

Contact Dermatitis in Tertiary Hospital: A 2-year Retrospective Study

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ABSTRACT

Background: Contact dermatitis (CD) is a skin inflammatory caused by allergen or irritant that generates public health impact. CD is classified into two types, based on its etiological perspective, namely allergic contact dermatitis (ACD) due to a hypersensitivity type IV reaction and irritant contact dermatitis (ICD), which is a non-immunological reaction. **Purpose:** To determine the profile of CD patients at Dermatology and Venereology Outpatients Unit of Dr. Soetomo General Academic Hospital Surabaya in January 2018 – December 2019. **Methods:** A retrospective study by observation and recording data. The results of the data recap were then processed using Microsoft Excel to obtain conclusions. **Result:** The results obtained were ACD (61.9%) and ICD (38.1%), aged 26-45 years (32.7%), female (79.3%). The most frequent occupation was housewives (25.3%), followed by private employees (24.5%). The most suspected causative substance was cosmetic (47.7%). The most common skin disease history was food allergy (11%), followed by drug allergy (2.8%), and atopic dermatitis (2.3%). The most frequent manifestation was acute (69.8%), with the most clinical presentation was erythematous macules (35%). Most therapies were given in combination (73.6%), with antihistamines (61%) and topical corticosteroids (49.2%) were the most prescription drug. **Conclusion:** ACD was more common than ICD, mostly in a female, dominated in the 26-45 years old. Housewife was the most occupational. Cosmetic was the most suspected causative substance. Food allergy was the most skin disease history. Acute was the most frequent manifestation. Erythematous macules were the most clinical presentation. Antihistamine and corticosteroid are the most common drug in combination therapy.

Keywords: Contact dermatitis, profile, public health.

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BACKGROUND

Contact dermatitis is a skin disease due to contact with chemical substances. Contact dermatitis is one of the common skin diseases in the community due to daily activities in occupational settings.¹ Skin disease reflects health conditions, and it is often underestimated or considered a harmless disease. However, it impacts both physically and psychologically and can significantly affect their quality of life. In addition, the accuracy, prompt diagnosis, and suitable treatment methods considerably affect the patient's recovery and prognosis.

The high prevalence of CD can be found in hair and make-up stylists, nurses, beauty clinics, food processing workers, and metal sector workers.² In Indonesia, the prevalence of dermatitis is 6.78%. An epidemiological study of CD in Indonesia shows that 97% of the 339 cases are contact dermatitis cases, with 66.3% being irritant contact dermatitis (ICD).³

A retrospective study specifically for ACD due to

cosmetics from the Allergy-Immunology Division medical records in Dermatology and Venereology Outpatients Unit of Dr. Soetomo General Academic Hospital Surabaya from January 2014 to December 2017 revealed 289 (26.1%) with contact dermatitis due to cosmetics from a total of 1105 contact dermatitis patients. The highest number of patients occurred in 2017, 96 cases (2.8%), and it has shown a significant increase since 2014.⁴ This study evaluates the profile of contact dermatitis patients to obtain public health information regarding dermato-venereology diseases, especially contact dermatitis.

METHODS

This was a descriptive retrospective study of contact dermatitis patients at the Dermatology and Venereology Outpatient Unit of Dr. Soetomo General Academic Hospital Surabaya in January 2018 - December 2019. The medical record was analyzed by considering the type of contact dermatitis, age, gender,

history of skin disease, personal hygiene, activity/occupational, causative agents, clinical manifestations, and therapy. The obtained data were then processed using Microsoft Excel to obtain conclusions. This research has been reviewed and approved by Ethics Committee at Dr. Soetomo General Academic Hospital Surabaya (No.0126/LOE/301.4.2/IX/2020).

RESULT

We obtained 367 subjects, consisting of 227 ACD (61.9%) and 140 ICD (38.1%) patients treated at the Dermatology and Venereology Outpatients Unit of Dr. Soetomo General Academic Hospital Surabaya period January 2018 – December 2019. The most age group in ACD patients was 19-25 years (34%) with 78 patients, while in ICD, it was 26-45 years (31.4%) with 44

patients. Therefore, most contact dermatitis patients were 26-45 years (32.7%) in age. Most contact dermatitis patients were female, with 291 patients (79.3%), while the remaining 76 patients (20.7%) were males. There are two occupational groups with the most data collection, namely 44 housewives (31.4%) in ICD and 58 private employees (25.6%) in ACD. Thus, it can be seen that the group with the most work or activity in contact dermatitis patients is housewives with 93 (25.3%) patients. The most suspected causative substance in ACD was cosmetics with 144 data (57.6%), while in ICD were cleansers and cosmetics obtained the same amount with 51 (32.1%) data. Thus, it can be concluded that cosmetics (47.7%) are the most suspected materials causing contact dermatitis patients with ACD and ICD. The frequency distribution is presented in Table 1.

Table 1. The profile of CD patients at Dermatology and Venereology Outpatients Unit of Dr. Soetomo General Academic Hospital Surabaya period January 2018 – December 2019

	ACD		ICD		Total			ACD		ICD		Total	
	(n)	%	(n)	%	(n)	%		(n)	%	(n)	%	(n)	%
Contact Dermatitis	227	61.9	140	38.1	367	100		Occupation					
	Age						Not in school yet	0	0	0	0	0	0
< 10	0	0	0	0	0	0	Student	19	8.4	8	5.7	27	7.4
11 - 18	25	11	14	10	39	1.6	Undergraduate	45	19.8	14	10	59	16.1
19 - 25	78	34	35	25	113	30.8	Housewife	49	21.6	44	31.4	93	25.3
26 - 45	76	33.4	44	31.4	120	32.7	Private employees	58	25.6	32	22.9	90	24.5
46 - 60	30	13	25	17.9	55	15	Entrepreneur	7	3	7	5	14	3.8
> 60	18	7.9	22	15.7	40	10.9	Civil Servant	11	4.9	6	4.3	17	4.6
Total	227	100	140	100	367	100	Army/ Police	1	0.4	0	0	1	0.3
	Gender						Unemployed	6	2.6	4	2.9	10	2.7
Female	183	80.6	108	77.1	291	79.3	No data	31	13.7	25	17.8	56	15.5
Male	44	19.4	32	22.9	76	20.7	Total	227	100	140	100	367	100
Total	227	100	140	100	367	100	Suspected causative substance						
	History of skin disease						Cleanser	31	12.4	51	32.1	82	20
Atopic dermatitis	4	1.6	5	3.4	9	2.3	Clothing	7	2.8	0	0	7	1.7
Food allergy	31	12.7	12	8.2	43	11	Cosmetic	144	57.6	51	32.1	195	47.7
Drug allergy	8	3.3	3	2.1	11	2.8	Food	11	4.4	4	2.5	15	3.7
No data	202	82.4	126	86.3	328	83.9	Topical drugs	20	8	13	8.2	33	8
Total	245	100	146	100	391	100	Oil	23	9.2	28	17.6	51	12.5
							Others	14	5.6	12	7.5	26	6.4
							Total	250	100	159	100	409	100

Description: a patient might have contacted more than one suspected causative substance and may have more than one skin disease history

ACD: acute contact dermatitis; ICD: irritant contact dermatitis

Table 2. Clinical presentation and manifestation distribution of CD patients at Dermatology and Venereology Outpatients Unit Of Dr. Soetomo General Academic Hospital Surabaya period January 2018 – December 2019

Clinical presentation	Total	%	Clinical manifestation	Total	%
Erythematous macules	315	35	Acute	256	69.8
Papules	157	17.5	Chronic	103	28
Pustule	64	7	No data available	8	2.2
Vesicle	13	1.5			
Crusts	13	1.5			
Erosion	64	7			
Excoriation	16	1.8			
Lichenification	29	3.2			
Xerosis	88	9.8			
Ichthyosis	4	0.5			
Fissure	19	2.1			
Scales	95	10.6			
Others	22	2.5			
Total	899	100		367	100

Note: one patient may experience more than one clinical presentation

Table 3. Therapy distribution for CD patients at Dermatology and Venereology Outpatients Unit of Dr. Soetomo General Hospital Academic Surabaya period January 2018 – December 2019

Therapy	Total	Percentage (%)
Systemic	50	13.6
Topical	42	11.4
Systemic and topical	270	73.6
No data available	5	1.4
Total	367	100

Table 4. Systemic and topical drug distribution for CD patients at Dermatology and Venereology Outpatients Unit of Dr. Soetomo General Hospital Academic Surabaya period January 2018 – December 2019

Drug classes	Data	%	Drug names	Data	%
Systemic drug distribution					
Antihistamines	300	61	Cetirizine	268	54.5
			Loratadine	32	6.5
			Hydroxyzine	0	35.8
Corticosteroids	176	35.7	Prednisone	0	0.8
			Dexamethasone	176	1.4
Antibiotics	15	3.1	Amoxicillin	4	0.8
			Erythromycin	7	1.4
			Cloxacillin	4	0.8
Others	1	0.2	Paracetamol	1	0.2
Total	492	100		492	100
Topical drug distribution					
Antihistamines	0	0		0	0
Corticosteroids	207	49.2	Desoxymethasone	45	10.7
			Hydrocortisone	86	20.4
			Mometasone furoate	76	18
Antibiotics	37	8.8	Sodium fusidate	36	8.6
			Gentamicin cream	1	0.2
Moisturizer	173	41.1	Biocream ®	40	9.5
			Vaseline album	56	13.3
			Urea	20	5
			Nutricream ®	30	7
			Atopiclair ®	10	2.4
			Sunblock	17	4
Natrium chloride compress	1	0.2	Natrium chloride solution	1	0.2
Others	1	0.7	Salicyl powder	3	0.7
Total	421	100		421	100

Note: one patient can receive more than one drug

Based on Table 1, the highest number of history of skin disease in contact dermatitis patients was 43 (11%) food allergy, followed by 11 (2.8%) drug allergy, 9 (2.3%) atopic dermatitis, and no available data in 328 (83.9%) patients. Food allergy was the most common skin disease history in ACD with 31 (12.7%) patients and ICD with 12 (8.2%) patients.

Most clinical manifestation was acute, with 256 patients (69.8%). Meanwhile, the most clinical presentation was erythematous macules (35%) with 315 patients.

The therapy distribution is divided into systemic, topical, and combination of systemic and topical treatment. There were 50 (13.6%) systemic therapies, 42 (11.4%) topical therapies, 270 (73.6%) combined therapies, and 5 (1.4%) unspecified therapies. In systemic therapy, the most drug were 300 (61%) antihistamines, with 268 (54.5%) cetirizine drugs. In topical therapy, the most drug class was 207 (49.2%) corticosteroids, with 86 (20.4%) hydrocortisone cream.

DISCUSSION

This study recorded a total of 367 outpatients, 227 (61.9%) of them were ACD patients, and 140 (38.1%) were ICD patients. In age distribution, most of the patients were 26-45 years old (32.7%), followed by 19-25 years old (30.8%). Naturally, this group is prone to experiencing ACD/ICD due to occupational. Indrawan et al. reported that workers dominated by those aged 31-40 years are more at risk of experiencing CD.⁵ Furthermore, that result is in accordance with this study that shows productive age is prone to experiencing ACD/ICD due to occupational setting and greater change for dermatitis-causative substance due to higher mobility. However, the result of this study are not in line with the theoretical concept argued by Zahruddin and Damayanti. They stated that older persons are more at risk of experiencing dermatitis due to collagen degradation and making skin drier.⁶

We found the most CD patients were females, with 291 (79.3%) cases. Sunaryo et al. also reported that 52 (67.5%) of 77 CD patients were females.⁷ Female skin produces less oil to protect and maintain skin moisture. Meanwhile, getting older makes the skin thinner due to collagen degradation, making it more prone to dermatitis.^{5,8} This shows that woman are more at risk than men.⁹

Most occupation in this study were housewives with 93 patients (25.3%), followed by private employees with 90 patients (24.5%). Their work activities tend to expose them to allergens and irritants. Also, Sunaryo et al. reported similar results that out of 77 patients, 19 patients (24.7%) were housewives.⁷

The most suspected causative substances were 195 cosmetics (47.7%) and 82 cleaners (20%). This is in accordance with the research of Noviandini and Prakoeswa. They reported that 18 of 27 patients (66.7%) presented positive results for a cosmetic patch test.¹⁰ Cosmetics is the most common cause because most patients were women aged 26-45 years who had high mobility and frequently wear cosmetics. Apart from cosmetics, cleanser products can also cause CD, especially ICD. Repeated and extended cleanser use can cause dry skin due to lipid erosion, increasing transepidermal water loss, losing its skin barrier function, and making it prone to irritation.¹¹

We found that 43 (11%) of 367 patients had food allergies. We found different results from the concept of risk factors for dermatitis. The leading risk factor for ICD is atopic.¹² Patients with a history of atopic have a low threshold and skin barrier function, so they have more severe reactions with susceptibility to irritation. However, another study by Fonacier et al. said that atopic dermatitis is not the leading risk factor for developing CD.¹³ Similar result has been reported by Afifah. She reported no difference in the proportion of contact dermatitis in patients with or without a history of allergy.¹⁴

Acute 256 (69.8%) was the most clinical manifestation, and erythematous macules 315 (35%) was the most frequent clinical presentation in this study result. This results are in accordance with the Indonesian Society of Dermatology and Venereology (PERDOSKI), which states that in ACD, acute lesions are characterized by erythematous macules.¹⁵ Likewise, the literature Novak et al. also said that the presence of erythematous macules characterized acute ICD.¹⁶ Similar results were also obtained in Rubianti and Prakoeswa's study of 289 patients, 256 patients with erythematous macular efflorescence.⁴

Combined therapy was the most common therapy received by patients, as observed in 270 cases (73.6%). In systemic therapy, 300 (61%) antihistamines was the most common drug class, with 268 (54.5%) cetirizine was the most drug. Meanwhile, in topical therapy, 207 (49.2%) corticosteroids were the most drug class, with 86 (20.4%) hydrocortisone cream as the most prescribed drug. Antihistamines administration aims to reduce itching, while topical corticosteroids is generally applied to local and limited lesions to reduce the inflammation.^{17,18} Also, Sunaryo et al. reported similar results that from 77 patients, 33 (42.8%) patients received antihistamine and corticosteroid therapy.⁷ Witasari and Sukanto also reported 43 (86%) antihistamines and 31 (62%) topical corticosteroids prescriptions.¹⁷

The study result are valid for CD patients in the Dermatology and Venereology Outpatients Unit of Dr. Soetomo General Academic Hospital Surabaya in January 2018 – December 2019. They cannot be generalized as a condition, especially in CD patient profile in general. The diagnosis criteria and etiology are only obtained based on medical records, thus limiting complete and detailed observation.

Understanding health information related to contact dermatitis and hygiene can improve patients' health quality as well as preventing CD. Therefore, we suggest future research to explore limiting factors in this study that can influence the incidence of CD.

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