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Case Report

CD30-Positive Angioinvasive Lymphomatoid Papulosis (Type E) Developing from Parapsoriasis en Plaque

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Keywords
Angioinvasive lymphomatoid papulosis · Parapsoriasis en plaque · CCL17 · CCR4 · Granulysin

Abstract
Angioinvasive lymphomatoid papulosis (LyP) type E is a rare variant characterized by angiocentric and angiodestructive features with CD30+ CD8+ lymphocyte infiltration. In rare cases, LyP type E is concomitant with mycosis fungoides, but there is no English report that describe LyP type E developing from parapsoriasis en plaque. In this report, we described a case of angioinvasive LyP (type E) developing from parapsoriasis en plaque, in which we employed immunohistochemical staining for the investigation of its pathomechanisms.

Introduction

CD30+ lymphoproliferative disorders represent a spectrum of diseases, from lymphomatoid papulosis (LyP) to primary cutaneous anaplastic large cell lymphoma [1]. Among them, angioinvasive lymphomatoid papulosis (LyP) type E is a rare variant first described by Kempf in 2013, and characterized by angiocentric and angiodestructive features with small to medium sized lymphocytes that express CD30 and CD8 [2]. In rare cases, LyP type E occurs in

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patients with mycosis fungoides [3], but there is no English report describing LyP type E developing from parapsoriasis en plaque. In this report, we describe a case of angioinvasive LyP (type E) developing from parapsoriasis en plaque.

Case Report

A 76-year-old Japanese woman visited our outpatient clinic with an ulcerated, infiltrated plaque on the left side of the right leg. She had been treated for parapsoriasis en plaque with narrow band UVB irradiation for 4 years. On her initial visit, physical examination revealed an ulcerated, infiltrated plaque in the scaly erythema with atrophic lesions on the right lower legs (Fig. 1a). A biopsy specimen from the right lower leg revealed a dense perivascular infiltrate of atypical lymphoid in the upper dermis reaching into the subcutaneous tissue (Fig. 1b, c). Immunohistochemical staining revealed that these atypical lymphocytes, which were distributed throughout the dermis, were positive for CD3, CD8 (Fig. 2a), CD30 (Fig. 2b), granulysin (Fig. 2c) and CCR4 (Fig. 2d) and negative for CD4, CD7, and CD56. In addition, substantial numbers of CCL17 producing cells were detected at the center of the infiltrate (Fig. 2e), whereas CCL22 producing cells were not detected (data not shown). Therefore, we diagnosed angioinvasive LyP (typeE). We administered topical clobetasol propionate once a day for one month. The ulcerated, infiltrated plaque rapidly regressed within one month with a remaining scar, erythema, and skin atrophys (Fig. 2f).

Discussion

LyP is characterized by multiple papulonodular lesions that spontaneously regress within a few weeks [1]. One of the possible mechanisms for the spontaneous regression of LyP might be a subpopulation of myeloid cells that produce various chemokines and express immunomodulatory molecules such as PD-L1 [4], leading to the development of an immune reactive or immunosuppressive tumor microenvironment. In our present case, a dense infiltrate of CCL17 producing cells was observed at the center of the area with infiltrating atypical lymphocytes, which was surrounded by CCR4+CD8+CD30+ atypical lymphocytes. CCL17 is a chemokine produced by various dermal cells including tumor-associated macrophages (TAMs), dermal dendritic cells (DCs) and endothelial cells [5, 6]. CCL17 attracts CCR4+ lymphocytes, such as Th2 cells regulatory T cells and cutaneous T cell lymphoma (CTCL) cells [7]. Taken together, CCL17 producing cells might attract both CTCL cells and normal lymphocytes and may play a role in the development of the characteristic histological feature of angioinvasive LyP.

As we described above, CCR4+ cells were not only CTCL cells but also normal lymphocytes. Interestingly, Kondo et al. reported that human CCR4+CD8+ immature memory T cells could produce multiple cytokines (IL-4, IFN-g, IL-2, TNFa) and migrate to inflammatory sites in the skin via CCR4/CCL17 pathways [8]. Notably, granulysin is expressed by NK cells and non-naive CD8+ T cells [9] that lyse various cancers including skin cancers [10]. Moreover, the expression of granulysin in the tumor microenvironment even co-relates with the prognosis of cancer patients [10]. In our present case, substantial numbers of granulysin-bearing cells co-existed with atypical lymphocytes in the lesional skin, which might play a role in the rapid clinical regression of the tumor. Since we present only a single case, further cases are needed

to gain additional insight into the pathomechanisms of angioinvasive lymphomatoid papulosis.

Statement of Ethics

The patient gave written informed consent.

Disclosure Statement

The authors declare no conflict of interest.

References

1 Kempf W, Pfaltz K, Vermeer MH, Cozzio A, Ortiz-Romero PL, Bagot M, et al. EORTC, ISCL, and USCLC consensus recommendations for the treatment of primary cutaneous CD30-positive lymphoproliferative disorders: lymphomatoid papulosis and primary cutaneous anaplastic large-cell lymphoma. Blood. 2011 Oct;118(15):4024–35.
2 Kempf W, Kazakov DV, Schärer L, Rütten A, Mentzel T, Paredes BE, et al. Angioinvasive lymphomatoid papulosis: a new variant simulating aggressive lymphomas. Am J Surg Pathol. 2013 Jan;37(1):1–13.
3 Kiavash K, Abner SM, Malone JC. New variant lymphomatoid papulosis type E preceding and coexisting with mycosis fungoides - a case report and review of the literature. J Cutan Pathol. 2015 Dec;42(12):1018–23.
4 Kakizaki A, Fujimura T, Kambayashi Y, Furudate S, Kawano M, Ogasawara K, et al. Comparison of CD163+ Macrophages and CD206+ Cells in Lesional Skin of CD30+ Lymphoproliferative Disorders of Lymphomatoid Papulosis and Primary Cutaneous Anaplastic Large-cell Lymphoma. Acta Derm Venereol. 2015 May;95(5):600–2.
5 Shoda T, Futamura K, Kobayashi F, Saito H, Matsumoto K, Matsuda A. Expression of thymus and activation-regulated chemokine (TARC) by human dermal cells, but not epidermal keratinocytes. J Dermatol Sci. 2014 Nov;76(2):90–5.
6 Fujimura T, Kambayashi Y, Furudate S, Kakizaki A, Hidaka T, Aiba S. Possible mechanisms of the crosstalk between Langerhans cells and regulatory T cells in extramammary Paget disease by receptor activator of nuclear factor kappa B (RANK) ligand/RANK pathways. Br J Dermatol. 2017 Feb;176(2):387–94.
7 Rubio Gonzalez B, Zain J, Rosen ST, Querfeld C. Tumor microenvironment in mycosis fungoides and Sézary syndrome. Curr Opin Oncol. 2016 Jan;28(1):88–96.
8 Kondo T, Takiguchi M. Human memory CCR4+CD8+ T cell subset has the ability to produce multiple cytokines. Int Immunol. 2009 May;21(5):523–32.
9 Bengsch B, Ohtani T, Herati RS, Bovenschen N, Chang KM, Wherry EJ. Deep immune profiling by mass cytometry links human T and NK cell differentiation and cytotoxic molecule expression patterns. J Immunol Methods. 2018 Feb;453:3–10.
10 Fujimura T, Furudate S, Kambayahsi Y, Kakizaki A, Yamamoto Y, Okuhira H, et al. Phospho-STAT5B expression is a prognostic marker for Merkel cell carcinoma. Anticancer Res. 2017 May;37(5):2335–41.

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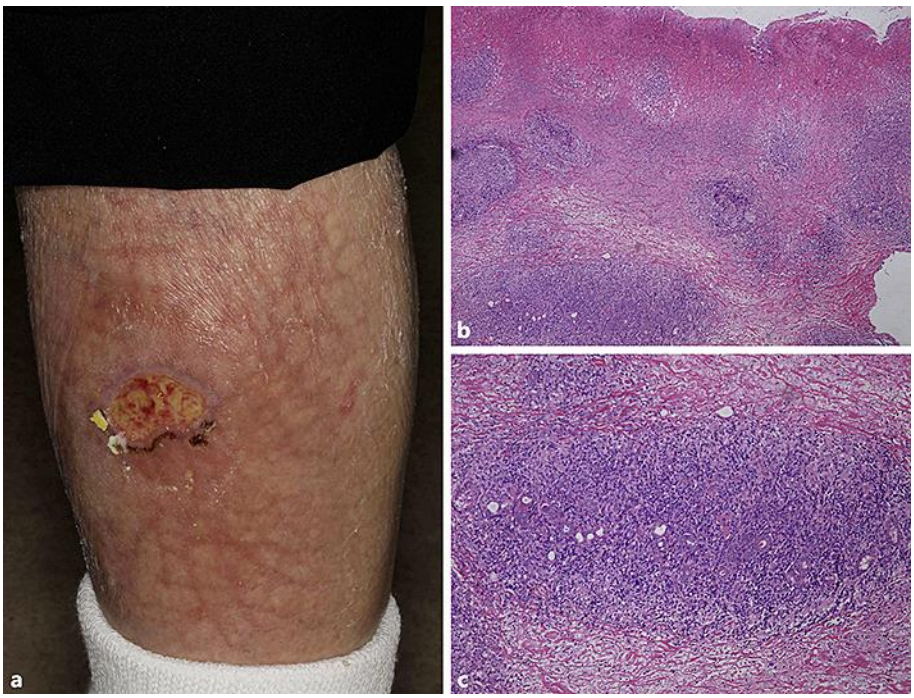

Fig. 1. An ulcerated, infiltrated plaque on scaly erythema with skin atrophy on the right lower leg (**a**). Dense perivascular infiltrates of atypical lymphoid cells in the upper dermis reaching into the subcutaneous tissue (**b**, **c**). (H&E staining: Original magnification 50× [**b**], ×200 [**c**]).

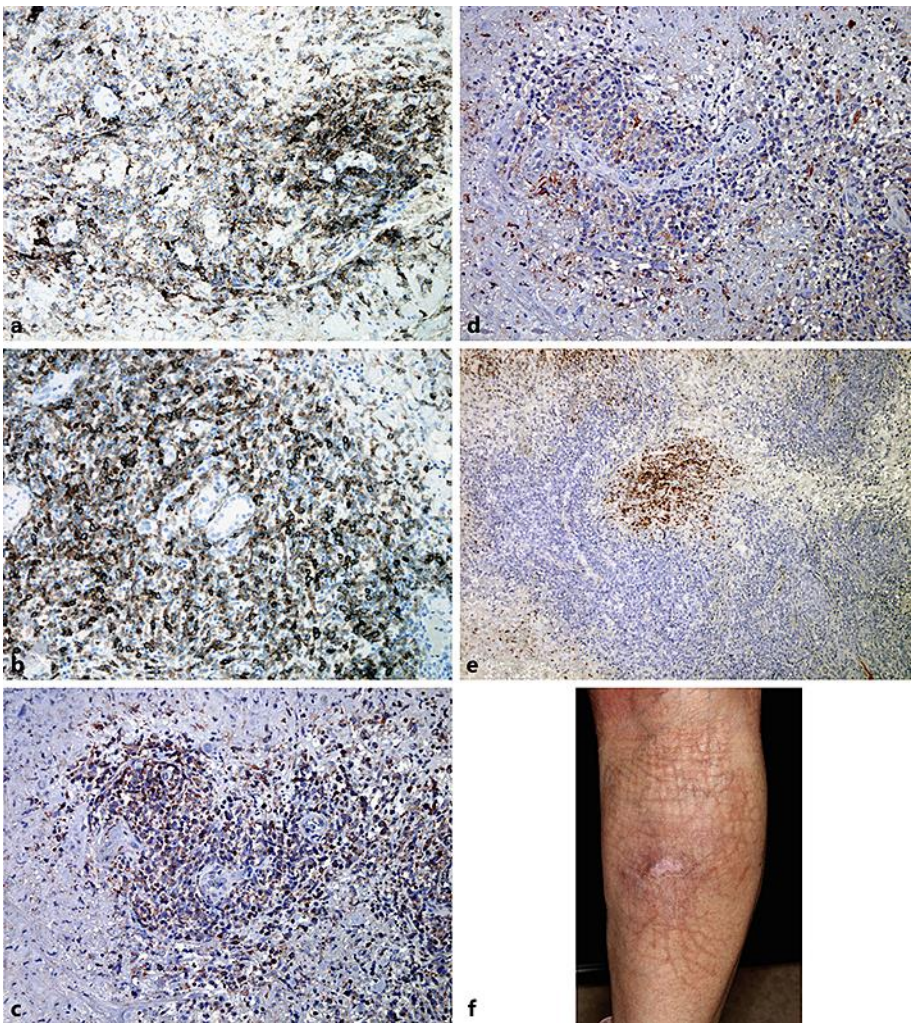

Fig. 2. Immunohistochemistry and clinical follow up: anti-CD8 (**a**), anti-CD30 Ab (**b**), anti-granulysin Ab (**c**), anti-CCR4 Ab (**d**), and anti-CCL17 Ab (**e**). (Original magnification: ×200 [**a–e**]). The ulcerated, infiltrated plaque rapidly regressed within one month with a remaining scar, erythema, and skin atrophy (**f**).