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Dermatological Presentations in Systemic Lupus Erythematosus: A Comprehensive Case Study

Nanda Earlia [1,2,*], Fitria Salim [1,2], Arie Hidayati [1,2], Aldilla Pradistha [3], Teuku Maulana Malik Ibrahim [3], Shelda Syifa Azzahra [3] and Rizka Yuliani Maulidina [3]

[1] Department of Dermatology and Venereology, Faculty of Medicine Universitas Syiah Kuala, Banda Aceh, Aceh, Indonesia; nanda.earlia@usk.ac.id (N.E.), fitria.spkk@gmail.com (F.S.); ariehidayatispdv@gmail.com (A.H.).
[2] Department of Dermatology and Venereology, Dr. Zainoel Abidin Hospital, Banda Aceh, Aceh, Indonesia
[3] Faculty of Medicine, Universitas Syiah Kuala, Banda Aceh, Aceh, Indonesia; apradistha@yahoo.com (A.P.); mr.momol28052000@gmail.com (T.M.M.I.); sheldasyifaa@gmail.com (S.S.A.); Rizkayuliani702@gmail.com (R.Y.M.)

* Correspondence: nanda.earlia@usk.ac.id

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Abstract

Lupus erythematosus (LE) is an inflammatory autoimmune disease with a broad clinical spectrum of multi-organ inflammation and can be life-threatening. Manifestations of LE can occur confined to the skin (cutaneous lupus erythematosus, CLE) or systemic involving several organs such as the kidneys, heart, and lungs (systemic lupus erythematosus, SLE). We report a female, 27-year-old with complaints of black spots on her back, stomach area, hands, and feet. The patient feels that the spots increase when doing activities outside the home. Patients also complain of fever, pain when swallowing, joint pain, fatigue, and hair loss. Dermatological status in the abdominal, posterior thoracic, and extremities regions shows the presence of macules accompanied by hyperpigmented patches with unclear borders, irregular edges, gutta-plaque size, multiple numbers, and atypical arrangement and configuration. In the ANA profile examination, the native SS-A antigen (60 kDa) +++ results were strongly positive. The examination results concluded CLE type Subacute CLE (SCLE). The patient was given Calcium Carbonate capsules, Folic Acid tablets, and Methylprednisolone tablets. Topical medications include tretinoin 0.25% cream, momethasone 0.1% cream, Desoximethasone 0.25% cream, clobetasol propional 0.05% cream, and must use Sunscreen morning and evening. After 2 weeks, the patient showed good results. The black spots are starting to fade. Other complaints, such as fever, fatigue, and pain when swallowing, have decreased. Cutaneous lupus can be a challenge to treat because the symptoms are varied and complex. Management of CLE aims to eliminate symptoms and signs of the disease, prevent damage from occurring, minimize side effects of drugs, and improve quality of life.

1. Introduction

Lupus erythematosus (LE) is an inflammatory autoimmune disease with a broad clinical spectrum of multi-organ inflammation and can be life-threatening. Manifestations of LE can occur confined to the skin (cutaneous lupus erythematosus, CLE) or systemic involving several organs such as the kidneys, heart, and lungs (systemic lupus erythematosus, SLE) [1]. Recognizing CLE is very important because cutaneous is most often affected by SLE, around 70-85%, and is the initial symptom in 25% of cases [2].

After initial diagnosis, one-third of CLE patients risk developing SLE within the next three to five years (5-18%). CLE is estimated to occur two to three times more often than SLE [3]. The incidence of SLE worldwide is estimated at 1.5-11/100,000 per person per year. In Europe, it is around 1.5-7.4/100,000 per person annually. Gender is the biggest risk factor for SLE, with a female-to-male incidence ratio of 15:1 in adults and 4:1 in children. SLE is a life-threatening disease, especially in women, where it is one of the 20 leading causes of death in women aged between 5 and 64 years [4, 5].

The etiology of CLE is still unclear but is believed to be related to genetic predisposition and certain environmental factors as triggers [6]. Smoking, ultraviolet radiation, and drugs are environmental factors associated with the pathogenesis of SLE [7]. CLE is classified into subtypes based on clinical manifestations and duration into acute CLE (ACLE), subacute CLE (SCLE), and chronic CLE (CCLE). In ACLE, localized malar rash or butterfly rash has been reported to occur in 20% to 60% of patients. SCLE is a subtype of CLE that appears as a symmetrical photosensitive erythematous rash that does not cause scarring, usually on areas exposed to sunlight, such as the face, neck, arms, upper back, and shoulders. In CCLE, this includes discoid lupus erythematosus (DLE), lupus erythematosus profundus (LEP), chilblain cutaneous lupus (CHLE), and lupus tumidus (LET) [8].

The differential diagnosis can vary greatly depending on the individual CLE subtype. Currently, there is no standard diagnostic for CLE. The diagnosis of CLE should be based on comprehensive considerations. A comprehensive evaluation is carried out on all organs and systems through history and physical examination, detection of serum autoantibodies, including anti-nuclear antibodies (ANA), and complete blood count laboratory examination [9].

After establishing a diagnosis of CLE, clinical assessment of disease activity and worsening can help determine a therapeutic plan and evaluate treatment. The Cutaneous Lupus Erythematosus Disease Area and Severity Index (CLASI) is a clinical measurement tool developed in 2005 and has been the first instrument used to evaluate disease activity and damage in CLE patients. CLASI-A scores are grouped into mild (0-9), moderate (10-20) and severe (21-70) levels of disease activity. CLASI-D scores are grouped into mild (0-9), moderate (6-16), and severe (>17) disease severity. Based on this, patients are classified into mild disease activity level and mild disease severity level [8].

Cutaneous lupus can be challenging to treat because the symptoms are varied and complex. Here, we present a case report of a patient with lupus erythematosus and skin manifestations. We brought up this case because skin abnormalities in LE patients are very common and one of the early signs of SLE. Making an accurate diagnosis and comprehensive treatment can extend life expectancy and improve the patient's quality of life.

2. Cases

We report a 27-year-old female referred to the dermatology and venereology polyclinic doctor. Zainoel Abidin General Hospital with complaints of black spots on the back, stomach, hands, and feet. Patients feel their spots increase when they do activities outside the home. These spots are sometimes accompanied by itching, which is more pronounced in the hands and feet. Apart from spotting, patients also complain of joint pain, hair loss, and fatigue. Initially, in August 2023, the patient felt a reddish rash on his face, accompanied by complaints of painful swallowing, frequent pain, and fatigue. After visiting the clinic in Meulaboh, they suspected the patient was suffering from allergies. However, the complaints did not improve. The patient then came to Meulaboh Regional Hospital with the same complaints, accompanied by fever and swallowing pain. The patient was treated for three days at Meulaboh Regional Hospital but did not improve. On September 2, 2023, the patient was referred to the Department of Dermatology and Venereology Dr. Zainoel Abidin General Hospital.

On physical examination, vital signs were within normal limits. Dermatological status in the abdominal and posterior thoracic regions shows the presence of macules accompanied by hyperpigmented patches with unclear borders, irregular edges, gutta-plaque size, multiple numbers, atypical arrangement, and configuration, and regional distribution (Figure 1). In the superior and inferior extremities, macules are accompanied by hyperpigmented patches and blemishes with unclear borders, irregular edges, gutta-plaque size, multiple numbers, atypical arrangement and configuration, and regional distribution (Figure 2). In blood laboratory examinations, there was a decrease in hemoglobin, hematocrit, and erythrocyte levels and an increase in SGOT and SGPT. In the ANA profile examination, the native SS-A antigen (60 kDa) +++ results were strongly positive, with associated diseases including LE, Sjogren's syndrome, and Primary biliary cirrhosis. The patient was diagnosed with cutaneous lupus erythematosus (CLE) type Subacute CLE (SCLE).

The patient was hospitalized and treated with the internal medicine department for nine days. The patient began returning to the skin clinic on April 2, 2024, with blackish spots on his hands, feet, and body. Patients

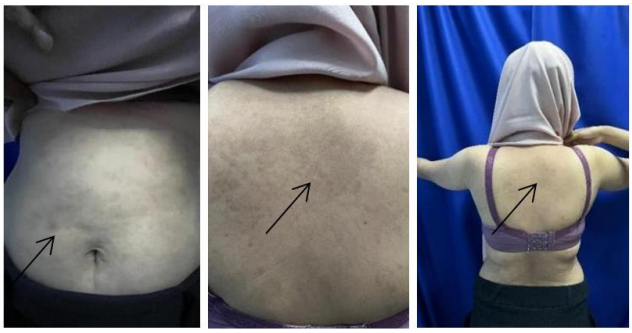

Figure 1. Dermatological status in the abdominal and posterior thoracic regions shows the presence of macules accompanied by hyperpigmented patches with unclear borders, irregular edges, gutta-plaque size, multiple numbers, atypical arrangement and configuration, regional distribution (arrow sign).

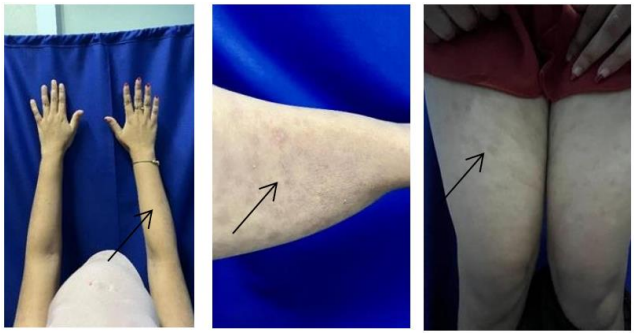

Figure 2. Dermatological status in the superior and inferior extremities, macules are seen accompanied by hyperpigmented patches and papules with unclear borders, irregular edges, gutta-plaque size, multiple numbers, atypical arrangement and configuration, regional distribution (arrow sign).

occasionally still complain of itching in the rash area. However, the itching now is slightly less than before. The patient admitted that the itching and rash reappeared when exposed to the sun. The patient also said that he still had joint pain and muscle aches if he did not take medication. The patient's family did not have similar complaints. The patient obtained a CLASI-A score of 3, which means the disease is mild, and the CLASI-D score is 0, which means the severity of the disease is mild. In laboratory blood tests, there was a decrease in hemoglobin, hematocrit, and erythrocytes and an increase in SGOT and SGPT. CLASI-A scores grouped into mild (0-9), moderate (10-20), and severe (21-70) levels of disease activity. CLASI-D scores are grouped into mild (0-9), moderate (6-16), and severe (>17) disease severity. In patients, the CLASI-A score was 3, namely mild disease, and the CLASI-D score was 0, namely mild disease severity.

The patient was given Calcium Carbonate capsules 500 mg twice a day, Folic Acid tablets 1 mg once a day, and Methylprednisolone tablets 8 mg twice a day. Topical medications include tretinoin 0.25% cream dan momethasone 0.1% cream (night on the face), Desoximethasone 0.25% cream (morning on the arm) Clobetasol propional 0.05% cream (morning on the legs). They must use Sunscreen SPF 50 (morning and evening on the face). After two weeks, the patient showed good results. The black spots are starting to fade. Other complaints, such as fever, fatigue, and pain when swallowing, have decreased.

3. Discussions

The spectrum of skin findings in CLE is broad and varied. Establishing a diagnosis in CLE patients requires provider accuracy in taking the patient's history, physical examination, and laboratory examination [6]. Based on the history in the case above, the patient complained of weakness and itching all over the body, especially in the hands and feet. There are black spots on the back, stomach, hands, and feet. Patients also complain of joint pain, pain when swallowing, and fatigue. Several months ago, the patient complained of the same complaint and also the appearance of a symmetrical red rash on the cheek area. The patient was referred to dr. Zainoel Abidin General Hospital because there was still no improvement after being treated at Meulaboh Regional Hospital for three days. At the dr. Zainoel Abidin General Hospital, the patient was treated together between the dermatology and venereology departments and the internal medicine department. The patient had his ANA profile checked, and the results of the ANA profile examination were +++ (strongly positive). Based on the history, physical, and laboratory examination, the patient was diagnosed with CLE subtype SCLE.

One of the main aspects of the development of LE is the appearance of skin lesions in approximately 80% of patients diagnosed with this disease [2]. The characteristic of the SCLE rash is annular or polycyclic psoriasiform macules or plaques that mostly affect areas exposed to the sun. These lesions usually do not cause scarring. Initially, the rash is reddish and then becomes dyspigmented within a few months. CLE is divided into several types: ACLE, SCLE, and CCLE. The primary lesions in ACLE are facial malar rash, confluent erythema and edema, erythema macules and papules that eventually become confluent, morbilliform macules and papules, bullous lesions and erythema multiforme-like lesions. The ACLE rash covers areas that are exposed to sunlight, the malar area, and cheeks, and always avoids the nasolabial folds [3] In this case, the patient came to the hospital complaining of a symmetrical red rash on his face (malar rash), so the patient was included in ACLE.

After several months of malar rash on the patient's face, the rash became hyperpigmented. Then, the new rash in the form of reddish spots begins to spread to the neck, body, and extremities. This is because there is a strong relationship between CLE disease activity and sun or UV radiation exposure. UV radiation is the most important environmental factor in the induction phase of SLE, especially LE-specific skin diseases. UV light most likely causes self-immunity and loss of tolerance because it causes keratinocyte apoptosis. UVB radiation displaces autoantigens such as Ro/SS-A and the related autoantigen, La/SS-B, and calreticulin, from their normal location within epidermal keratinocytes to the cell surface. UVB irradiation induces CCL release. Sun exposure induces and worsens skin lesions and may increase symptoms of arthralgia and fatigue in patients with systemic symptoms. Thus, patients who previously had ACLE become SCLE due to frequent exposure to sunlight which causes exacerbation of the lesions in the form of an increasing rash that spreads throughout the body. This is by complaints from patients who claim that they feel itchy and the rash appears to be increasing in number when exposed to the sun [6].

SCLE patients can be of all ages and genders. However, SCLE is most commonly diagnosed in middle-aged women. This condition usually occurs in patients aged 15-70 years. Of patients with CLE, 10-50% have SCLE [10]. This corresponds to the patient, who is female and 26 years old. Approximately 50% of patients with SCLE also have joint involvement. Arthralgia is often symmetrical and affects small joints like the wrist or hand. Patients usually report fatigue [11]. This follows patient complaints, where patients feel joint pain and quickly get tired.

In patients, the CLASI-A score was 3 (mild disease), and the CLASI-D score was 0 (mild disease severity). CLASI is used to evaluate the severity of skin disease in CLE. It has two scores: disease activity and disease damage. Disease activity is scored at a maximum of 70 points and measures erythema, scaling/hypertrophy, mucous membrane involvement, hair loss in the past 30 days, and alopecia without scarring. Damage is given a maximum score of 80 points and takes into account the presence of dyspigmentation and scarring, including alopecia scarring. The depigmentation score doubled if most of the depigmentation had been present for more than 12 months. CLASI-A scores are grouped into mild (0-9), moderate (10-20) and severe (21-70) levels of disease activity. CLASI-D scores are grouped into mild (0-9), moderate (6-16), and severe (>17) disease severity. Based on this, patients are classified into mild disease activity level and mild disease severity level [8].

Laboratory results showed that a complete blood test showed low hemoglobin levels (anemia), hematocrit, erythrocytes, MCV, and neutrophil segments were low or below normal limits. In cases of SLE, patients are found to have anemia, as assessed by low hemoglobin and hematocrit levels. Anemia occurs in more than 50% of SLE patients, and the most common is anemia of chronic disease. Other causes of anemia in SLE can include iron deficiency anemia, Coomb's positive autoimmune hemolytic anemia, and red blood cell aplasia [12].

On September 9, 2023, the patient received the results of the ANA profile examination. Based on the results of the ANA profile examination on the patient, it was found that the Ribosomal-P-protein (RIB) antigen showed +++ results, namely strong positive or strong positive for SLE. Antinuclear antibody examination, also known as ANA examination, is a characteristic of SLE and should be the initial test carried out. Positive ANA is seen in more than 97% of SLE cases. As a diagnostic test, the ANA test can be useful in suggesting a diagnosis of SLE, but other diseases, including nonrheumatologic conditions, are also associated with a positive ANA [13]. Anti-ribosomal P (anti-Rib-P) antibodies are a specific serological marker for systemic lupus erythematosus (SLE). The prevalence of anti-Rib-P antibodies is approximately 15-40% in SLE patients. Research conducted by Zhen-Rui Shi showed that antibodies to ribosomal protein P are an important complementary parameter for SLE disease. Autoantibodies to Rib-P should be checked individually for additional diagnostic benefit, especially in patients with suspected SLE who are negative for anti-dsDNA or anti-Sm antibodies. Native SS-A antigen (60 kDa) with +++ results, namely strong positive. The results of the recombinant Ro-52 and SS-B (SSB) antigens respectively showed +++ results, namely strong positive and ++, namely positive for related diseases such as Sjogren's syndrome, SLE, Neonatal lupus erythematosus and others[14] Approximately 70% of SCLE cases have an association with anti-SSA/Ro antibodies [5].

Management of SLE aims to eliminate symptoms and signs of the disease, prevent damage from occurring, minimize side effects of drugs, and improve quality of life. In addition, the treatment of SLE should aim to achieve remission or at least low disease activity and prevent relapse. The remission referred to is the absence of clinical activity without the use of glucocorticoid and immunosuppressant drugs) [13].

Methylprednisolone was chosen as the most widely used treatment therapy for lupus patients because methylprednisolone can be an immunosuppressive drug and also an anti-inflammatory drug. Methylprednisolone is a group of synthetic corticosteroids derived from

prednisone whose effects are stronger than prednisone and can be given orally or intravenously. In addition, the use of methylprednisolone is preferred because the dose is easy to adjust. Corticosteroids are also better than NSAIDs in managing inflammation and restoring function during disease activity. Corticosteroid therapy in SLE has been used for a long time. Therefore, some side effects may occur. The side effects of corticosteroids depend on the duration of therapy and the dose of the corticosteroid itself. One of the most common side effects of corticosteroids is the symptoms of Cushing's syndrome, consisting of a round face, striae, and central obesity. Folic acid is used to treat SLE with accompanying anemia and can also be used in patients who use long-term corticosteroids to prevent osteoporosis due to decreased bone mass [9].

Glucocorticoids are given if necessary. Glucocorticoids are administered based on the type and severity of organ involvement and should be reduced to a maintenance dose of ≤5 mg/day (prednisone equivalent) and discontinued when possible. Initiation of appropriate immunomodulatory agents may accelerate the reduction/discontinuation of glucocorticoids. Methotrexate (MTX), azathioprine (AZA), and mycophenolate should be considered in patients with poor symptom control after a trial with GC. In active or relapsing disease, belimumab, rituximab, or cyclophosphamide may be considered in organ-threatening disease. Topical corticosteroids are an important part of the treatment of all subtypes of CLE. Corticosteroids are considered the first-line topical treatment because of their anti-inflammatory effects. This drug can be used in cases of local lesions or as additional therapy in patients undergoing systemic treatment. Corticosteroids potent, such as clobetasol, are more effective in controlling the disease than those with lower potency. However, these drugs are associated with a higher risk of side effects, such as striae and telangiectasis, due to their effects on fibroblasts and blood vessels [9].

The principles of SLE treatment are early intervention and individualized treatment to minimize disease progression, reduce organ damage, and improve prognosis. The survival rate of SLE patients has increased due to improvements in diagnosis and treatment. The 5-year survival rate of SLE patients increased from 50% to 60% in the 1950s to more than 90% in the 1990s and from 2008 to 2016, stabilized at 95% in high-income countries and at 92% in low and middle income. The short-term goal of SLE treatment is to control disease activity and improve clinical symptoms, achieving clinical remission or the lowest possible disease activity. The long-term goals are to prevent and reduce recurrence, reduce the adverse effects of treatment reactions, prevent and control organ damage, reduce mortality, and improve quality of life [10].

This is the successful management of the CLE case. This success is greatly influenced by establishing an early diagnosis and providing comprehensive therapy. After therapy for two weeks, the patient showed a good outcome. Hyperpigmentation on the skin faded. Other complaints, such as fever, fatigue, joint, and swallowing pain, were reduced.

4. Conclusions

Cutaneous lupus can be challenging to treat because the symptoms are varied and complex. Early recognition and appropriate management of CLE is very important because it may be a manifestation of SLE. SLE exhibits a wide spectrum of symptoms ranging from mild symptoms to life-threatening conditions. The diagnosis of CLE is made by performing a thorough history and a physical and laboratory examination to determine the underlying systemic involvement. Collaboration between multidisciplinary specialists such as dermatology and rheumatology is very important to diagnose and treat patients. Appropriate and comprehensive therapy can control disease activity and minimize damage, which is the goal of treatment. Further research is needed to investigate new treatment agents that target immune cells and inflammatory pathways involved in the pathogenesis of CLE but with minimal side effects when used long-term.

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