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OLDER ADULT WITH ERYTHRODERMA, A MEDICAL EMERGENCY. CASE REPORT

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Palabras clave: Dermatitis Exfoliativa; Parapsoriasis; Anciano; Geriatría; Enfermedades de la Piel.

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ABSTRACT

Introduction: Erythroderma is a severe inflammatory skin syndrome that affects more than 90% of the body's surface area. The most common causes include psoriasis, a history of dermatological disease, and the use of certain medications. Due to the extent of skin involvement, it is considered a medical emergency because of the high risk of skin barrier dysfunction. This risk is exceptionally high in older adults, in whom the onset of erythroderma can exacerbate functional decline, lead to nutritional impairment, and cause mood disturbances. These complications are associated with an increased likelihood of developing systemic infections, dehydration, and electrolyte imbalances, which are acute and potentially life-threatening conditions.

Case presentation: A 76-year-old male patient was admitted to the emergency department of the Hospital Universitario San Ignacio de Bogotá (Colombia) due to a one-and-a-half-year history of pruritic, erythematous, painful, and scaly skin lesions on the lower limbs, which later spread throughout the body, causing systemic involvement. The patient was admitted to the hospital with a diagnosis of erythroderma secondary to psoriasis. A skin biopsy showed nonspecific chronic dermatitis. A comprehensive geriatric assessment led to the establishment of a treatment focused on controlling disease progression and minimizing the risk of associated systemic complications, which resulted in the satisfactory recovery of the patient.

Conclusions: Dermatologic diseases in older adults are often underestimated due to the skin changes associated with aging. However, conditions such as erythroderma should be suspected considering the high risk of acute skin failure and associated complications. In these patients it is critical to implement optimal strategies based on functional status, with an emphasis on nutritional, mental, and social management. Comprehensive geriatric assessment is essential to determine treatment goals, ensure proper adherence to treatment, and improve the patients' quality of life.

RESUMEN

Introducción. La eritrodermia es un síndrome inflamatorio cutáneo grave que afecta más del 90% de la superficie corporal. Sus causas más frecuentes incluyen psoriasis, antecedente de enfermedades dermatológicas y reacciones a ciertos medicamentos. Se considera una emergencia médica debido al elevado riesgo de disfunción de la barrera cutánea por la magnitud del compromiso epidérmico. Este riesgo es mayor en personas mayores, en quienes la eritrodermia puede exacerbar el deterioro funcional generando problemas nutricionales y alteraciones del estado de ánimo. Estas complicaciones están relacionadas con una mayor probabilidad de infecciones sistémicas, deshidratación y trastornos hidroelectrolíticos, condiciones que pueden ser agudas y potencialmente mortales.

Presentación del caso. Hombre de 76 años que ingresó al servicio de urgencias del Hospital Universitario San Ignacio de Bogotá (Colombia) por lesiones cutáneas

pruriginosas, eritematosas, dolorosas y descamativas que aparecieron un año y medio antes en miembros inferiores y se diseminaron por todo el cuerpo ocasionando compromiso sistémico. El paciente fue hospitalizado con diagnóstico de eritrodermia secundaria a psoriasis. Se realizó biopsia cutánea cuyo resultado reportó dermatitis atópica crónica no específica. A través de una valoración geriátrica integral se estableció tratamiento centrado en controlar la progresión de la enfermedad y minimizar el riesgo de complicaciones sistémicas asociadas, con lo cual el paciente tuvo una evolución satisfactoria.

Conclusiones. Las enfermedades dermatológicas en adultos mayores tienden a ser subvaloradas debido a los cambios cutáneos asociados al envejecimiento. Sin embargo, afecciones como la eritrodermia deben ser sospechadas debido al alto riesgo de fracaso cutáneo agudo y las complicaciones asociadas. En estos pacientes es crucial implementar estrategias óptimas basadas en su funcionalidad y con un enfoque en el manejo nutricional, mental y social. La valoración geriátrica integral es fundamental para determinar los objetivos del tratamiento, garantizar una adecuada adherencia a este y mejorar la calidad de vida de los pacientes.

INTRODUCTION

Patients with dermatological diseases such as psoriasis, atopic dermatitis or eczema may suffer from a skin syndrome known as erythroderma or exfoliative dermatitis. This condition is characterized by a severe inflammation of the skin that involves more than 90% of the body surface and presents with erythematous and scaly lesions that can cause acute skin problems (1,2).

Erythroderma represents the final stage of many dermatological diseases, but most studies state that it is usually associated with the exacerbation of a pre-existing dermatosis such as psoriasis, which is the cause of 25–50% of cases. It is therefore essential to know the patient's background and their complete medical history in order to reach an accurate diagnosis (1).

This condition is a medical emergency due to the risk of acute skin failure and a mortality rate of up to 30% (3). This risk is higher in older adults and in people with comorbidities, in whom erythroderma can exacerbate functional impairment leading to nutritional disorders and mood alterations (3–5).

Erythroderma is more prevalent in men (1,2) and occurs more frequently between the ages of 41 and 61 years (1). It may begin with progressive erythema accompanied by scaly and pruritic skin lesions, and may affect the skin adnexa, mainly the nails (1,2).

Since it is a syndromic entity, the diagnosis of erythroderma can be easily made by identifying generalized erythema and desquamation of $\geq 90\%$ body surface area; however, diagnostic accuracy can be improved by performing multiple biopsies along the course of the disease (1).

Treatment approach to erythroderma should include discontinuation of any unnecessary medications and appropriate testing to exclude underlying malignancies. Environmental temperature must be controlled for its treatment, as these patients suffer from loss of thermoregulatory body homeostatic functions that prevent cooling or overheating. Skin barrier function can be improved with colloid baths, moist compresses, emollients, and mild topical corticosteroids. High potency topical corticosteroids or topical tacrolimus are not recommended as systemic absorption is enhanced by increased skin permeability (1).

The following is the case of an older adult with erythroderma, who progressed favorably after receiving treatment based on a comprehensive geriatric assessment.

CASE PRESENTATION

A 76-year-old man, farmer, from a rural area of the municipality of El Guamo, Tolima (Colombia), was admitted to the emergency department of the Hospital Universitario San Ignacio (a quaternary care institution in Bogotá, Colombia) due to the presence of painful, pruritic, erythematous and scaly skin lesions that began to appear a year and a half earlier on the lower limbs and spread to the face, upper limbs, palms of the hands, and soles of the feet.

Before being admitted to the hospital, the patient visited the emergency department of a low complexity healthcare center located in El Guamo, where he was prescribed outpatient treatment with topical corticosteroid (betamethasone twice a day) for a month and was discharged the same day without undergoing additional studies.

Given the persistence of the symptoms, the patient attended an outpatient dermatology department of a private institution approximately three months after finishing the aforementioned treatment, where a skin biopsy was requested, the results of which reported a non-specific chronic atopic dermatitis. Due to increased pain and lesions (with impaired function), the patient decided to visit the emergency department of the Hospital Universitario San Ignacio two months after receiving the biopsy results.

On admission, he was evaluated by the geriatrics service, which found the patient in a fair general condition, moderately dehydrated, but without cardio-pulmonary alterations or evidence of lymphadenopathy or risk of malnutrition according to the Mini Nutritional Assessment screening tool.

The patient stated that he could previously perform basic and instrumental activities of daily living independently (score of 100 on the Barthel scale prior to admission to the institution), but his physical examination on admission showed that he experienced mild dependence to perform these activities (score of 75 on the Barthel scale), with functional decline predominantly in dressing and moving and transferring activities, which was associated with the progression of the lesions and uncontrolled pain.

The patient, who did not show signs of major neurocognitive disorders and had an informal support network (family), stated that he had difficulties with the administrative procedures of his healthcare provider, which prevented him from attending medical check-ups for an adequate follow-up of his condition.

Physical examination on admission indicated that the patient had phototype III, edema on both eyelids, and skin involvement with extensive erythematous and scaly plaques on more than 90% of his body, predominantly on the face, anterior and posterior thorax, and upper and lower limbs, including the palms of the hands; no lesions were observed on the soles of the feet. His face and ears exhibited edema with xerotic eczema and fissures, and there were also some serohematic scabs on his face, back of the hands, and forearms. His back and anterior thorax showed rounded, slightly infiltrated papules and plaques up to 1cm in size. The palms of the hands had desquamation, and there were erythema and thick white dandruff on the scalp.

Blood tests taken on admission showed leukocytosis, eosinophilia, normocytic anemia with slight hypochromia, and altered renal function (Table 1). Serological tests were negative for hepatitis, HIV, and non-reactive for VDRL (venereal disease research laboratory).

On the day of hospital admission, the patient was evaluated by the dermatology service, which requested a skin biopsy from three different anatomical sites (left forearm, left abdominal flank, and left thigh) in order to rule out conditions such as adverse drug reaction, atopic dermatitis, psoriasis, and cutaneous T-cell lymphoma (less likely). They also requested a soft tissue ultrasound which was taken on the third day of admission and showed right inguinal lymph nodes with a reactive appearance.

On the same day of admission, treatment was started with topical corticosteroid (clobetasol 0.05%, once every 12 hours), parenteral hydration (80cm³ Ringer lactate per hour), and occlusive management with vaseline gauze dressings on the affected skin (changed every 12 hours), resulting in a favorable progression of the patient's condition.

Table 1. History of blood tests taken during hospital stay.

Test/Date taken	03/08/21	04/08/21	05/08/20	06/08/21	07/08/21	08/08/21	10/08/21	11/08/21
Blood count	L: 11 300 N: 7200 Eos: 800 Hb: 11 g/dL MCV 79.8 MCH: 25.8 Pt: 529 500							L: 14 500 N: 11 900 Hb: 11.8 g/dL Eos: 200 Pt : 451 500
Creatinine	1.3 mg/dL	1.3 mg/dL	1.36 mg/dL		1.25 mg/dL	1.09 mg/dL		1.13 mg/dL
Urea nitrogen	35.5 mg/dL	35.5 mg/dL	33.3 mg/dL		22.8 mg/dL	20.2 mg/dL		26.8 mg/dL

Test/Date taken	03/08/21	04/08/21	05/08/20	06/08/21	07/08/21	08/08/21	10/08/21	11/08/21
Sodium	142 mmol/L				139 mmol/L			
Cloro	107 mmol/L				107 mmol/L			
Potassium	4.5 mmol/L		4 mmol/L					
Magnesium	1.7 mg/dL							
Calcium	8.6 mg/dL			7.7 mg/dL				
Phosphorus	4.4 mg/dL			4.6 mg/dL				
Uric acid	6.3 mg/dL			6.3 mg/dL				
Hepatitis B							Non-reactive	
Hepatitis C							Non-reactive	
HIV								Non-reactive
ALT								38 U/L
AST								27 U/L
Bilirubin								BT: 0.48 mg/dL BI: 0.38 mg/dL BD: 0.10 mg/dL

L: leukocytes; N: neutrophils; Eos: eosinophils; Hb: hemoglobin; MCV: mean corpuscular volume; MCH: mean corpuscular hemoglobin; Pt: platelets; HIV: human immunodeficiency virus; ALT: alanine aminotransferase; AST: aspartate aminotransferase; BT: total bilirubin; BI: indirect bilirubin; BD: direct bilirubin.

Source: Own elaboration.

The biopsy pathology report (received on the sixth day of hospitalization) reported psoriatic erythroderma. Consequently, treatment was started with methotrexate 15mg orally every week and topical corticosteroid treatment was continued (clobetasol 0.05%, 1 dose every 12 hours), which was administered during 9 days of hospital stay and 15 days after discharge.

The patient had an adequate clinical course after the initiation of medical treatment, with resolution of the renal function alteration, pain control, and reduction of the skin lesions. For this reason, he was discharged 9 days after being admitted to the hospital. At discharge, the patient scored 95 on the Barthel scale and could perform basic activities of daily living independently. Information was provided to the patient and his relatives about the disease and the importance of continuing treatment, as well as guidelines for adherence and outpatient follow-up.

DISCUSSION

Erythroderma is an inflammatory skin syndrome characterized by desquamation and erythema on more than 90% of the body surface and sometimes represents the final stage of multiple dermatologic diseases in adults (1). This is a potentially life-threatening condition, so it is considered a medical emergency (1).

Erythroderma is more frequent in men and the mean age of presentation is between 41 and 61 years (1). The pathophysiology of this syndrome is believed to

derive from a complex interaction between cytokines (interleukins 1, 2, and 8), intercellular adhesion molecule-1 (ICAM-1), tumor necrosis factor, and interferon gamma, which generates an increase in epidermal cell division that reduces the transit time of these cells through the epidermis and produces exfoliation (1).

Besides skin involvement, in erythroderma it is important to examine the skin adnexa, mainly the nails. According to a study conducted by Mahabaleshwar *et al.* (2) in 50 patients with a clinical diagnosis of exfoliative dermatitis, the most common change in the nails is discoloration (40%), followed by the presence of ridges (36%), and nail dystrophy (28%). Other nail changes described by these authors include pitting, onycholysis, shiny nails, and paronychia (2).

The initial approach to erythroderma should include evaluation by a nutrition expert, assessment of fluid and electrolyte imbalance, measures to maintain skin barrier function, antihistamines with a sedative effect, and exclusion of secondary bacterial infections (1); it also includes interventions to reduce the risk of acute skin failure. It should be kept in mind that the treatment of this condition in older adults is more complex, so a comprehensive geriatric assessment (evaluation of the clinical, functional, mental, and social spheres) plays a very important role in the care of this population.

The main causes of erythroderma include psoriasis (25–50%), adverse drug reactions (11.3–21.6%), history of dermatologic disease (5.12–25.3%), and cancer (1%); the cause cannot be precisely identified in 6.51–36% of cases (1). After identifying the possible cause, it is recommended to establish the severity of the disease, define the place of care (inpatient or outpatient), and evaluate the probability of complication risks derived from acute skin failure such as fluid and electrolyte imbalance, distributive shock, sepsis, heart failure, ophthalmologic complications, among others (3).

As mentioned above, it is important to evaluate the nutritional status of patients with erythroderma in detail, given that this is a condition that results in a state of hypercatabolism and that there is evidence that patients with this condition are at high risk of malnutrition or undernutrition (1,4). Moreover, early identification and treatment of malnutrition could improve the outcome of the disease.

To treat patients with erythroderma, measures should be implemented to ensure fluid and electrolyte balance and maintain the barrier function of the skin, which requires local hydration by means of occlusive bandages with petroleum jelly to prevent dehydration due to evaporation. It is also recommended to rule out secondary bacterial infections and to administer antihistamines with sedative effect to relieve pain and itching (1). Cyclosporine, infliximab and methotrexate are recommended for first-line pharmacological management (1).

Even though studies on the prognosis of erythroderma are scarce and the results are inconsistent, it has been established that erythroderma secondary to pharmacological reactions improves or resolves within 2–6 weeks after drug withdrawal. It has also been found that when associated with psoriasis and eczema, erythroderma may improve over several weeks or months, although lesions may reappear in 15% of cases. When associated with malignancy, erythroderma may persist and be refractory to treatment, and when the cause is unknown, patients

may have complete remission in 30% of cases and partial remission in 50% (1).

Considering that erythroderma can exacerbate functional deterioration, resulting in nutritional problems, mainly in older adults and people with co-morbidities, and that malnutrition negatively affects the body from a functional perspective, the functional sphere should be evaluated in this population with the aim of evaluating the early initiation of rehabilitation and thus prevent in-hospital functional deterioration (5). Regarding the mental sphere, the presence of affective symptoms such as depression or anxiety should be assessed, as it has been shown that about 16% of patients with dermatological diseases suffer from a psychological condition secondary to their skin disease and that 14% of patients have a psychological condition that aggravated their skin disease (6).

Finally, regarding the social sphere, the presence and characteristics of the patient's support network should be taken into account, as they may determine the place of care for erythroderma (outpatient vs. inpatient), adherence to treatment, and outpatient follow-up to guarantee disease education (6).

The following diagnostic algorithm (Figure 1) and treatment algorithm (Figure 2) for older adults with erythroderma are based on a comprehensive geriatric assessment and may serve as a guide for the care of this population.

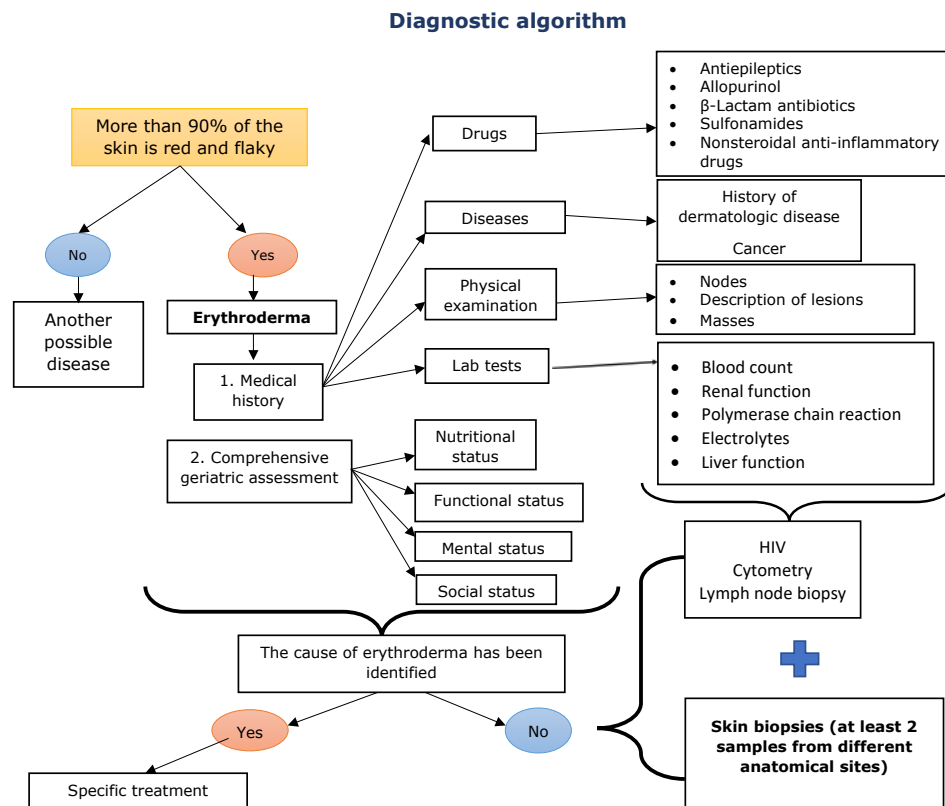


Figure 1. Diagnostic algorithm of erythroderma in older adults.

Fuente: Own elaboration.

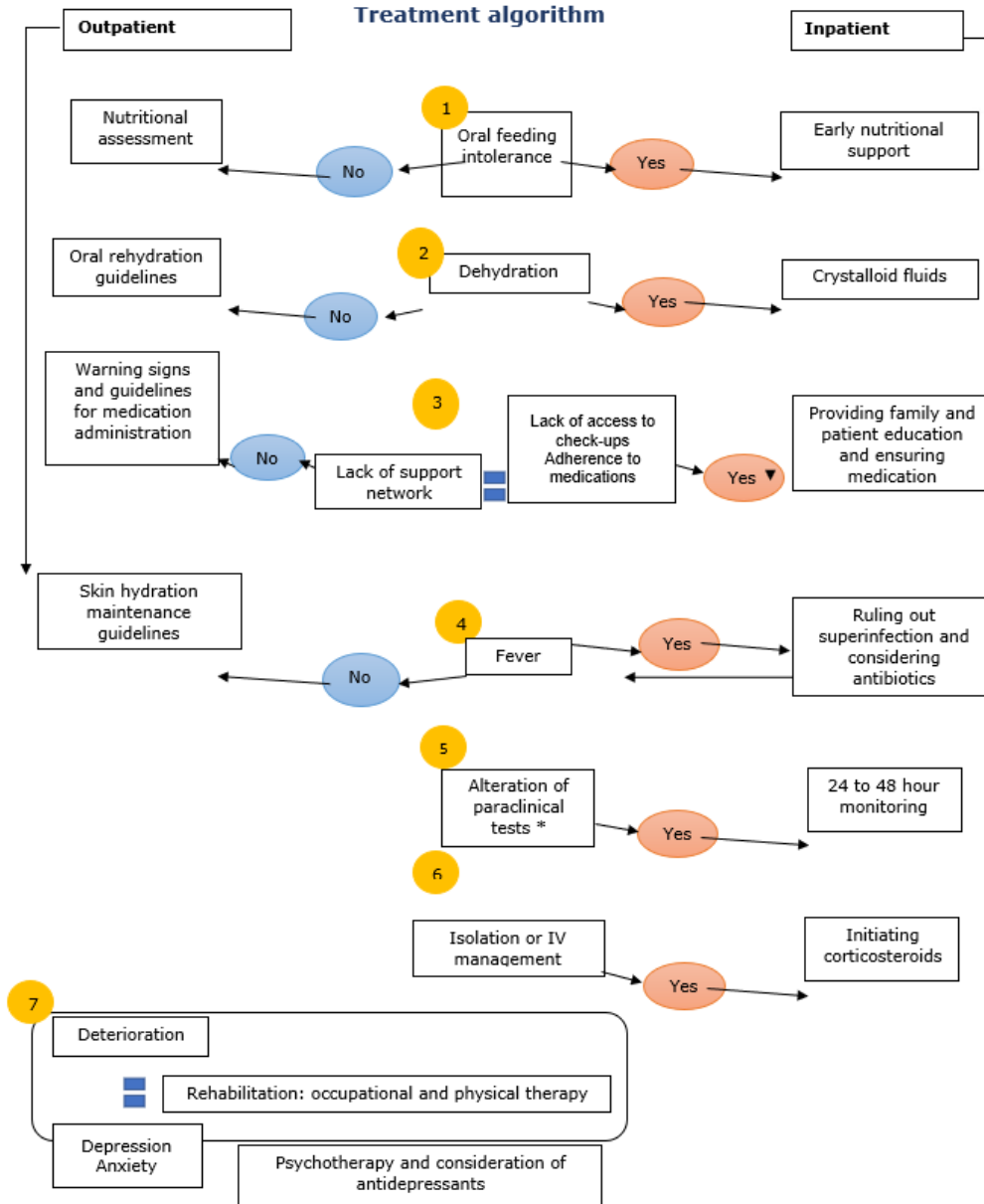


Figure 2. Treatment algorithm for older adult patients with erythroderma.

* Electrolytes, blood count, renal function, hepatic function.

Source: Own elaboration.

CONCLUSIONS

Erythroderma is a condition that can develop into a dermatologic emergency, so it should be suspected and identified early to reduce the risk of acute skin failure.

The approach to and treatment of erythroderma in older adults is a clinical challenge given the limited medical literature on the subject. However, including

a comprehensive geriatric assessment, using a problem-based approach, allows for an early etiologic diagnosis, which will help establish optimal nutritional, functional, mental and social care strategies to ensure increased adherence and a better quality of life for the patient.

This case report is a contribution to the literature on dermatologic diseases in older adults as it provides evidence of the treatments available for a condition that can become a medical emergency, as well as the adverse effects of interventions in this population.

ETHICAL CONSIDERATIONS

To prepare this case report, informed consent was obtained from the patient, who was informed, together with his relative, of the purpose of the article. Both agreed to its publication and, additionally, approval was obtained from the ethics committee of the Pontificia Universidad Javeriana.

CONFLICTS OF INTEREST

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