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HISTOLOGICAL PATTERNS OF INFLAMMATION IN ERYTHRODERMA

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Abstract: Based on blinded histopathological examination, the diagnosis was established in 61% (n=50/82) of cases compared with the final diagnosis. At the same time, the diagnosis of psoriatic erythroderma was confirmed in 23.2% of cases (n=19/82), spongiotic dermatitis/atopic erythroderma in 20.7% of cases (n=17/82), erythrodermic form of mycosis fungoides/Sezary syndrome in 8.5% of cases (n=7/82), and drug-induced erythroderma in 8.5% of cases; the histological diagnosis was not definitively established or did not correspond to the final diagnosis in 39.1% of cases (n=32/82).
Keywords: erythroderma, histological signs of erythroderma, histology, psoriatic erythroderma.

INTRODUCTION

Erythroderma is described as a diffuse reddening of the skin with varying degrees of involvement, affecting more than 90% of the body surface. Despite the fact that it is a potentially life-threatening disease with a high mortality rate due to metabolic disorders and other complications, its causes are still poorly understood in the literature. Erythroderma does not represent a specific disease, but rather is a clinical manifestation of many different diseases [1,2].

MATERIALS AND METHODS

Histological diagnostic method is one of the main ones for differential diagnostics of erythroderma. However, histology of skin biopsy samples of patients with erythroderma may be non-specific and manifest only by such histological signs as hyperkeratosis/parakeratosis, acanthosis, chronic inflammatory infiltrate with or without eosinophils [3]. There are conflicting opinions about the diagnostic value of skin biopsy in the study of patients with erythroderma [4]. Earlier in the literature, the possibility of not performing diagnostic skin biopsy in patients with erythroderma, which was preceded by dermatosis, was emphasized [2], since clinical and pathological correlation will be a difficult task [4]. Wilson et al. believe that in patients with erythroderma who have a history of various dermatoses, histological examination may not be informative enough [1].

Inflammatory cells in the epidermis or dermis (number of cells in four fields of view) were assessed according to the following criteria: 0–20 – mild infiltrate, 21–49 – moderate infiltrate, > 50 – severe infiltrate. In each case, the blind (latent) histological diagnosis was compared with the clinical diagnosis.

RESULTS AND DISCUSSION

The study population consisted of 82 patients (55 men and 27 women) with an average age of 73 years (range 25-95 years). Isolated (“blind”, hidden) histopathological examination made it possible to establish the correct diagnosis in 61% (n=50/82) of cases, compared with the final diagnosis established on the basis of a combination of clinical, laboratory data and response to therapy. In particular, the diagnosis of psoriatic erythroderma was made in 23.2% of cases (n=19/82), atopic erythroderma in 20.7% (n=17/82), erythrodermic form of mycosis fungoides/Sezary syndrome in 8.5% (n=7/82) and drug-induced erythroderma in 8.5% (n=7/82). The histological diagnosis did not match the final diagnosis in the remaining 39.1% of cases (n=32/82). Along with this, the most frequent histological signs of the first group of patients with psoriatic erythroderma (n=19, mean age 70.2 years, 18 men and 1 woman) were psoriasiform acanthosis (n=17/19; 89%). Another histological sign in the first group of patients was hypogranulosis (n=11/19; 58%). Among the cellular composition of the infiltrate in patients with

psoriatic erythroderma, in addition to lymphocytes, neutrophilic granulocytes prevailed in the dermis. These cells were found in quantities of > 50 both in the epidermis and in the dermis (n=16/19; 84%). At the same time, diffuse parakeratosis and diffuse hypogranulosis were detected in 58% of cases (n=11/19).

The second largest group was patients with the erythrodermic form of atopic eczema (n = 17, mean age 74.2 years, 10 men and 7 women). Exocytosis and superficial perivascular infiltrate mainly of lymphocytes were recorded in all patients (n = 17/17, 100%). Other histological features of this group of patients were represented by irregular acanthosis (n = 14/17; 82%), the presence of eosinophils in the amount of <50 cells in the dermis (n = 13/17; 76%) and diffuse spongiosis (n = 9/17; 53%). However, these features were detected in all cases without taking into account the difference between local and diffuse spongiosis.

The third study group consisted of 7 patients with the erythrodermic form of mycosis fungoides (n=7, mean age 77.8 years, 6 men and 1 woman). The histological criteria for selecting patients in this group were lymphocytic microabscesses, linear arrangement of lymphocytes in the basal layer of the epidermis, atypical lymphocytes in both the epidermis and dermis in an amount of > 50 cells and epidermotropism, which were detected in all cases. Superficial and deep infiltrate in the dermis was detected in 4 of 7 skin biopsies (57%) cases, while in 3 patients (28%) the infiltrate was moderate. At the same time, signs of eczematous inflammation of the skin were absent in these histological preparations.

CONCLUSION

Erythroderma remains a difficult disease to diagnose and treat. Histological examination may be sufficient for correct diagnosis and treatment in most cases. However, the need for multiple skin biopsies, as well as a combination of clinicopathological parameters and response to treatment, represent the mainstay of the entire diagnostic process.

Thus, based on our results, we have shown that the correct conclusion about the cause of erythroderma can be based on objective histological criteria in up to 60% of cases.

Further studies are needed to try to identify additional histological and/or immunohistochemical markers (e.g. interleukin-36 Y for confirmation of psoriasis) that could help clinicians in the diagnosis of the etiologic factors of erythroderma.

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