

# Erythrodermic drug hypersensitivity reactions secondary to marijuana cigarettes

Cut Putri Hazlianda, Arridha Hutami Putri

Department of Dermatology and Venereology, Faculty of Medicine Universitas Sumatera Utara, Medan, Indonesia.

**Abstract** Erythroderma or generalized exfoliative dermatitis is a skin inflammatory disorder characterized by erythema followed by generalized skin desquamation involving more than 90% of the body's skin surface area. Most erythroderma cases occur due to a secondary process. Therefore, it is mandatory to establish the etiopathology for proper management. We reported a 45-year-old Indian male who presented to the emergency department with generalized skin desquamation secondary to marijuana cigarettes. Patient showed complete remission and excellent clinical response after corticosteroid treatment. This report showed the importance of early diagnosis and prompt treatment to provide a good prognosis as well as prevent complications.

**Key words**

Erythroderma; Drug hypersensitivity reaction; Marijuana, Skin desquamation.

## Introduction

Erythroderma or generalized exfoliative dermatitis is a skin inflammatory disorder characterized by erythema followed by generalized skin desquamation involving more than 90% of the body surface area.<sup>1-4</sup> Initial manifestation of erythroderma is generalized skin erythema followed by exfoliation that is usually seen within 2 to 6 days. Nails can be thick, dry and brittle. Nail pitting, pretibial edema and pedal edema can be observed in around 50% of cases.<sup>1-3</sup>

Most erythroderma cases occur due to a secondary process.<sup>3,4</sup> Therefore, it is mandatory to establish the etiopathology for proper management. Some underlying etiology of this

disease include other widespread skin diseases (psoriasis, atopic dermatitis, other dermatosis) in 27% to 68% of adult cases, followed by drug hypersensitivity reactions in 15% of patients, cutaneous T cell lymphoma (CTCL) or Sezary syndrome in 5% of patients and idiopathic in about 20% of cases.<sup>1,5-7</sup>

Cannabis is a mixture of dried flowers and leaves of the Cannabis sativa (hemp) plant, which is a psychoactive drug that can be found throughout the world.<sup>8</sup> Cannabis also known as marijuana, grass, pot or weed.<sup>9</sup> In literatures, marijuana is reported to cause some skin reactions such as acne, type 1 hypersensitivity reactions in the form of contact urticaria or generalized pruritus, allergic reactions in the form of contact dermatitis and drug hypersensitivity reactions in the form of erythema multiforme, fixed drug eruption, morbiliform eruption and acute generalized exanthematous pustulosis.<sup>8,10-15</sup> We reported a 45-year-old Indian male who presented to the emergency department with generalized skin desquamation secondary to marijuana cigarettes.

---

**Manuscript:** Received: July 03, 2023

Accepted: March 09, 2024

**Address for correspondence**

Dr. Cut Putri Hazlianda

Department of Dermatology and Venereology,  
Faculty of Medicine Universitas Sumatera Utara,  
Medan, Indonesia.

Email: cut.putri@usu.ac.id

## Case report

A 45-year-old Indian male patient came to the Emergency department of USU Hospital Medan with chief complaint of generalized skin desquamation since 2 weeks ago. Initially, around 5 months ago, it presented with itchy, erythematous maculopapular rash which then gradually developed into generalized skin desquamation. There is history of routine marijuana consumption since 5 months ago and previous history of allergies to marijuana around 15 years ago. Usually, the condition remit after consuming medication bought in pharmacies, but his current condition showed no improvement after medications. Patient claimed that he did not know the name of the medication taken for his condition. There is no history of other drug or food allergy in this patient. There is no other systemic disease and no similar diseases in the patient's family.

On physical examination, patient looked moderately ill, compos mentis, body weight 58kg and height 170cm, blood pressure 110/70

mmHg, pulse 92 bpm, respiratory frequency 22  $\times$ /minute and body temperature 37°C. The conjunctiva is slightly pale and oral meth mouth is found. Bilateral pedal edema is observed. Otherwise, there is no hepatosplenomegaly or lymph node enlargement in this patient.

Upon dermatological examination, generalized skin desquamation and hyperpigmented plaques associated with thick scales were observed in the face, trunk and extremities. Onycholysis is found on some fingers of his hands as well as feet (**Figure 1**).

Patient was then admitted and further serological investigations were conducted. He was advised to discontinue smoking marijuana and other drugs. Patient was treated with intravenous dexamethasone 5mg thrice daily, diphenhydramine injection 1ml every 12 hours, omeprazole 40mg once daily, application of 10% urea cream twice daily and 0.25% desoximetasone cream combined with 5% salicylic acid over the trunk and extremities twice daily.



**Figure 1** Patient's clinical manifestations during his first admission; (a-i) skin and nail manifestations; (j-k) meth mouth.

Laboratory results showed hemoglobin 10.0 g/dL\*, MCV 71.20 fL\*, hematocrit 31.4%\*, leukocytes  $14.21 \times 10^3/\mu\text{L}^*$ , platelets  $603 \times 10^3/\mu\text{L}^*$ , liver function and kidney function within normal limits, blood glucose levels within normal limits. Patient was diagnosed as erythrodermic drug hypersensitivity reactions secondary to marijuana cigarettes.

On the third day of hospitalization, patient's condition showed significant improvement and dosage of dexamethasone was tapered to 5mg twice daily. Further improvement was noticed on day-5 and dexamethasone dosage was tapered off to 5mg once daily. Patient was then discharged on day-6 with oral dosage of methylprednisolone 24mg/day, omeprazole 20mg daily, cetirizine 10mg daily, topical 10% urea cream twice daily and 0.25% desoximetasone cream over the trunk and extremities twice daily. Hydrocortisone 1% was prescribed for the facial lesion.

During his first follow up, 4 days after hospital discharge, there was minimal scaling and hyperpigmentation observed and pedal edema

was minimal. **(Figure 2)** The dose of methylprednisolone tablets was tapered again to 16mg/day (for 3 days), followed by 8mg/day (for the subsequent 3 days), after which the methylprednisolone tablet was stopped.

## Discussion

The incidence of erythroderma varies greatly from 0.9 up to 71 per 100,000 outpatients. It predominantly affects men, with a male to female ratio of 2.1 to 4.1. Any age group can be affected with average age varies from 41 to 61 years. During early stage of erythroderma, it often presented in the form of generalized skin erythema which is then followed by skin desquamation after 2 to 6 days.<sup>1-3,6</sup>

A detailed history is required to assess possible triggers, whether the erythroderma is caused by infection, drug consumption, topical drug application, exposure to ultraviolet light or other factors.<sup>1</sup> To ascertain the exact etiology of drug eruption, oral provocation test can be done. But in this case, the test was not done since it is contraindicated in patient with history of



**Figure 2** Patient's clinical manifestations 4 days after hospital discharge

erythroderma.<sup>16</sup> In this patient, marijuana cigarettes are suspected to be the cause of hypersensitivity reactions because the rash occur after exposure to this substance and there is no prior history of consumption of any drugs.

Marijuana or cannabis contains the psychoactive substance 9-tetrahydrocannabinol (THC). About 5 to 10% of THC is absorbed when smoked in rolled cigarettes.<sup>17</sup> The first case of hypersensitivity to THC due to marijuana cigarettes was reported in 1971, until now many studies regarding sensitization to marijuana exposure through inhalation, gastrointestinal tract and direct contact have been reported. However, to date, no studies have clearly specified the allergenic composition of cannabis and its derivatives.<sup>10</sup>

In general, laboratory tests do not help much in establishing diagnosis of erythroderma. Laboratory tests that can be performed such as complete blood count, urinalysis, electrolytes, liver function, kidney and albumin as well as histopathological examination.<sup>1</sup>

Main management of erythroderma caused by hypersensitivity reactions to drugs is by cessation of drugs that are suspected as etiology and oral steroids as well as topical corticosteroids and moisturizers to reduce inflammatory reaction due to vasodilation and erythema.<sup>1-7</sup> Healing usually occurs quickly, generally within a few days to few weeks after treatment. Poor prognosis can occur secondary to opportunistic infections due to long-term corticosteroid treatment or fluid and electrolyte imbalance.<sup>1,6</sup> Heart failure, pneumonia, respiratory distress and sepsis are the most common causes of death in erythroderma.<sup>18</sup> In this case, patient showed complete remission and excellent clinical response after corticosteroid treatment.

## Conclusion

We reported a 45-year-old man with erythrodermic drug hypersensitivity reactions secondary to marijuana cigarettes. Patient showed complete remission and excellent clinical response after corticosteroid treatment. Proper treatment will provide good prognosis for most cases and prevent possible complications.

**Declaration of patient consent** The authors certify that they have obtained all appropriate patient consent.

**Financial support and sponsorship** None.

**Conflict of interest** Authors declared no conflict of interest.

## Author's contribution

**CPH:** Diagnosis & management of the case, critical review, final approval of the version to be published.

**AHP:** Identification & management of the case, manuscript writing, final approval of the version to be published.

## References

1. Grant-Kels JM, Fedeles F, Rothe MJ. Exfoliative dermatitis. In: Goldsmith LA, Katz SI, Gilchrist BA, Paller AS, Leffell DJ, Wolff K, eds. Fitzpatrick's dermatology in general medicine. 8th ed. New York: McGraw-Hill. 2012:266-78.
2. Djuanda A. Eritroderma. In: Menaldi SLSW, Bramono K, Indriatmi W. eds. Ilmu Penyakit Kulit dan Kelamin. Edisi 7. Jakarta: Badan Penerbit FK UI. 2018:228-31.
3. César A, Cruz M, Mota A, Azevedo F. Erythroderma. A clinical and etiological study of 103 patients. *J Dermatol Case Rep.* 2016;**10(1)**: 1-9.
4. Sehgal, VN, Srivastava G, Sardana K. Erythroderma/exfoliative dermatitis: a synopsis. *Int J Dermatol.* 2004;**43**:39-47.
5. Mistry N, Gupta A, Alavi A, Sibbald RG. A review of the diagnosis and management of erythroderma (generalized red skin). *Adv Skin Wound Care.* 2015;**28(5)**:228-36.
6. Okoduwa C, Lambert WC, Schwartz RA, Kubeyinje E, Eitokpah A, Sinha S, Chen W. Erythroderma: Review of potentially life-

- threatening dermatosis. *Indian J Dermatol.* 2009;**54(1)**:1-6.
7. Thomson MA, Berth-Jones J. Erythroderma and Exfoliative Dermatitis. In: J. Revuz *et al*; eds. Life-Threatening Dermatoses and Emergencies in Dermatology. Berlin: Springer Verlag Berlin Heidelberg; 2009:79-86.
  8. Frank N, Hennings C, Miller JL. Drug Abuse. In: Kang S, Amagai M, Bruckner AL, Enk AH, Margolis DJ, McMichael AJ, Orringer JS, editors. Fitzpatrick's Dermatology in General Medicine. Edisi ke-9. New York: McGraw Hill; 2019:18(101):1705-1716.
  9. Troiani, M. Smoking vs. Eating Cannabis: The Medical and Scientific Differences and How they Affect Patient Health. *Digamma LLC.* 2017:1-13.
  10. Min JY, Min KB. Marijuana use is associated with hypersensitivity to multiple allergens in US adults. *Drug Alcohol Depend.* 2018;**182**:74-77.
  11. Williams C, Thompstone J, Wilkinson M. Work-related contact urticaria to cannabis sativa. *Contact Dermatitis.* 2008;**58**:62-3.
  12. Van Gasse AL, Sabato V, Faber MM, Bridts CH, Ebo DG. Cannabis Allergy: More Than a Bad Trip. In: Handbook of Cannabis and Related Pathologies. *Academic Press.* 2017:517-26.
  13. Ozyurt S, Muderrisoglu F, Ermete M, Afsar F. Cannabis-induced erythema multiformelike recurrent drug eruption. *Int J Dermatol.* 2014;**53(1)**:e22-23.
  14. Steinmetz-Rodriguez C, Schillinger B, Beach FL. Marijuana: An Unusual Cause of Fixed Drug Eruption. *JA OCD.* 2003:16-8.
  15. Genebriera de Lamo J, Pittelkow MR, Sanchez M. Signs of Drug Abuse. In: Bologna JL, Schaffer JV, Cerroni L, eds. Dermatology. 4<sup>th</sup> ed. US: Elsevier. 2018;89:1595-1606.
  16. Brockow K, Przybilla B, Aberer W, Bircher AJ, Brehler R, Dickel H, *et al.* Guidelines for the diagnosis of drug hypersensitivity reactions. *Allergo J Int.* 2015;**24**:94-105.
  17. Haydock S, Drug dependence. In: Clinical Pharmacology. 2019;**11**:139-164.
  18. Gamboa P, Sanchez-Monge R, Sanz ML, Palacín A, Salcedo G, Diaz-Perales A. Sensitization to Cannabis sativa caused by a novel allergenic lipid transfer protein, Can s 3. *J Allergy Clin Immunol.* 2007;**120(6)**:1459-60.