



Recurrent Dermatitis Atopic in Young Adult: Case Report and Literature Review

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Abstract

Background: Atopic dermatitis is a chronic and residive skin inflammation, which is often found in patients with allergic rhinitis and asthma and among their family members, which is characterized by skin disorders in the form of itchy papules then undergo excoriation and lichenification, distribution in body folds. At the age of 4-16 years, the predilection for dermatitis is found on the upper body and face. Generally, symmetrical dermatitis appears in the flexure area, hands, and feet.

Case Presentation: The following is a case report of a 16-year-old male patient as a student. The patient was diagnosed with atopic dermatitis with complaints of itching in the neck area, hand folds, and leg folds. Initially itchy, filled with clear fluid in the neck, then spread to the folds of the hands and feet. Itchy, hot, and painful when sweating. Lesions ad Regio Colli, superior and inferior extremities show lichenified lesions with an irregular shape, poorly demarcated with bilateral spread, accompanied by squama and excoriations.

Conclusion: Atopic dermatitis is a chronic inflammation of the skin, which may manifest as itchy papules that become excoriated and lichenified. Predilection can be determined based on the age of the patient.

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INTRODUCTION

Atopic dermatitis (AD) or eczema is a skin disease characterized by chronic-resistive inflammation and most commonly occurs in infancy and childhood. Data from the International Study of Asthma and Allergies in Childhood (ISSAC) show that the prevalence of AD in the world reaches 15-20% in the first decade of life (2 million children in 100 countries), especially in children aged over two years and 1-years-old. 3% in the adult age group. The prevalence rate of AD has been increasing in the last 50 years, especially in developing countries, such as Latin America and Southeast Asia.¹

Children with AD generally experience itching that is persistent and significantly affects their quality of life. In Indonesia, the prevalence rate of atopic dermatitis cases, according to the pediatric dermatology study group, is 23.67%, which is the first level of the disease from other children's diseases. The prevalence of Dermatitis Atopic has increased three times fold since 1960.²

Increased prevalence of dermatitis atopic is possibly caused by several factors such as urbanization, pollution, and the hygiene hypothesis. Study of Asthma and Allergies in Childhood (ISAAC) states that the number. The incidence of AD reaches 20% in Asian countries such as South Korea, Taiwan, and Japan. Yuin Chew's Research Chan et al., in Southeast Asia, found the prevalence of dermatitis atopic in adults is approximately 20%. According to the baby and child visit report in Indonesia, DA is in the first place (611 cases) of the ten skin diseases that are commonly found in children. Based on data at URJ Pediatric Skin Diseases,

Dr. RSUD. Soetomo It was found that the number of dermatitis atopic patients had an increase from 116 patients (8.14%) in 2006, in 2007 it became 148 patients (11.05%) while in 2008 as many 230 patients (11.65%). Atopic dermatitis is more common in women than men, with a ratio of approximately 1.5:1.

CASE PRESENTATION

The patient came with complaints of itching in the neck area, folds of the hands, and folds of the feet, and the complaints have been felt for three months ago. At first, it was itchy and filled with clear fluid in the neck and then spread to the folds of the hands and feet—severe itching with sweating, heat, and pain in the lesion. The patient currently complains that his skin is like a pull, so his neck hurts and hurts when he turns, and his hands and feet hurt that he cannot straighten. Past medical history: Atopic dermatitis (+), chronic rhinitis (+), chronic bronchitis (+). Treatment History: Family Disease History: There are no similar complaints in the family, no family history of allergies, Asthma (+) Socio-Economic History: the patient lives in a boarding house close to his school. Generalist Status General Condition: Good Awareness: Compos Mentis Blood Pressure: 120/80 mmHg Pulse: 109 x/minute SpO2: 99% Temperature: 36.4oC Dermatological Status: Ad Region: Colli region, superior extremity region, inferior extremity Efflorescence: There are lichenified lesions with an irregular shape, poorly defined with bilateral distribution, accompanied by squama and excoriation. The patient was diagnosed with dermatitis atopic. The patient has been treated with dexamethasone 0,5 mg, cetirizine 10mg, vitamin C, vaseline album, and elox cream.



Figure 1. Atopic dermatitis patient. The predilection for arm, leg, and neck creases.

DISCUSSION

Atopic dermatitis is a chronic and residive skin inflammation, which is often found in patients with allergic rhinitis and asthma and among their family members, which is characterized by skin disorders in the form of itchy papules, which then undergo excoriation and lichenification, distribution in body folds.⁴

Atopic dermatitis is a skin disease that affects children with a prevalence of 10-20% and adults 1-3% in America. There are various terms used as synonyms for atopic dermatitis, such as atopic eczema, eczema flexural, neurodermatitis disseminated, and prurigo Besnier. The International Study of Asthma and Allergies in Childhood (ISAAC) suggested that the prevalence of atopic dermatitis varies between 0.3% to 20.5% in 56 countries. 3,7 case of atopic dermatitis in children in Indonesia was found as much as 23.67% in 611 new cases of other skin diseases in 2000 and are on the first rank of 10 most children skin disease at seven hospitals in five cities in Indonesia.³ Dermatitis atopic is characterized by dry, itchy skin and relapse. The cycle of itching and scratching on children can interfere with sleep at night.

Chronic itching, skin infections, sleep disorders, and growth can reduce the quality of life.⁵

In this patient, we found a characteristic feature of atopic dermatitis, namely the presence of scaling and excoriation in the folds. The patient also feels prolonged itching accompanied by a burning sensation and pain in the lesion. According to Sularsito SA, the main symptom of atopic dermatitis is itching/pruritus that appears throughout the day. The appearance of eczematous lesions can be acute (erythematous plaques, prurigo papules, papulovesicular), subacute (thickening and excoriated plaques), and chronic (lichenification). Eczematous lesions may become erosive when scratched, and exudation occurs, which ends in crusted lesions. Skin lesions that are very wet (weeping) and crusted are often found in advanced disorders.⁶

Clinical features of atopic dermatitis are divided into four types based on their localization with age:

1. Infantile Atopic Dermatitis (0-1 years)
Atopic dermatitis often appears in the first year of life and begins around two months of age. This type is also called the milk scale because the lesions resem-

ble milk marks. The lesions are erythematous plaques, smooth papulo-vesicles, and become crusted by scratching the cheeks and forehead. The itching that occurs causes the child to become restless, have difficulty sleeping, and often cry. Exudative lesions, erosions, and crusts can lead to secondary infection and generalized widespread and become chronic and residive lesions.

2. Atopic Dermatitis in Children (1-4 years)

It can be a continuation of the infantile form or arise alone. In general, the lesions are symmetrical erythematous papules with excoriations, trim crusts, and lichenification. Lesions can be found in the flexures and extensors of the extremities, around the mouth, eyelids, hands, and neck.

3. Atopic Dermatitis in Children (4-16 years)

At the age of 4-16 years can be found dermatitis on the upper body and face. Generally, symmetrical dermatitis appears on the flexure areas, hands, and feet.

4. Atopic Dermatitis in Adults

In adults, dermatitis lesions are less characteristic and can be on the face, upper body, flexures, lips, and hands. The lesions are dry, flat papules, lichenified plaques with little scale, and frequent excoriations and exudations from scratching. Sometimes it can develop into

erythroderma. Stress can be a triggering factor because when stressed, the itching threshold value decreases.⁷

In this patient, it is not clear which category of atopic dermatitis is defined. On the one hand, the patient's age is included in the category of atopic dermatitis in children. However, based on the characteristics of the lesions included in atopic dermatitis in adults. This is based on the findings of dry lesions, flat papules, small-scale lichenified plaques, and frequent excoriations and exudations due to scratching.

Generally, AD patients have elevated eosinophil counts and serum immunoglobulin E (IgE) levels.⁷ This is related to immunological and cellular mechanisms that play an essential role in the pathogenesis of AD. The main immunopathogenesis of AD is related to T helper (Th) cells, which function to recognize antigens and regulate immune responses such as inflammation, defense against viral infections, and the proliferation of specific T and B cells. Th cells play a significant role in the pathogenesis of AD, where the number of Th2 is more in atopic patients while the number of Th1 is decreased.¹⁰

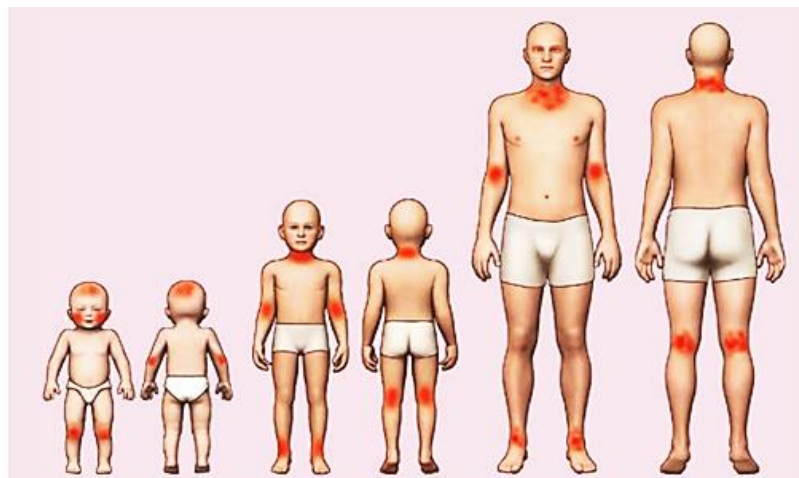


Figure 2. Areas of predilection for atopic dermatitis in infants, children, and adults.⁸

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In AD, there are two types of dendritic cells with high affinity for IgE (myeloid-containing IgE receptors), namely Langerhans cells (SL) and inflammatory dendritic epidermal cells (SEDI). IgE-containing SL appears to play an essential role in skin allergen presentation in IL-4-producing Th2 cells, whereas in acute AD, Th2 is involved, and cytokines, especially IL-4, IL-5, and IL-13, and decreased IFN- γ , which mediates the conversion of immunoglobulin isotypes to IgE synthesis and increases the expression of adhesion molecules on endothelial cells. In contrast, chronic AD involves the production of Th1 cytokines, IL-12, IL-18, and IL-5, as well as IFN- γ , which is upregulated in keratinocytes.¹¹

If one parent has a history of AD, the incidence of AD is doubled in their child. This incidence is tripled when a history of AD is found in both parents. There are two chromosomes that are closely related to AD, namely chromosome 1q21 and chromosome 17q. It is still paradoxical because of psoriasis with clinical features. That who are different are also linked to the same chromosome. In addition,

the two chromosomes are not associated with other atopic diseases. Also found the role of other chromosomes such as 5q31-33 as a gene encoding Th2 cytokines.¹¹¹²

The diagnosis of atopic dermatitis can be made based on prominent clinical findings, especially itching. In subsequent developments to diagnose atopic dermatitis, allergy tests were used, namely skin prick test and total IgE levels, as diagnostic criteria and were only performed when there was clinical doubt.³

Complaints Patients come with complaints of itching that varies in location depending on the type of atopic dermatitis (see classification). The main symptom of AD is pruritus, which can come and go throughout the day, but is generally more severe at night. As a result, the patient will scratch. Patients usually also have a history of often feeling anxious, selfish, frustrated, aggressive, or feeling depressed.¹³

The patient previously had a history of atopic dermatitis, while no one in the family had similar complaints but had a history of asthma. Patients with a family history of allergies may have a greater chance of developing atopic dermatitis. Especially in stressed adult patients and being frustrated can add to the reason for frequent relapses. Some cases found food allergies like eggs, milk, wheat, soy, and peanuts can be a trigger for dermatitis atopic also, house dust mite and staphylococcus aureus can colonize.

Here is some Risk Factor in Patient with Dermatitis Atopic. One of them might be found in those patients:

1. Women suffer from AD more than men (ratio 1.3:1).
2. Patient and/or family history of atopy (allergic rhinitis, allergic/vernal conjunctivitis,

- bronchial asthma, atopic dermatitis, etc.).
3. Environmental factors: small family size, higher maternal education, increased income, migration from rural to urban areas, and increased use of antibiotics.
 4. A history of sensitivity to wool, cat hair, dogs, chickens, birds, and the like.¹³

Physical Examination Pathognomonic signs of AD patients:

1. Dry to the touch
2. pale/dim
3. Cold fingers
4. There are papules, lichenification, erythema, erosion, excoriation, exudation, and crusting at the predilection location.¹³

As we mentioned before, this patient has characterized lesions as dry to touch, and there is lichenification, erythema, erosion, excoriation, exudation, and crusting at some fold. The pathogenesis of AD occurs when the skin becomes dry; This is related to the dysfunction of the permeability of the epidermal barrier, namely the loss of function of the filaggrin gene (FLG) mutation. This gene encodes the protein profilargin as a structural precursor of the FLG protein in the differentiation of the epidermal complex. FLG is expressed on keratohyalin granules during terminal differentiation of the epidermis. Once the keratinocytes become dense, the FLG protein releases a natural moisturizing factor (NMF).^{9,10}

The diagnosis of AD in children can be made clinically based on the criteria of Hanifin-Rajka. The diagnosis of AD can be made if there are three major criteria and more than three minor criteria. The major criteria contain Chronicity, History of Atopy personal or family, Involvement of face and flexures (Popliteal and antecubital fossa), and pruritus. The minor criteria contain delayed blanching to cholinergic, anterior subscapular cataract, keratoconus,

raised IgE, Immediate type 1 Skin test, Dennie's Line, Recurrent Skin Infection, Ictyosis Vulgaris over palmar Crease, and Facial Pallor. The patient fulfills more than three major criteria, chronicity, history of atopy, Involvement of face and flexures, and pruritus. For minor criteria, we do not know yet because there is no Support Examination.

The European Task Force on Atopic Dermatitis created an index to assess the degree of atopic dermatitis, known as SCORAD (Score of atopic dermatitis). SCORAD can assess the severity of inflammation in atopic dermatitis by assessing (A) the extent of the wound, (B) signs of inflammation, and (C) complaints of itching and sleep disturbances. Signs of inflammation are erythema, induration, excoriation, papules, and lichenification.¹⁷

Based on the degree of severity is divided into:

1. Mild AD: if it affects <10% of the skin surface area.
2. Moderate AD: if it affects 10-50% of the skin surface area.
3. Severe AD: if it affects more than 50% of the skin surface area. Without complications (generally not followed by secondary infection).

With complications (accompanied by secondary or widespread infection and recalcitrant (not improving with standard treatment).¹³

Investigations in AD patients can be done by checking serum IgE (if needed and can be done in First Level service facilities) and allergy tests, namely skin prick tests in adult cases. Tests are performed when there is clinical doubt.¹³

Differential Diagnosis of Atopic Dermatitis, namely allergic contact dermatitis, skin inflam-

mation occurs after the skin is exposed to allergens through a delayed-type hypersensitivity process. The occurrence of DKA is significant in the ability to sensitize, the level of exposure, and the ability to enter these substances. Therefore, a person can be exposed to DKA if sensitization occurs first by an allergen substance. Nickel-induced allergic contact dermatitis lesions in children or infants give the same picture as AD, but the areas of dermatitis are well demarcated according to places that are frequently exposed to nickel. In addition, facial lesions and dermatoxerosis are rarely involved in allergic contact dermatitis.¹⁸

Cereboic dermatitis can also be a differential diagnosis of atopic dermatitis. Seborrheic dermatitis is a disease that often occurs, characterized by the presence of red scales above the base. This superficial chronic inflammatory disease often affects areas of the skin that have high sebum production and folds. AD in infants is complicated to distinguish from cereboic dermatitis because both often give the appearance of a *cradle cap* on the vertex of the scalp. It can be distinguished by the appearance of seborrheic dermatitis lesions that are more oily, yellowish, rarely accompanied by xerosis and pruritus, and more often appear in the intertriginous area and the diaper area. While AD is drier, accompanied by crusting and pruritus.¹⁸

The management of AD consists of five main pillars, including:

1. First, it is essential to educate patients, parents, and caregivers about the disease, therapy, and prognosis. Provide education on how to take care of the skin and avoid the use of drugs without the knowledge of the doctor. The explanation includes all

problems related to AD, such as symptoms, causes, precipitating factors, prognosis, and management.

2. Second, avoiding and modifying environmental trigger factors, namely, avoiding irritants and allergens.
3. Third, to strengthen and maintain optimal skin barrier function by giving moisturizing soap immediately after bathing, carried out at every phase of the disease course from individuals with a genetic predisposition to atopy to those who have manifested as AD.
4. Fourth, reduce AD inflammation.
5. Fifth, control and eliminate the itching-scratch cycle by giving antihistamines and psychological counseling to help deal with itching.⁴

Management is done with lifestyle modifications, namely:

- a. Find risk factors.
- b. Avoid irritating materials, including clothing such as wool or synthetic materials.
- c. Use a soap with a neutral pH and contains a moisturizer.
- d. Keeping clothes clean.
- e. Avoid the use of chemical additives.
- f. Rinse immediately after swimming to avoid prolonged exposure to chlorine.
- g. Avoid psychological stress.
- h. Avoid clothes that are too thick, tight, dirty
- i. In infants, maintain cleanliness in the diaper area, irritation by urine or feces, and avoid using medicated baby oil ingredients.
- j. Avoid cleansers that contain antibacterial because they induce resistance.¹³

Pharmacotherapy is given to overcome complaints:

- a. Topical (2 times a day)

- For lesions on the scalp, topical corticosteroids are given, such as Desonide 0.05% cream (note: if not available, fluocinolone acetonide 0.025% cream) for a maximum of 2 weeks.
- Skin moisturizer to maintain dehydration is given lanolin cream, 10% urea cream
- In cases with clinical manifestations of lichenification and hyperpigmentation, betamethasone valerate cream 0.1% cream or mometasone furoate cream 0.1% can be given.
- Topical corticosteroids are given if the lotion does not improve, for example, hydrocortisone
- In cases of secondary infection, it is necessary to consider topical or systemic antibiotics if the lesion is widespread. Antibiotics that can be used in AD patients include cloxacillin, cephalixin, erythromycin, clindamycin, and amoxicillin-clavulanate.
- Patients with atopic dermatitis have an abnormal skin barrier. It is characterized by an increase in water loss transepidermal, causing a decrease in water content in the skin. This effect will cause the skin to become dry (xerosis) and the formation of micro-fissures. Topical therapy will replace abnormal lipids in the epidermal layer, restore skin moisture, and repair damaged skin barriers. The type of moisturizer used can contain humectants, emollients, and occlusives or contain physiological ingredients, such as lipids, ceramides, and Natural Moisturizing Factor (NMF).¹⁹
- Another hydration therapy that can be used is *wet dressings*. In addition to aiding

in the hydration process, *wet dressings* can prevent the skin from rubbing, thereby speeding up the healing time of lesions. *Wet dressings* are more recommended for use in cases of severe chronic dermatitis and those who are refractory to therapy.⁴

b. Systemic oral

- Sedating antihistamines: chlorpheniramine maleate 3 x 4 mg per day for a maximum of 2 weeks or cetirizine 1 x 10 mg per day for a maximum of 2 weeks.
- Non-sedating antihistamines: loratadine 1x10 mg per day for a maximum of 2 weeks.¹³²⁰

On this patient, we used combination treatment such as oral medication and ointment. The purpose of ointment is to retain moisture in the skin. For oral medication, we give antihistamine because the pathophysiology of Dermatitis Atopic is allergy because of IgE; other medications are dexamethasone or corticosteroid to reduce inflammation.

Complications that often occur in Atopic Dermatitis, namely secondary infections, which are usually caused by bacterial infections and can occur in the expansion of diseases such as erythroderma.²¹

The prognosis for atopic dermatitis (AD) tends to be more severe and more persistent in infants and children. The remission period becomes longer as the patient ages. Spontaneous resolution of AD is reported to occur after five years of age in about 40-60% of infant AD patients, especially if it is mild.²²

Research has shown that AD disappears in about 20% of infant and pediatric patients and

improves in about 20%. More than half of adolescents treated for mild AD will experience a relapse of AD in adulthood. A poor prognosis can be associated with extensive lesions in childhood, accompanied by allergic rhinitis and asthma, a family history of AD in parents or siblings, early onset of age, and very high serum IgE levels.⁸²³

CONCLUSION

Atopic dermatitis is a chronic and residive skin inflammation (or a group of related disorders), which is often found in people with allergic rhinitis and asthma and among their family members, which is characterized by skin disorders in the form of itchy papules, which then undergo excoriation and lichenification. in the folds (flexural) of the body. Itching is the main complaint of atopic dermatitis accompanied by skin disorders in the form of erythematous plaques, papules, vesicles, crusts, and lichenification, which can be found on the face, hands, scalp, and the whole body. The diagnosis of atopic dermatitis is based on clinical findings and allergy testing as well as laboratory tests using several diagnostic criteria, including Hanifin and Rajka, Svennson score, William et al. Criteria, and SCORAD. There are five main pillars in the management of AD in children, namely, education of parents and patients, avoiding precipitating factors, increasing skin barrier function, administration of anti-inflammatory, and eliminating the itch-scratch cycle. AD management can be given topical or systemic treatment according to the patient's complaints and severity. AD, if not treated properly, will cause complications in the form of expansion of the lesion, and secondary infection can occur. Therefore, a poor prognosis for AD can be attributed to extensive childhood lesions, associated allergic rhinitis and

asthma, a family history of AD in parents or siblings, early age of onset, and very high serum IgE levels. A cross-sectional study in China reported that 52.3% of AD patients of all ages also had secondary infections. AD patients over 11 years old have a higher incidence of infection caused by *Staphylococcus aureus* compared to children under age groups. In this study, the ratio of AD patients with secondary bacterial infection is half of the total number of AD patients. Therefore, a secondary bacterial infection in AD is a problem that needs to be addressed because this complication can lead to recurrence in AD. If left untreated, it can lead to several systemic. Skin barrier defect is mentioned as one of the factors that facilitate bacterial colonization. Infection in AD skin lesions can worsen the inflammation, and it requires treatment with topical or systemic antibiotics. This would require longer therapy times, higher costs, and the risk of antibiotic resistance and ultimately affect the quality of life for patients and their families with infections such as osteomyelitis, septicemia, and endocarditis. Not infrequently found secondary infection in AD patients characterized by crusting lesions or eczema with or without pustules. This situation can be treated with antibiotics, topical or systemic, depending on the area of the infection. In addition, viral infections also frequently occur, for example, herpes simplex infection (HSV). HSV infection in AD is often more IFDA extensive compared to HSV infection in non-DA lines. In this situation, an antiviral is needed systemically to avoid worsening life-threatening. Untreated acute or chronic dermatitis is controlled, often accompanied by secondary infection. The most common infection is *Staphylococcus aureus*, often resistant to penicillin. In the beginning, IUI patients are treated with ampicillin.

For this reason, culture and resistance testing are necessary to determine the appropriate antibiotic. It is advisable to give high doses of antibiotics to reach adequate levels on the affected skin. The first options are cephalexin and erythromycin. Other options are clindamycin and dicloxacillin.

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