A study of erythroderma: Clues from eosinophilia and elevated lactate dehydrogenase levels

Sir,

Erythroderma, first described by Hebra in 1868, is an inflammatory disorder characterized by erythema and scaling involving more than 90% of the body surface. It results from worsening of existing skin disease (psoriasis, atopic dermatitis), or may be caused by drugs or underlying neoplasm; or of unknown cause, with an acute or insidious onset. The prognosis is frequently related to the cause, time of evolution, onset, associated diseases, and laboratory findings.[1]

We studied records of 66 patients with erythroderma, admitted to the Department of Dermatology, Hospital General de Mexico, between 1996 and 2007. Data collected from the records comprised age at onset, time for evolution, symptoms, associated disorders, existing skin disease, drug intake, aggravating factors, and laboratory parameters (hemoglobin, total leukocyte count, erythrocyte sedimentation rate (ESR), serum proteins, serum creatinine, serum electrolytes, serum lactate dehydrogenase (LDH), blood glucose, liver function tests, urine examination, and chest x-ray). Skin biopsies were performed in all cases; lymph node biopsy, CT scan, and determination of β2 microglobulin levels were undertaken when indicated.

All records selected fulfilled inclusion criteria. The mean age at onset was 44 years (range, 15-84 years). The sample consisted of 18 female and 44 male patients. In our study, erythroderma commonly showed a gradual onset, frequently related to gradual worsening of a preexisting dermatosis (time of evolution, 6.47 + 3.7 months). Itching and chills were the most common symptoms in 100% and 75% of the patients respectively. The most common causes of erythroderma were a) psoriasis (46%), b) carbamazepine which accounted for 69% of drug-related erythroderma and c) cutaneous T-cell lymphoma for underlying neoplasm.

The most important laboratory results were hypo-albuminemia (75%), eosinophilia (35%), and elevated ESR (30%). High levels of LDH were often related to an underlying neoplasm. We also performed a correlation analysis to check for a possible association of eosinophilia and high levels of LDH with paraneoplastic erythroderma (PE) and found that these parameters were frequently associated with this type of erythroderma (497.75 ± 264.64 *vs.* 99.55 ± 31.46 IU/L, $P \leq 0.05$). There were statistically differences in the number of blood eosinophils between patients with and without PE (1.55 ± 0.826 *vs.* 0.829 ± 0.179 K/mm^3, $P \leq 0.05$).

In patients with erythroderma related to malignancy, LDH and eosinophils levels were higher than those found in patients with erythroderma secondary to

other causes. Buechner[2] recognized that a high level of tissue eosinophils is a prognostic factor for death in erythroderma, because there is a greater probability of it being associated with malignancy, mainly T-cell lymphoma. Similar findings on high serum levels of LDH were arrived at by Vonderheid.[3]

A gradual onset is the most frequent pattern of evolution, probably because of the relation with a preexisting dermatosis. Clinical features of the syndrome were almost identical, despite of etiology, with similar data found in other studies.[4]

Nail disease was recorded in all patients, onychodystrophy and Beau´s lines being the most frequent manifestations, probably due to the large number of cases associated with psoriasis. Skin biopsy is a helpful tool, but it always needs to be performed at more than one site to achieve diagnostic accuracy, especially in patients with gradual onset of erythroderma.

Psoriasis was the most common underlying cause of erythroderma, in accordance with previous studies.[1,4]

In the follow-up, 6 patients died, mainly because of a malignant neoplasm, which suggests that erythroderma does not increase the risk of death; nevertheless, it is a significant cause of distress for patients. We recommend performing a complete medical history to identify the underlying cause so that this cutaneous disease can be treated.

Finally, we conclude that LDH is a useful tool when erythroderma is associated with neoplasms and may be considered as a prognostic factor for death, although in the majority of cases, it is associated with a favorable prognosis.

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