METHODS

This study used a descriptive study design aimed at evaluating the profile of contact dermatitis patients in Allergy-Immunology Division of Dermatology and Venereology Outpatient Clinic of Dr. Soetomo General Academic Hospital during January 2020-December 2021. The medical record contains basic data (age, gender, occupation), anamnesis (suspected causative agent, patient's complaint), clinical manifestation, location of lesion, diagnosis, and therapy. This research has been reviewed and approved by the Ethics Committee at Dr. Soetomo General Academic Hospital Surabaya (No.0661/LOE/301.4.2/X/2001).

RESULT

There were a total of 227 samples from contact dermatitis patients at the Allergy-Immunology Division of Dermatology and Venereology Outpatient Clinic of Dr. Soetomo General Academic Hospital during January 2020-December 2021. The sample consisted of 137 ACD patients and 90 ICD patients. The WHO (2013) classification was applied for the age grouping method.

The highest age group distribution was 20 - <45 years old with 104 (45.8%) patients, and the lowest patient age group distribution was ≥ 60 years old with 31 (13.7%) patients. Table 1 also shows the gender distribution of contact dermatitis patient at the Allergy-Immunology Division, Dermatology and Venereology Outpatient Clinic of Dr. Soetomo General Academic Hospital during January 2020 - December 2021. The count of male patients is 63 (27.8%), while the count of female patients is 164 (72.2%). The highest patient occupation distribution is private employee, with as many as 70 (30.8%) patients and the lowest patient occupation distribution is merchant, with 1 (0.4%) patient.

Table 1. Age Groups, Gender, and Occupation Distribution of Contact Dermatitis Patients

Age Groups	ACD		ICD		Total	
	n	%	n	%	n	%
≤ 20 Years Old	27	19.7	15	16.7	42	18.5
20 - <45 Years Old	64	46.7	40	44.4	104	45.8
45 - <60 Years Old	30	21.9	20	22.2	50	22.0
≥ 60 Years	16	11.7	15	16.7	31	13.7
Total	137	100	90	100	227	100
Gender						
Female	100	73.0	64	71.1	164	72.2
Male	37	27.0	26	28.9	63	27.8
Total	137	100	90	100	227	100
Occupation						
Private Employee					70	30.8
Housewife					57	25.1
Student					40	17.6
Others					30	13.2
Public Employee					10	4.4
Entrepreneur					8	3.5
Unemployed					5	2.2
Retired					3	1.3
Teacher					3	1.3
Merchant					1	0.4
Total					227	100

ACD = allergic contact dermatitis; ICD = irritant contact dermatitis.

Table 2. Suspected Causative Agent, Complaint, Lesion Location, and Clinical Manifestation Distribution of Contact Dermatitis Patients

Suspected Causative Agent	ACD		ICD		Total	
	n	%	n	%	n	%
Cosmetics	49	45.8	14	26.9	63	35.2
Cleanser	23	21.5	13	25.0	56	31.3
Topical Medication	13	12.1	11	21.2	24	13.4
Food	12	11.2	4	7.7	16	8.9
Topical Herbal Medicine	5	4.7	7	13.5	12	6.7
Clothing	5	4.7	2	3.8	7	3.9
Rubber slippers	0	0.0	1	1.9	1	0.6
Total	107	100	52	100	179	100
Patient's Complaint						
Itch	112	46.3	77	41.4	189	44.2
Red Patches	80	33.1	54	29.0	134	31.3
Burning sensation	37	15.3	41	22.0	78	18.2
Skin Peeling	13	5.4	14	7.5	27	6.3
Total	242	100	186	100	428	100
Lesion Location						
Face	77	36.0	29	22.3	106	30.8
Hand	42	19.6	43	33.1	85	24.7
Leg	35	16.4	32	24.6	67	19.5
Neck	18	8.4	11	8.5	29	8.4
Back	18	8.4	7	5.4	25	7.3
Waist	13	6.1	5	3.8	18	5.2
Armpit	11	5.1	3	2.3	14	4.1
Total	214	100	130	100	344	100
Clinical Manifestation						
Erythematous macules	128	47.6	84	43.5	212	45.9
Scales	35	13.0	38	19.7	73	15.8
Papules	51	19.0	21	10.9	72	15.6
Pustules	22	8.2	11	5.7	33	7.1
Erosion	33	12.3	39	20.2	72	15.6
Total	269	100	193	100	462	100

Note: One patient may experience more than one suspected causative agent, complaint, location, and clinical manifestation.
ACD = allergic contact dermatitis; ICD = irritant contact dermatitis.

Table 3. Diagnosis Distribution of Contact Dermatitis Patients

Diagnosis	n	%
ACD	137	60.4
ICD	90	39.6
Total	227	100

ACD = allergic contact dermatitis; ICD = irritant contact dermatitis.

Table 4. Therapy Distribution of Contact Dermatitis Patients

Topical Therapy	ACD		ICD		Total	
	n	%	n	%	n	%
Corticosteroid	94	55.0	72	51.1	166	53.2
Moisturizer	43	25.1	31	22.0	74	23.7
Antibiotic	34	19.9	38	27.0	72	23.1
Total	171	100	141	100	312	100
Systemic Therapy						
Antihistamine	99	75.0	67	72.0	116	66.3
Corticosteroid	31	23.5	20	21.5	51	29.1
Antibiotic	2	1.5	6	6.5	8	4.6
Total	132	100	93	100	175	100

Note: One patient receives more than one medication.
ACD = allergic contact dermatitis; ICD = irritant contact dermatitis.

The highest suspected causative agent distribution was cosmetics with as many as 63 (35.2%) patients. Followed by cleanser for as many as 56 (31.3%) patients, topical medication for as many as 24 (13.4%) patients, food for 17 (9.7%) patients, and herbal medicine for as many as 12 (6.7%). The topical herbal medicine can be in the form of eucalyptus oil, wasp oil, or other herbal topical medications. And the least frequent suspected causative agent was rubber slippers, with 1 (0.6%) patient. One of the foods that can be a causative factor in contact dermatitis is shrimp. And two examples of cosmetic that can cause contact dermatitis are perfume and cosmetic cream.

The highest patient complaint distribution was itch, with as many as 189 (44.1%) patients and the lowest

patient complaint distribution was abnormal skin growth, with as many as 27 (6.3%). The highest location of lesion distribution was on the face as many as 106 (30.8%) patients. And the lowest location of lesion distribution was the armpit for as many as 14 (4.0%) patients. The highest clinical manifestation distribution experienced by the patient was erythematous macules in as many as 212 (54.3%) patients. And the lowest clinical manifestation distribution on the patient was pustules in as many as 33 (8.4%) patients.

The highest diagnosis distribution of the patients was ACD, with as many as 137 (60.4%) patients. The lowest diagnosis distribution of the patient was ICD, with as many as 90 (39.6%) patients. The highest topical therapy distribution among patients is corticosteroid, with as many as 166 (53.2%) patients. The lowest topical therapy distribution among the patients was antibiotic, with as many as 72 (23.0%) patients.

The highest topical therapy distribution of the patient is antihistamine as many as 116 (73.8%) patients and the lowest topical therapy distribution among patients was antibiotic with as many as 8 (3.5%) patients. The antibiotics that are usually used in the treatment of contact dermatitis are sodium fusidate and gentamicin for topical medications and amoxicillin for systemic therapy.

DISCUSSION

As humans get older, the variety of activities carried out usually decreases. Humans over 60 have less exposure to causative materials than humans who are in their productive years. This resulted in the distribution of contact dermatitis patients at the Allergy-Immunology Division of Dermatology and Venereology Outpatient Clinic of Dr. Soetomo General Academic Hospital during January 2020 - December 2021 who were the least in the age range over 60 years old, with a total of 31 patients (13.7%). Meanwhile in this study, patients of unproductive age were in the second position in the age group below 20 years old, with a total of 42 patients (18.5%). This is also because young patients are still rarely exposed to suspected causative agents and there is also still no excessive immune response in children.[6]

Meanwhile, in this study, age distribution range that experiences the most contact dermatitis was the age range of 20 to 45 years old, which was 104 patients (45.8%). Most of these ages already have a steady activity or job. This results in them getting a lot of exposure to ingredients that can cause contact dermatitis.

The most frequent gender distribution was female with 164 (72.2%) subjects in this study. While men had a smaller distribution of 63 (27.8%) subjects. A study from Brazil also gave a similar result, namely that most of the patients were female (71.5%).[7] Also, a study at Dr. Soetomo General Academic Hospital in 2019 gave a similar figure, with 79.3% of the population being female and the rest being male.[8]

Based on a study conducted by Chen in 2010, it is known that women more often suffer from skin diseases such as allergic diseases, autoimmune dermatoses, hair diseases, and pigmentary disorders. Therefore, in this study, the number of female patients was significantly higher compared to the number of male patients in the same period.[9] Skin thickness is also one of the reasons why female distribution is higher compared to male. A study said that female skin thickness is less than male skin thickness at all ages.[10] Cosmetics are the most frequent suspected causative agent in this study. Estrogen has an influence on inflammatory factors, cytokines, and immune cells. The presence of higher estrogen levels in women also increases the chances of women having allergies to agents that can cause contact dermatitis.[11]

In the distribution of occupations, it can be seen that the jobs most affected by contact dermatitis are those of private employees, with a total of 70 (30.8%) subjects. Then followed by housewives with as many as 57 (25.1%) subjects, students with as many as 40 (17.6%) patients, others with as many as 30 (13.2%), and other types of work such as public employees, entrepreneurs, unemployed, retired, teachers, and also merchants with a number of patients less than 30.

This number is different from a study held in Bandung, where 42.2% of the patients were students. This could be influenced by the fact that the report noted that many of the co-assistants were being tested at the time.[12] There are a slight differences between this study and a retrospective study that was done at Dr Soetomo General Academic Hospital in 2019. In that study, Ginting stated that the most frequent occupation distribution was housewife (25.3%) and private employee (24.5%).

It can be suspected that private employees are required to dress neatly and decently every time they go to work. Therefore, they use cosmetics or good clothing to support their performance in the office. This can be one of the reasons why private employees have the highest number of patient distributions in this field of occupation. People who work as private employees are also still classified as productive age, which causes them to be more often exposed to substances that can cause allergies or irritation. Meanwhile, a housewife is

closely related to activities at home, such as cleaning the house or cooking for their family. Of course, cleaning the house with cleaning agents that are sometimes not suitable for the patient may cause an inflammatory reaction or irritation that causes the patient to experience contact dermatitis.

From the table, the most suspected causative agent that causes the most contact dermatitis is cosmetics, with 63 (35.2%) patients. Research conducted by Miftah said that 60% of patients who have a cosmetic contact dermatitis are caused by facial care product.[13] Meanwhile, cosmetics that cause a lot of allergic contact dermatitis are those that provide color and fragrance. On the other side, moisturizer is one of the most common causes of ACD because it usually contains fragrances that induce an allergic reaction.[14]

Cleanser was in second place with a total of 56 (31.3%) patients. There are many types of cleansers that can cause ICD and ACD. Research conducted by Damayanti stated that 82.61% of patient with contact dermatitis during the COVID-19 pandemic used antiseptic soap, while the rest used non-antiseptic soap.[15] Incorrect use of soap, such as not using moisturizer after handwash, can also cause contact dermatitis in patients. A 2017 study in North America stated that the most common cleanser that causes ACD and ICD is skin soap, such as liquid, lotion, and bars.[14]

While topical medications were in third place with a total of 24 (13.4%) patients. Topical medications that often result in contact dermatitis are topical medications that patients get from a general practitioner or from primary healthcare. Topical drugs such as local anesthetics and antibiotics can often sensitize patients to allergic reactions and that can take in form of ACD. Therefore, ACD is the most common adverse reaction when using topical medications.[16]

Topical herbal medicine had a total of 12 (6.7%) patients. Patients often use herbal remedies such as wasp oil or whiting for the skin complaints they have. It is important for the patient to have a patch test before applying that topical herbal medicine because topical herbal medicine often sensitizes the skin and causes allergic reaction. According to a study conducted by John in 2017, at least 56% of 15,980 patients they investigated showed an allergic reaction to at least one topical herbal medicine.[17]

In this research, clothing and rubber slippers had the lowerst distribution, with 7 (4.0%) patients and 1 (0.5%) patients having dermatitis caused by slippers. Slippers can easily cause such reactions because they are always in contact with the patient's skin. The patient's complaint is one of the clues for the doctor to determine the patient's diagnosis. There are some signs and symptoms that can indicate ICD. Symptoms of ICD include itch, erythema, burning, and many more.[18] The most common complaint among contact dermatitis patients was itch, with 189 (44.1%) patients complaining of that symptom. According to Brach, itching is often felt by the patient in acute contact dermatitis cases.[2] Meanwhile, red patches were in second place with 31.3% of patient having redness in their bodies. This is in line with the fact that erythematous macules are the most frequent clinical manifestation in this study.

The location of the lesion that most often occurs in contact dermatitis was the face, which occurred in 106 (30.8%) patients. Nowadays, skin care is used by a lot of people. But sometimes they use it without consulting to doctor before.

Furthermore, the second place occurred in the hands of 85 (24.7%) patients. The hands are one of the parts of the body that are often exposed without being covered. The hand is also the main skilled body part for many activities. So that the hands are one of body parts that are most often affected by causative agents that can cause contact dermatitis. As an example, when washing clothes, hands will come into contact with detergent as a cleaning agent, which can result in contact dermatitis.

Erythematous macules were the most common clinical manifestation in patients with contact dermatitis. A total of 128 ACD patients and 84 ICD patients experienced erythematous macules as a clinical manifestation. The total number of patients who had manifestations of erythematous macules was 212 (45.9%). This is in accordance with a study from Ginting that stated erythematous macules were the most frequent clinical manifestation in contact dermatitis with 35% of patients experiencing that clinical manifestation.[8]

The most frequent diagnoses in this study were ACD, which affected 137 (60.4%) patients. Meanwhile, those who experienced ICD were as many as 90 (39.6%) patients. This figure is similar to a study that was held in Bandung that found that the incidence of ACD is higher than the incidence of ICD.[12] Also having a similar result, Ginting reported that 61.9% of contact dermatitis patients are diagnosed as ACD, whereas 38.1% diagnosed as ICD.[8]

Patient education to avoid materials that trigger contact dermatitis is needed to improve the patient's quality of life. However, pharmacological medications are also given by doctors to help the patient's skin heal. These medications can be in the form of corticosteroids, moisturizers, antibiotics, and antihistamines.[18] All of these medications are already in line with Indonesian Society of Dermatology and Venereology (PERDOSKI) 2017 guidelines, which

state topical or systemic medication can be given to the patient for therapy.[19]

It can be seen from table 5.9 that corticosteroid is the most frequently prescribed topical therapy, with 166 (53.2%) patients getting that medication. Moisturizer was in second place, with 74 (23.7%) patients getting moisturizer. And the least frequent topical medication that was prescribed for the patient was antibiotic, as many as 72 (23.0%). Corticosteroid is given by the doctor to relieve the inflammatory process experienced by the patient. It is hoped that this can help minimize the risk of skin atrophy in patients.
For systemic therapy, the most frequent medication prescribed to the patient was antihistamine with 116 (73.8%). The second most frequently prescribed systemic medication was corticosteroid, and as many as 51 (22.7%) patients received corticosteroid medication. And the least common medication that was prescribed for the patient was systemic antibiotic with 8 (3.5%). Antihistamines can be given orally to patients. This class of drugs is used to control the pruritus that occurs in patients with ACD. While topical antihistamine drugs should be avoided, they can induce the occurrence of secondary dermatitis in patients. [20] On the other hand, antibiotics are rarely used by doctors because they can cause microbes to become resistant.[21]

In conclusion, the clinical profile of contact dermatitis patients at the Allergy-Immunology Division of Dermatology and Venereology Outpatient Clinic of Dr. Soetomo General Academic Hospital during January 2020-December 2021 shows that ACD is more prevalent than ICD and itch is the most common complaint with erythematous macules as the most frequent clinical symptom; therefore, the topical therapies that are mostly used are corticosteroids and antihistamines.

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