

# Erythroderma as first sign of lung cancer

## *Eritrodermia como primeira manifestação de carcinoma do pulmão*

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### Abstract

Erythroderma, or generalized exfoliative dermatitis, is a rare inflammatory disorder characterized by generalized erythema, involving more than 90% of the body surface area, accompanied by a variable degree of scaling. It may be the clinical presentation of several cutaneous or systemic diseases and it is frequently challenging to find the underlying cause. Our case focuses on a 76-year-old male patient that was referred to our department due to generalized erythroderma and diffuse alopecia, developing over the last 4 months. He presented with erythematous papules and nodules, some of them covered with sticky scales. Skin biopsy was compatible with drug eruption. Due to an inadequate response to treatment and typical B symptoms, further imagiologic studies were performed. Ultimately he was diagnosed with non-small cell lung cancer. This case shows the need to search for a neoplasm in patients presenting with erythroderma, particularly in the presence of systemic symptoms.

**Keywords:** Erythroderma. Paraneoplastic dermatitis. Lung cancer.

### Resumo

A eritrodermia pode ser a apresentação clínica de doenças cutâneas ou sistémicas severas, e caracteriza-se por eritema envolvendo mais de 90% da superfície corporal, acompanhada de variados graus de descamação. Encontrar a causa subjacente é frequentemente desafiador. Descreve-se o caso de um doente do sexo masculino de 76 anos, observado na consulta de Dermatologia por eritrodermia e alopecia difusa, com 4 meses de evolução. Ao exame físico observava-se uma dermatose polimórfica constituída por eritema e descamação generalizados, associados a pápulas e nódulos eritematosos e queratodermia palmar. A biópsia cutânea foi compatível com toxidermia. Por ter apresentado má resposta à terapêutica instituída e apresentar sintomas B típicos, foram realizados estudos imagiológicos. O diagnóstico final foi de carcinoma do pulmão de não-pequenas células. Este caso demonstra a necessidade de procurar uma neoplasia num doente que se apresente com eritrodermia, principalmente na presença de outros sintomas sistémicos e sem dermatose prévia.

**Palavras-chave:** Eritrodermia. Dermatose paraneoplásica. Neoplasia do pulmão.

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**Figure 1.** Generalized erythrodermic rash on the trunk and upper limbs.



**Figure 2.** Generalized erythrodermic rash on the trunk and upper limbs.

## Introduction

Erythroderma, or generalized exfoliative dermatitis, is a rare inflammatory disorder characterized by generalized erythema, involving more than 90% of the body surface area accompanied by a variable degree of scaling.

Establishing the underlying diagnosis may be very difficult initially. Erythroderma may be the clinical presentation of several cutaneous or systemic diseases. However, it is a rare first manifestation of a solid organ malignancy<sup>1,2</sup>.

Our case report describes one of the rare dermatological presentations of lung cancer.

## Clinical case

A 76-year-old male patient presented to the dermatology appointment with generalized erythroderma and diffuse alopecia.

As personal priors, he had hypertension and type 2 diabetes *mellitus*, treated with acetylsalicylic acid, atorvastatin, amiloride, and metformin. He offered no previous history of eczema, psoriasis, or any other skin conditions.



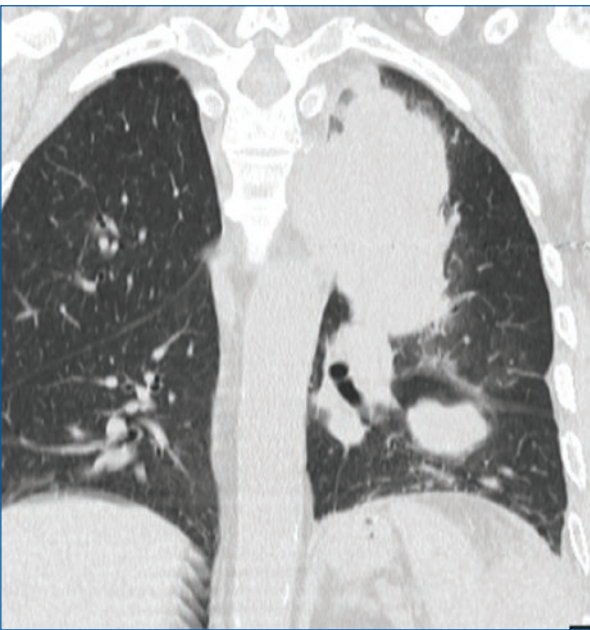
**Figure 3.** Associated erythematous papules and nodules, some of them covered with sticky scales, widely distributed throughout the entire body.

The skin rash appeared 4 months ago and he was evaluated in a private dermatology practice, where blood tests and a skin biopsy were performed. The routine laboratory showed peripheral eosinophilia and the histopathological findings were compatible with drug eruption.

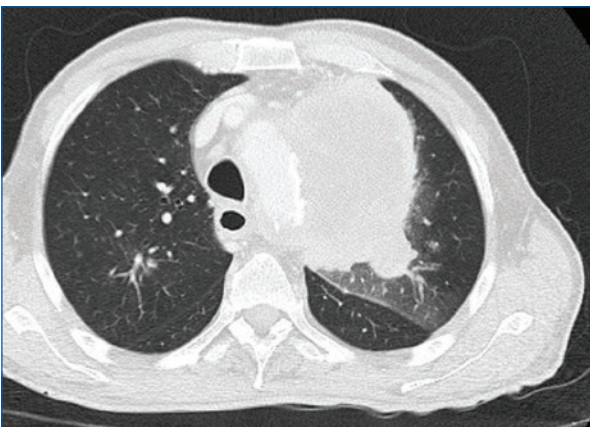
Since there was a suspicion of toxicoderma, all of the patient's chronic medication was suspended. A



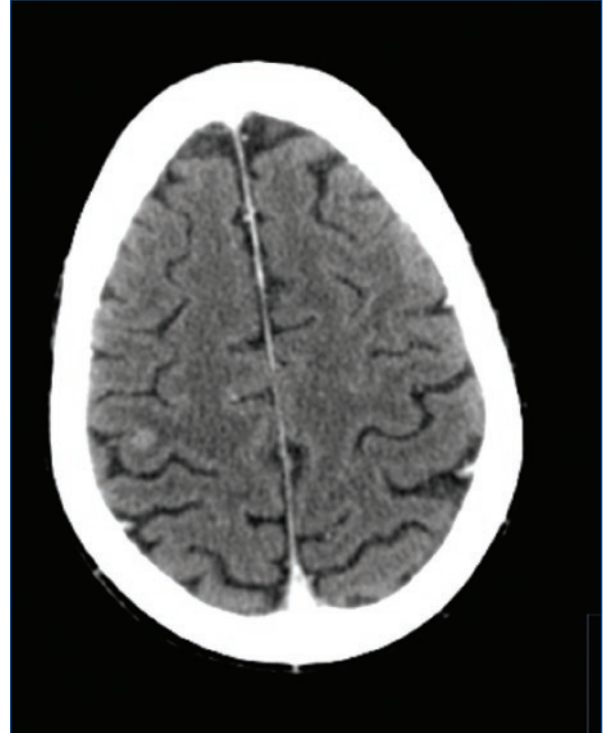
**Figure 4.** Palmar and ungueal involvement.



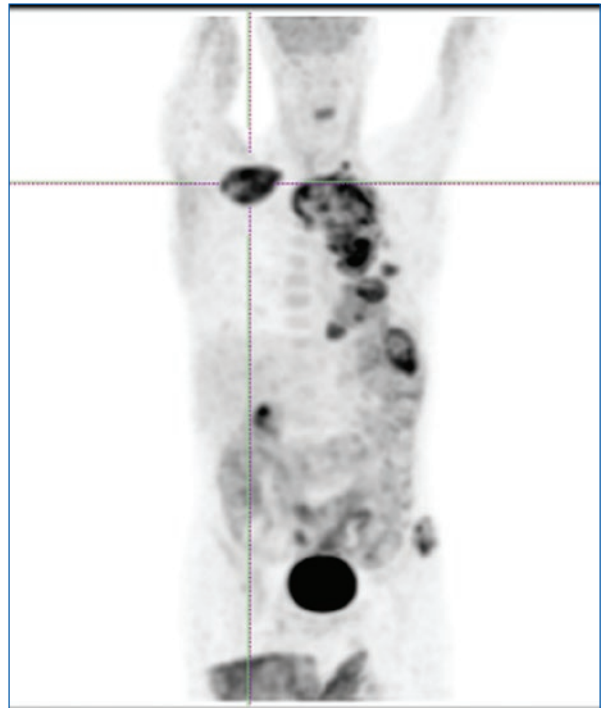
**Figure 5.** Chest CT scan showed multiple nodular lesions on the left lung, the biggest with 10 cm in diameter.



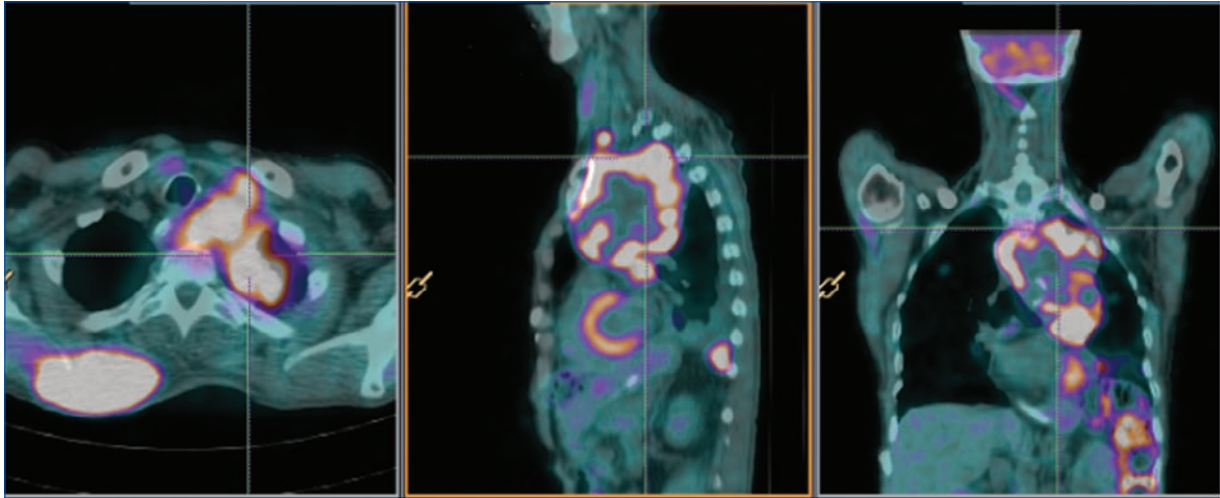
**Figure 6.** Chest CT scan showed multiple nodular lesions on the left lung, the biggest with 10 cm in diameter.



**Figure 7.** Head CT scan and positron emission tomography demonstrated metastatic lesions in the central nervous system, colon, muscle and bone.



**Figure 8.** Positron emission tomography demonstrated metastatic lesions in the colon, muscle and bone.



**Figure 9.** Positron emission tomography demonstrated metastatic lesions in the colon, muscle and bone.

variety of treatments were attempted throughout the months, including cyclosporine, corticotherapy (topical, per os, and intramuscular), and azathioprine, but the patient showed no improvement at all.

At this point, the patient presented to our dermatology department. Dermatological examination revealed a polymorphous dermatosis, with a generalized erythrodermic rash on the trunk, upper and lower limbs, face, and dorsum of hands and feet, associated with sparse erythematous papules and nodules, some of them covered with sticky scales, widely distributed throughout the entire body (Figures 1–3). Additionally, the patient presented with onychomadesis and subungual hyperkeratosis of the fingernails, and palmoplantar keratoderma (Figure 4).

A new skin biopsy was performed and the histopathological findings matched the previous diagnosis of allergic eczema/drug eruption, with tissue eosinophilia.

The patient was treated with topical corticotherapy and hydroxyzine.

Two months later, with no improvement of the skin rash, he started with complaints of partial dysphonia, anorexia, weight loss (10 kilos in 5 months), and a fast decline in overall health status.

Full laboratory blood tests showed an elevated alkaline phosphatase and sedimentation rate. Chest radiography revealed a mass on the upper left thorax. Further study with computed tomography (CT)—scan showed multiple nodular lesions on the left lung, the biggest with 10 cm in diameter (Figures 5 and 6). The histopathology was compatible with squamous cell lung cancer. Head CT and positron emission

tomography demonstrated metastatic lesions in the central nervous system, colon, muscle, and bone (Figures 7–9). Unfortunately, the patient passed away a few months later.

## Discussion

Erythroderma is a severe inflammatory skin syndrome characterized by generalized erythema and desquamation comprising  $\geq 90\%$  of the body surface area. It is most commonly caused by atopic dermatitis, psoriasis, and drug reactions. In some cases it is idiopathic, and these patients should be closely monitored over a long period of time, with skin biopsies, since some of these will develop a cutaneous T-cell lymphoma<sup>3</sup>.

Paraneoplastic erythroderma accounts for about 1% of the cases and is most commonly associated with lymphoproliferative disorders, other than mycosis fungoides and Sézary syndrome. Less commonly, it can be associated with solid tumors, usually in the late stage of the disease, including colon, prostate, gastric, and lung carcinoma<sup>4–6</sup>. Paraneoplastic syndromes can appear before, during or after the tumor diagnosis<sup>1</sup>. In this case it was the first manifestation.

Lung cancers are a leading global cause of morbidity and mortality<sup>7</sup>. The most common paraneoplastic dermatoses associated with lung neoplasms are tripe palms, erythema gyratum repens, hypertrichosis lanuginosa acquisita, and Bazex syndrome<sup>8</sup>.

To our knowledge, as an erythroderma presentation, only 14 cases of squamous cell lung cancer have been reported in the literature<sup>7,9</sup>. Following Curth's postulates, we can relate but not definitely classify this case

of erythroderma as a paraneoplastic syndrome, since the patient wasn't able to initiate treatment<sup>9</sup>.

A limitation of this study is the fact that the skin nodules weren't biopsied, which might mean apart from erythroderma, the possibility of a cutaneous metastasis from lung cancer.

A clinical finding of a rapidly extending erythroderma, especially in a patient without any previous dermatological disorder and with systemic symptoms, should warrant investigation for underlying malignancies.

Recognition of these paraneoplastic dermatoses is important to facilitate earlier diagnosis and management.

## Ethical responsibilities

**Protection of people and animals.** The authors declare that for this research no experiments on humans and/or animals were performed.

**Confidentiality of data.** The authors declare that they have followed the protocols of their work center regarding the publication of patient data.

**Right to privacy and written consent.** The authors declare that they have received written consent from the patients and/or subjects mentioned in the article.

The author of correspondence must be in possession of this document.

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