Mycosis fungoides with an unusual clinicopathological presentation

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It is a challenging task to diagnose mycosis fungoides (MF), a type of primary cutaneous lymphoma, in the early stages of its development, due to the unspecific presentations associated with the disease. Histopathology and immunohistochemistry conduce to a more definite diagnosis. Presence of atypical T-cells in epidermis and upper dermis is the most significant pathologic finding. Herein, we present an 80-year-old lady with unusual generalized lesions resembling prurigo nodularis for 3 years, who was finally diagnosed as a case of MF with eosinophilic infiltrations in her lesions and serum eosinophilia.

Keywords: mycosis fungoides, primary cutaneous lymphoma, eosinophilia

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INTRODUCTION

In primary cutaneous lymphomas (CLs), lymphatic proliferation was primarily confined to the skin which has T-lymphocyte (65%), B-lymphocyte (25%) or NK cells as origins [1]. Among cutaneous T-cell lymphomas (CTCL), mycosis fungoides (MF) represented the most common subtype [2]. A common MF manifestation, initially presented with erythematous scaling lesions in the sun-exposed areas of the skin, was the development of localized or generalized patches, plaques, tumors and erythroderma with a progressive and long-term course [3]. MF patients suffered from a troublesome pruritus, which affected the quality of their life [4]. Diagnosis is considered difficult in the early stages due to non-specific, atypical presentations and mild histological changes [5,6]. Multiple skin biopsies and immunohistochemistry can yield a more conclusive diagnosis. While skin biopsy results depend on the MF subtypes and stages, the presence of eosinophilia or eosinophilic infiltration in tissues is extremely rare. To date, only three cases of MF with eosinophilia have been reported [7-9]. Pruritic skin lesions may precede systemic B or T-cell lymphomas for years. However, only three cases

of cutaneous lymphoma in patients with prurigo nodularis have been reported in the literature [10]. Here, we report a rare case of MF with lesions similar to prurigo nodularis and blood and tissue eosinophilia.

CASE REPORT

The present case is an 80-year-old lady with generalized extremely pruritic plaques and nodules existing for the past three years. The course of the disease began with pinkish pruritic papules, plaques and nodules on her lower extremities, which gradually extended to other areas. Topical or systemic medications, including antihistamines and corticosteroids, had not improved her condition. In her dermatological physical examination, generalized papules, plaques and nodules with pinkish color and multiple excoriation lines and yellowish crusts were noticed (Fig. 1,2). Furthermore, superimposed bacterial infection of lesions by staph aureus was confirmed by lesional gram stain and culture. In her general physical examination, she had lymphadenopathy in both inguinal and axillary regions. In her routine lab data, a white blood cell (WBC) count of 14400/mcl with an eosinophilia of 1600/mcl were noted. Her complete blood count (CBC) was otherwise normal. She had an erythrocyte sedimentation rate (ESR) of 3 and a weakly positive C-reactive protein (CRP).

There was no history of eosinophilia provoking drug use, and her stool exam was negative for blood, ovum and parasites.

Her abdominal and pelvic ultrasonography was normal. In her spiral chest CT scan, multiple micronodular lymph nodes were detected in the upper and lower lobes of the right lung. Also, abdominal and pelvic CT scan had few sub-centimeter parailiac and multiple inguinal lymph nodes. Lymph node biopsy showed reactive lymph nodes, and PPD test and bronchoalveolar lavage were both normal.

Multiple biopsy specimens were obtained from her skin lesions. Findings included hyperkeratosis, parakeratosis, acanthosis, spongiosis and vesicle formation. Further observed was the exocytosis of some atypical lymphocytes into the basal and lower spinous layer. Dermis showed dense patchy infiltrates of mature as well as atypical lymphocytes with irregular nuclear border intermingled with certain eosinophils. Another

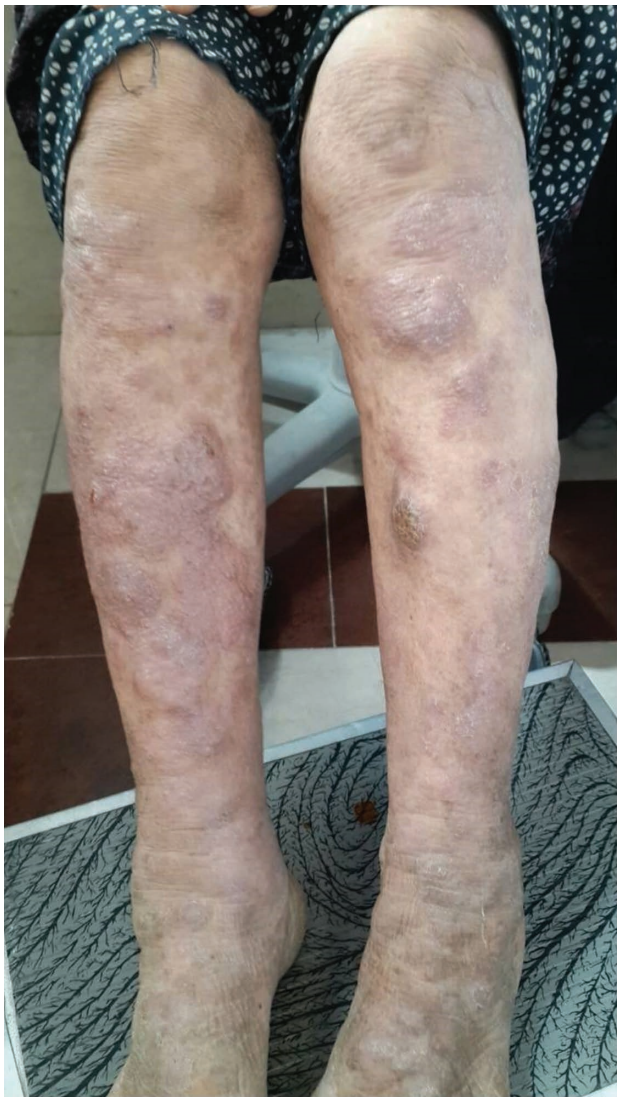

Figure 1. Hyperkeratotic prurigo nodularis like lesions on both lower extrimities

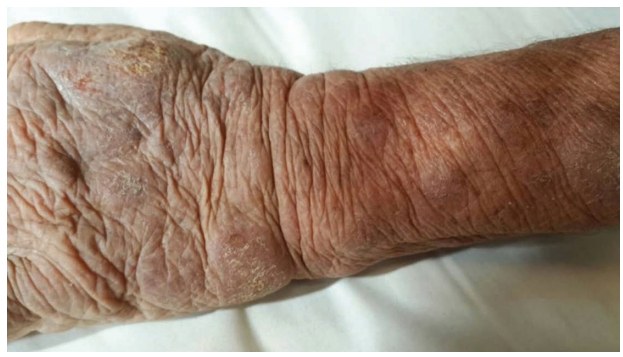

Figure 2. Prurigo nodularis like lesions on both upper extremities.

biopsy showed hyperkeratosis, parakeratosis, acanthosis with multifocal epidermotropism of atypical lymphocytes with enlarged hyperchromatic nuclei and irregular border mainly in the basal layer. Dermis had patchy dense infiltrates of essentially lymphoid cells with enlarged irregular nuclei admixed with some eosinophils. Atypical lymphocytes permeated and destructed sweat glands (Fig. 3,4).

Immunohistochemical study was conducted on paraffin-imbedded tissues with antibodies of CD43, CD3, CD4, CD5, CD8, CD7, CD20, CD30, PAX5 and ki67. The majority of neoplastic cells in the epidermis and dermis expressed CD3, CD4 and CD5 (Fig. 7,8). On the other hand, there was a minimal expression of PAX5 and CD8 in the dermis. The

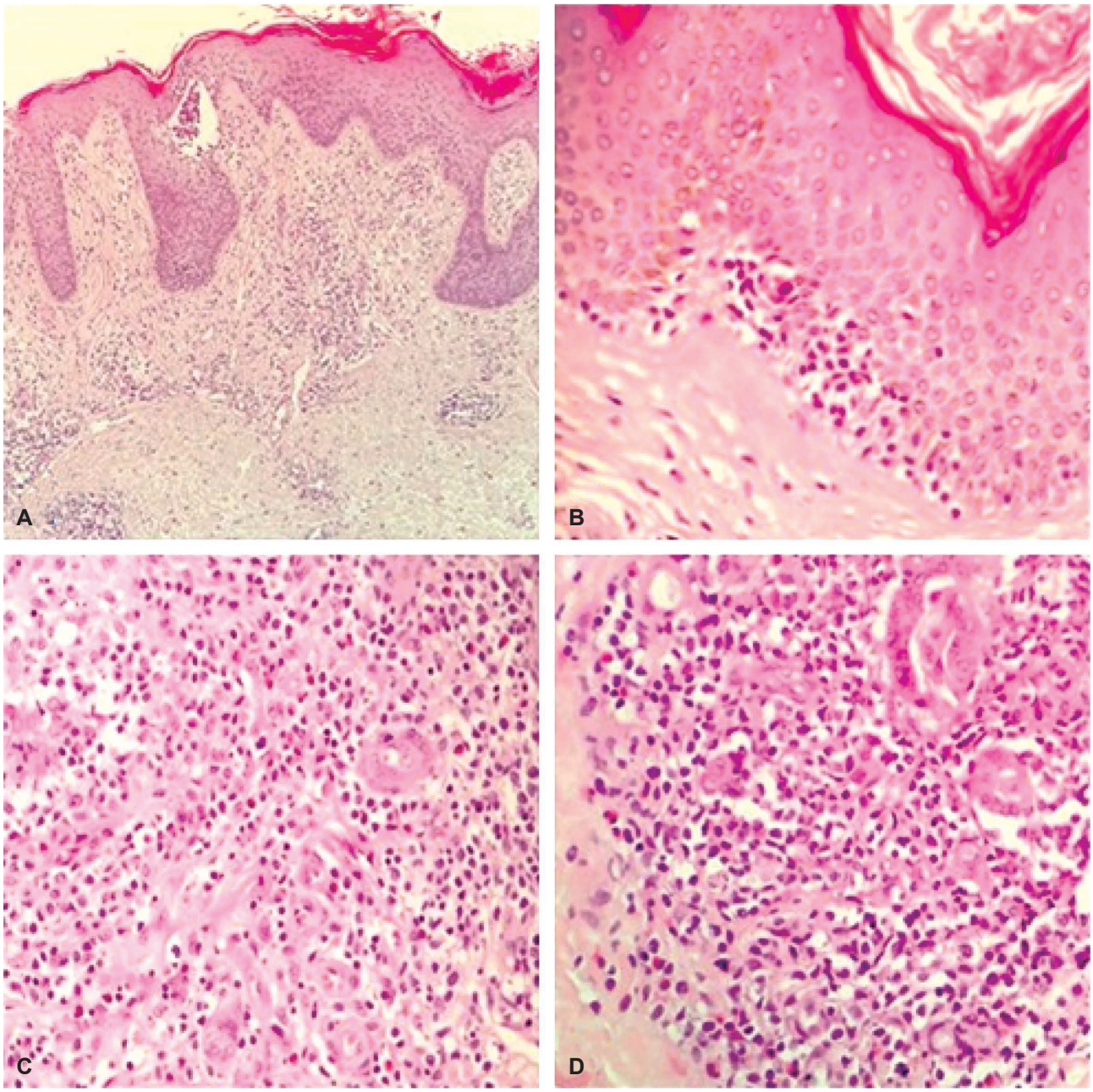

Figure 3. (A) Hyperkeratosis, parakeratosis, acanthosis, spongiosis with vesicle formation, exocytosis of mature and atypical lymphocytes (H&E ×100). (B) Epidermotropism of atypical atypical lymphocytes with hyperchromatic nuclei and irregular nuclear borders (H&E ×400). (C) Dense deep dermal infiltrate of mostly atypical lymphocytes with irregular nuclear border admixed with many eosinophils (H&E ×400). (D) Dense deep dermal infiltrate of mostly atypical lymphocytes admixed with eosinophils (H&E ×400).

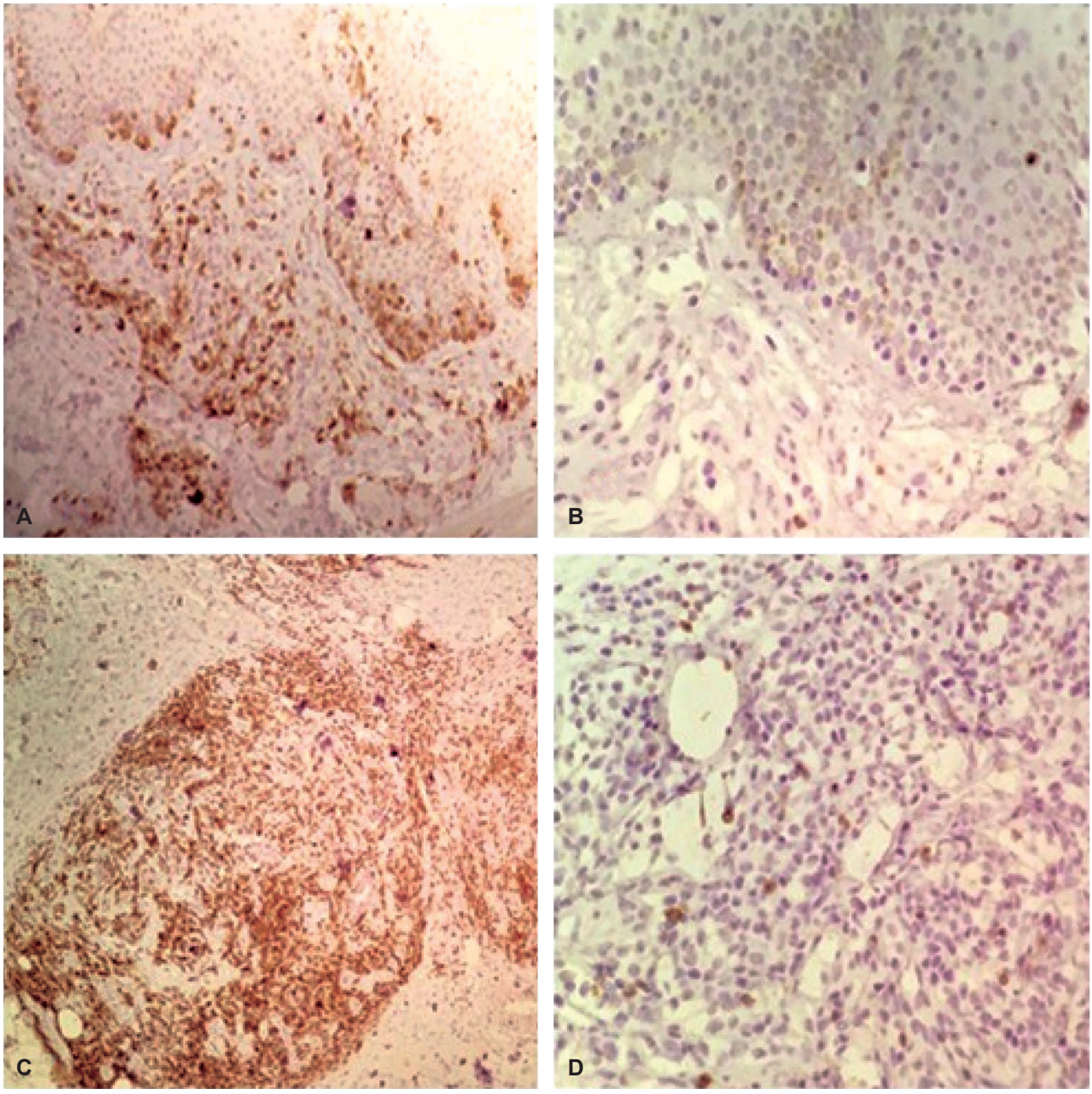

Figure 4. (A) Epidermal and dermal lymphocytic infiltrate were positive for CD3. (B) Epidermal and dermal atypical lymphocytes were negative for CD7. (C) Majority of deep dermal atypical lymphoid infiltrate express CD3. (D) Deep dermal atypical lymphoid infiltrate was negative for CD7.

neoplastic cells were negative for CD20, CD30, and CD7 (Fig. 8,10), while Ki67 was positive in more than 50% of the lymphoid population.

A diagnosis of MF (Stage 2B) with eosinophilia was confirmed for the patient and she was planned for UVA irradiation following photosensitization with 8-methoxypsoralen (PUVA therapy) plus systemic acitretin. Unfortunately, the patient was lost to follow-up.

CONCLUSION

Ours was an extremely rare case of MF with blood and tissue eosinophilia and lesions resembling prurigo nodularis. One year prior to achieving conclusive results, both histopathology and IHC studies on the three different sites of her skin lesions were non-diagnostic. Given the non-specific presentation of MF, particularly at patch/plaque

stage, early clinical diagnosis becomes challenging and certain patients are, for years, treated for other differential diagnoses. A typical feature of MF is epidermotropism of small- to medium-sized lymphocytes with cerebriform nuclei. However, other characteristic histology features are not much definitive and cannot deliver a diagnosis without uncertainty (6). Immunophenotyping conduces to the diagnosis of MF through revealing the presence of T-cell antigens such as CD3 and CD5 and the loss of CD7. The similarity of T-cell clones to various biopsy sites further has shown the accuracy of MF diagnosis (7). However, presence of eosinophilic infiltrations is not expected. The unique histopathologic feature in the present case study is the unusual eosinophilic infiltration in her lesions and considerable eosinophilia (1600/mcl), which has been reported only in very few MF patients so far [8-10].

Moreover, only three cases of cutaneous lymphoma in patients with prurigo nodularis have been reported in the literature [11].

Confirmed by histopathology and IHC, our case had both of these rare features, underlining the importance of multiple biopsies in patients with nondiagnostic earlier ones, when there is suspicion of malignancy.

Conflict of Interest: None declared.

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