



ERYTHRODERMA SUSPECTED CAUSED BY SAMBILOTO (*Andrographis paniculata*): A CASE REPORT

Revinanda Venincia Pangaribuan, Dina Arwina Dalimunthe*, Ade Arhamni

Dermatology and Venereology Department, Faculty of Medicine, Universitas Sumatera Utara, Jl. Dr. Mansyur No.5, Medan, North Sumatera, 20154, Indonesia

*dina.arwina@usu.ac.id

ABSTRACT

Erythroderma, or Exfoliative Dermatitis (ED), is a serious dermatological emergency marked by erythema and scaling over more than 90% of the body surface area. Although etiologies are diverse, drug reactions remain a major cause. Beyond conventional pharmaceuticals such as antibiotics, antivirals, anti-inflammatory agents, cardiac drugs, and chemotherapeutics, herbal remedies have also been linked to hypersensitivity reactions. Sambiloto (*Andrographis paniculata*), a traditional antidiabetic widely used in Southeast Asia, has been reported to trigger severe cutaneous adverse reactions, including erythroderma. We present the case of a 53-year-old woman with diabetes mellitus who developed generalized erythematous macules, scaling, severe pruritus, fever, chills, and fatigue four days after consuming a Sambiloto decoction. She denied the use of other medications. Clinical findings supported by histopathological analysis confirmed erythroderma. Management involved discontinuation of the suspected herbal, systemic corticosteroids, antihistamines, moisturizers, antibiotics, and glucose control, leading to marked improvement within eight days. This case highlights that drug-induced erythroderma often has an acute onset and rapid course. Despite their reputation for safety, herbal medicines may provoke severe hypersensitivity reactions with potentially life-threatening outcomes. Comprehensive drug history-taking, including traditional remedies, is therefore essential in evaluating patients with exfoliative dermatitis. The objective of this report and journal is to raise awareness of herbal-induced erythroderma and to contribute to the growing body of evidence regarding the risks of traditional therapies. Early recognition and prompt withdrawal of the causative agent remain critical for preventing recurrence and improving patient outcomes.

Keywords: adverse drug reaction; erythroderma; herbal medicine; sambiloto

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INTRODUCTION

Erythroderma is a dermatological emergency with diverse etiologies, including primary dermatoses, systemic diseases, malignancies, and drug reactions. (Tso et al., 2021; Grant-Kels J. M., Fedeles F. & Rothe M. J., 2012) Drug-induced erythroderma accounts for a significant proportion of cases, with antibiotics, antivirals, chemotherapy agents, and herbal medicines being common triggers. (Tso et al., 2021; Grant-Kels J. M., Fedeles F. & Rothe M. J., 2012, Shang Y. X., et al., 2022). Among these, herbal remedies such as Sambiloto (*Andrographis paniculata*) have gained popularity for diabetes management but have also been implicated in hypersensitivity reactions, including severe cutaneous adverse reactions. (Shang Y. X., et al., 2022; Suwankesawong W., Saokaew S., Permsuwan U., Chaikyakunapruk N., 2014).

The onset of symptoms is important to assess different etiologies of erythroderma. (Grant-Kels J. M., Fedeles F. & Rothe M. J., 2012) Onset of erythroderma due to drug reactions is typically sudden and rapid and its resolution is typically faster than cases of erythroderma due to other causes. (Hoxha S., Fida M., R., Malaj R., Vasili E., 2020). Diagnostic workup includes a complete history, physical examination, and careful analysis of pertinent clinical clues and dermatohistopathology, with histopathologic findings varying based on the underlying etiology of erythroderma. (Grant-Kels J. M., Fedeles F. & Rothe M. J., 2012 ; Hoxha S., Fida M., R., Malaj R., Vasili E., 2020)

Management of erythroderma involves combining symptomatic relief with addressing the underlying etiology and potential systemic complications. Hospitalization is required in acute erythroderma cases to monitor and maintain metabolic and hemodynamic stability. (Grant-Kels J. M., Fedeles F. & Rothe M. J., 2012; Austad, S., & Athalye, L., 2022). Against this background, the present case report aims to highlight the potential role of herbal medicine, particularly Sambiloto (*Andrographis paniculata*), as a rare cause of erythroderma and to emphasize the importance of comprehensive drug history-taking, including the use of herbal remedies, in patients presenting with exfoliative dermatitis.

METHOD

This study is presented as a single case report. The data were obtained through direct clinical observation, patient anamnesis, physical examination, laboratory investigations, and histopathological evaluation. The patient was selected purposively as she presented with new-onset erythroderma following Sambiloto consumption and no other identifiable triggers. Data collection included clinical photographs, laboratory results, and skin biopsy findings. The information was descriptively analyzed by comparing the patient's presentation with existing literature on drug-induced erythroderma and adverse reactions to herbal medicines.

Case illustration

A 53-year-old woman presented to the Emergency Unit of Prof. Chairudin Panusunan Lubis Hospital with complaints of red patches accompanied by scaling and severe itching across her body for the past four days. Seven days before symptom onset, she consumed a decoction of Sambiloto for her diabetes mellitus, believing it would help regulate her glucose levels. Three days later, red patches appeared on her inner elbows, neck, chest, and abdomen, gradually enlarging and coalescing into generalized erythematous patches. The following day, scaling developed on her neck and inner elbows, progressively spreading further. These symptoms were associated with fever, chills, and fatigue. The patient stated that she did not administer any treatment when the symptoms appeared. She had no history of food allergies, cancer, malignancy, or other atopic diseases, and her family history was unremarkable. She also denied taking any allopathic medications.

On physical examination, her general condition was weak, with a *compos mentis* level of consciousness. Her vital signs were as follows: blood pressure 130/90 mmHg, heart rate 100 beats per minute, respiratory rate 24 breaths per minute, body temperature 38.3°C. Dermatological assessment revealed erythematous macules and scaling on the face, trunk, upper extremities, and lower extremities, indicating generalized involvement. Additionally, xerosis was present all over the body. The intensity of pruritus was assessed using the Visual Analog Scale (VAS), yielding a score of 8, indicating severe pruritus (Figure 1).

The patient underwent complete blood tests, liver function tests, kidney function tests, electrolyte analysis, and blood glucose tests. Laboratory abnormalities identified included anemia (Hb = 11.2 g/dL), leukocytosis (WBC = $12.09 \times 10^3/\mu\text{L}$) and hyperglycemia (random blood glucose level = 394 mg/dL). The patient was subsequently referred to the Dermatology Department and admitted for hospitalization to prevent dehydration. Due to hyperglycemia, the patient was also managed jointly with the Internal Medicine Department.



Figure 1. A-C. First day of the patient's hospitalization. Erythematous macules with thickened scales were observed in the facial region, trunk, upper extremities, and lower extremities (generalized).

A skin biopsy was performed on the patient to assist in establishing the diagnosis. The biopsy sample was taken from the upper arm. The skin biopsy showed acanthosis, hyperkeratosis, and minimal spongiosis in the epidermal layer. The subepidermal region exhibited an inflammatory infiltrate composed of lymphocytes and neutrophils. This result supported the clinical diagnosis of generalized exfoliative dermatitis (Figure 2). The working diagnosis was established based on anamnesis, physical examination, and additional tests such as laboratory investigations and skin biopsy. Based on these findings, the patient was diagnosed with generalized exfoliative dermatitis, suspected caused by Sambiloto (*Andrographis paniculata*). The differential diagnoses for this patient include Stevens-Johnson Syndrome – Toxic Epidermal Necrolysis (SJS-TEN) and Drug Reaction with Eosinophilia and Systemic Symptoms (DRESS).

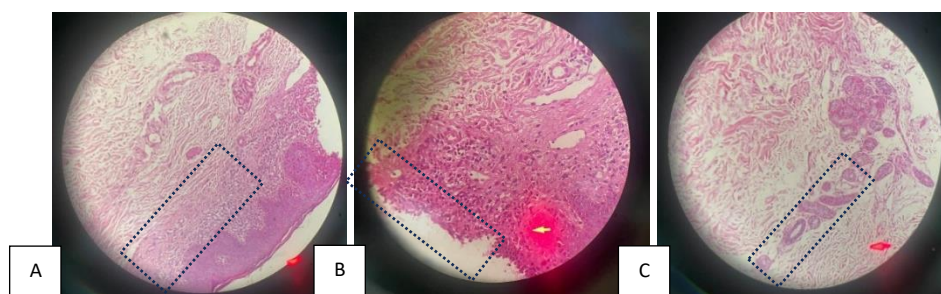


Figure 2. A. Acanthosis, hyperkeratosis, and minimal spongiosis observed in the epidermal layer. B. Inflammatory cell infiltration, predominantly composed of lymphocytes and neutrophils, is observed in the subepidermal region. C. Stroma consists of fibro-collagenous connective tissue.

The treatment included the discontinuation of Sambiloto, intravenous fluid administration, and systemic corticosteroids (dexamethasone 12.5 mg/day), which were given once the patient's blood glucose levels were stable and gradually tapered as the clinical condition improved. Additional treatments included antihistamines (loratadine 10 mg/day), a topical moisturizer applied twice daily (Urea 10% cream), and topical corticosteroids (1% hydrocortisone cream applied to facial lesions twice daily and 0.25% desoximetasone cream applied to erythematous lesions on the trunk and legs twice daily). The patient also received antibiotics (intravenous ceftriaxone 1 gram every 12 hours), insulin and antipyretic (paracetamol, up to three times daily as needed). The patient was monitored every six hours for vital signs and blood glucose levels and was placed on a high-protein diet. After eight days, the patient showed significant improvement, with resolution of erythema and scaling. (Figure 3). The prognosis in this case is *quo ad vitam bonam*, *quo ad functionam bonam* and *quo ad sanationam dubia bonam*.



Figure 3. A-C. Eight days after initiating treatment, generalized erythema was no longer visible on the whole body, with only minimal scaling observed on the face.

DISCUSSION

Erythroderma, also known as Exfoliative Dermatitis (ED), was first documented by Von Hebra in 1868, is a severe inflammatory skin syndrome characterized by generalized erythema and desquamation comprising $\geq 90\%$ of the body surface area. (Tso et al., 2021; Grant-Kels J. M., Fedeles F. & Rothe M. J., 2012) Some cases often accompanied by erosions, crusts, and changes in hair and nails, with common symptoms including shivering, malaise, fatigue, and pruritus. (Tso et al., 2021; Albalawi et al., 2024) The patient in this case report presented with a fatigue and chills condition, along with skin manifestations observed as erythematous macules with thickening and widespread scaling accompanied by itching, consistent with the clinical presentation of erythroderma.

A detailed history is essential for diagnosing erythroderma and identifying the underlying etiology, including predisposing factors, allergies, previous skin diseases, history of drug consumption, timing of symptom onset, age at onset, duration of illness, and family history. (Grant-Kels J. M., Fedeles F. & Rothe M. J., 2012). In general, the onset of symptoms is acute, and in drug-induced exfoliative dermatitis, it tends to progress more rapidly. (Grant-Kels J. M., Fedeles F. & Rothe M. J., 2012; Austad, S., & Athalye, L., 2022; Inamadar, A. C., & Ragunatha, S., 2019) In this case, the patient had consumed a decoction of Sambiloto seven days before the onset of symptoms.

Herbal therapy is in great demand due to its minimal side effects, affordability, and accessibility, and it is widely perceived as a safe alternative to conventional drugs. (World Health Organization, 2019). Sambiloto (*Andrographis paniculata*) is also known as “King of bitters” is an antidiabetic medicinal plant that works by inhibiting the alpha-amylase enzyme. It is distributed in Southeast Asia countries, including Indonesia, Malaysia, Thailand and Sri Lanka. (Suwankesawong, W et al, 2014; Hartini, Y. S., Setyaningsih, D., Chang, M. J. V., & Nugrahanti, M. C. I. A., 2021; Zeng, B. et al., 2022; Hayati, L., & Hidayat, R., 2020) Among the compounds extracted from Sambiloto (*Andrographis paniculata*), andrographolide is the most prominent due to its bioactive properties and abundance. (Hayati, L., & Hidayat, R., 2020) However, reports indicate that Sambiloto (*Andrographis paniculata*) can induce hypersensitivity reactions, including urticaria, anaphylaxis, and erythroderma. (Shang Y. X., et al., 2022; Suwankesawong, W., Saokaew, S., Permsuwan, U. & Chaiyakunapruk, N., 2014) Data from Australia indicate that, since 2005, more than 300 cases of anaphylaxis and hypersensitivity reactions have been recorded in relation to drugs containing *Andrographis paniculata*. (Therapeutic Goods Administration.; 2024).

The management of erythroderma includes identifying and discontinuing the causative agent, systemic corticosteroids, supportive skin care, and monitoring for systemic complications. (Grant-Kels J. M., Fedeles F. & Rothe M. J., 2012) Systemic corticosteroid treatment with prednisone can be used to induce improvement in erythroderma at a dose of 1–2 mg/kg body weight per day, which is then gradually tapered. (Grant-Kels J. M., Fedeles F. & Rothe M. J., 2012; Heelan, K., Sibbald, C., & Shear, N. H., 2019) Topical treatment of erythroderma can be supplemented with moisturizers

to soften the skin, enhance the penetration of active ingredients, and restore the skin's barrier function. (Inamadar, A. C., & Ragunatha, S., 2019; Heelan, K., Sibbald, C., & Shear, N. H., 2019) Antihistamines, particularly those with sedative effects, may be administered to alleviate pruritus, a common complaint among patients with erythroderma and to help manage associated anxiety. (Albalawi, H., Altemani, A., Alhweiti, A., et al., 2024; Heelan, K., Sibbald, C., & Shear, N. H., 2019) According to the literature, erythroderma secondary to drug reactions usually improves or resolves within 2–6 weeks after discontinuation of the causative drug. (Austad, S., & Athalye, L., 2022). This is consistent with the treatment provided in this case.

The prognosis in this case is *quo ad vitam bonam*, *quo ad functionam bonam*, and *quo ad sanationem dubia bonam*. Eight days after initiating treatment, the patient was satisfied with the results. On dermatological examination, the generalized erythema had resolved, with only minimal scaling remaining on the face. Many factors influence the clinical course and prognosis of erythroderma, including age, etiology, comorbidities, speed of onset of erythroderma, and early initiation of therapy. (Grant-Kels J. M., Fedeles F. & Rothe M. J., 2012; Austad, S., & Athalye, L., 2022) In drug-induced erythroderma, the course is usually rapid, and upon discontinuation of the offending drug the erythroderma clears readily and patients recover completely. (Austad, S., & Athalye, L., 2022; Heelan, K., Sibbald, C., & Shear, N. H., 2019) Erythroderma can be fatal, especially in the very young and the elderly.² The most common causes of death in patients with erythroderma are pneumonia, septicemia, fluid or electrolyte imbalance, and heart failure. (Grant-Kels J. M., Fedeles F. & Rothe M. J., 2012; Austad, S., & Athalye, L., 2022) Prevention of erythroderma depends on controlling the underlying cause. Medications and irritants that have previously caused erythroderma should be avoided. (Heelan, K., Sibbald, C., & Shear, N. H., 2019). It is important that the patients maintain careful records of allergies including potentially cross-reactive medications. (Grant-Kels J. M., Fedeles F. & Rothe M. J., 2012) The patient in this case report was advised to discontinue and exercise caution with the use of drugs, including herbal therapies. She was educated about her drug allergy and provided with a list of suspected drugs that could potentially trigger an allergic reaction in future treatments.

CONCLUSION

This case highlights the potential for herbal medicines to cause severe cutaneous reactions. Clinicians should be aware of the risks associated with traditional remedies and ensure thorough patient counseling regarding their safety. Prompt diagnosis and cessation of causative are key in preventing recurrence and complications. Further studies are needed to elucidate the mechanisms underlying herbal-induced erythroderma.

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