



The coexistence of lupus erythematosus panniculitis and subcutaneous panniculitis-like T-cell lymphoma in the same patient

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INTRODUCTION

Lupus erythematosus panniculitis (LEP) most commonly presents as multiple deep subcutaneous indurated nodules or erythematous plaques involving the face and proximal extremities.¹ Lipoatrophy is another characteristic feature on resolution.^{2,3} Histopathologically, LEP shows lymphoplasmacytic lobular panniculitis, often with dermal mucin deposition, hyaline fat necrosis, and lymphoid follicles. There may be epidermal vacuolar change and a perivascular and periadnexal lymphocytic infiltrate with prominent plasma cells.^{3,4} Treatment options include antimalarials, systemic steroids, dapsone, or rituximab.⁵

LEP may be limited to the subcutaneous fat; in such cases, it can be difficult to entirely exclude subcutaneous panniculitis-like T-cell lymphoma (SPTCL). Histopathologic findings of SPTCL show pleomorphic T cells in the subcutaneous adipose tissue in a pattern mimicking panniculitis. Since 2005, SPTCL has been restricted to $\alpha\beta$ pannicular infiltrates, usually CD8⁺ and CD56⁻, and has an indolent outcome. These patients can be treated with systemic corticosteroids, bexarotene, interferon, or low-dose chemotherapy with a single agent such as methotrexate.⁶ In contrast, pannicular lymphomas with $\gamma\delta$ phenotype are usually CD8⁻ and CD56⁺ and may also involve the dermis or epidermis. These patients are generally treated with multiagent chemotherapy and stem cell transplantation, but the prognosis is poor.

The histopathologic distinction of LEP and SPTCL can be challenging (Table 1)^{7,8} because of significant overlap; other clues that can aid in differentiating LEP from SPTCL include the clinical presentation and

Abbreviations used:

CT: computed tomography
 HPS: hemophagocytic syndrome
 LEP: lupus erythematosus panniculitis
 PET: positron emission tomography
 SPTCL: subcutaneous panniculitis-like T-cell lymphoma

Table 1. Potential histopathologic features distinguishing lupus panniculitis from T-cell lymphoma involving the subcutis

Feature	Lupus panniculitis	T-cell lymphoma involving the subcutis
Interface change	+	-/+
Dermal mucin	+/-	-/+
Perivascular/periadnexal infiltrate	+/-	-/+
Atypical lymphocytes	-/+	+
Lymphocytes rimming adipocytes	-/+	+
Lymphoid follicles	+/-	-/+
Hyaline fat necrosis	+/-	-/+
Immunohistochemistry		
Ki-67	- hot spots	+ hot spots
CD4	+	-/+
CD8	-/+	+/-
CD20 ⁺ aggregates	+	-
CD123 ⁺ clusters	+	-/+
Plasma cell aggregates	+	-/+

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history and T-cell clonality. Interestingly, up to 20% of patients with SPTCL have associated autoimmune diseases⁹; furthermore, there is some evidence that there is a more than chance association between LEP and subcutaneous SPTCL.^{10,11} Some investigators suggest that these 2 entities exist on a spectrum.^{12,13}

CASE REPORT

A 15-year-old girl presented with alopecia and indurated lesions on the occipital scalp (Fig 1, F). Biopsy found a periadnexal, superficial, and deep dermal and subcutaneous lymphoplasmacytic infiltrate (Fig 1, A and B). Epidermal atrophy and pigment incontinence were identified (Fig 1, C). CD123 staining highlighted clusters of plasmacytoid dendritic cells (Fig 1, D). Ki-67 immunostain highlighted scattered lymphocytes (Fig 1, E). The skin findings were shown in Fig 1, F. These findings were consistent with discoid lupus erythematosus and LEP. Her laboratory values were normal. She was treated with hydroxychloroquine, 200 mg, by mouth twice daily.

One year later, multiple, firm, non-mobile, tender flesh-colored subcutaneous nodules developed on the proximal forearms (Fig 1, H) and distal lower extremities. She also had a recent history of fever; however, she had no other B-type symptoms including weight loss or night sweats. Her laboratory values remained normal. Biopsy of a lesion on the left forearm showed a dense lobular pannicular infiltrate composed predominantly of variably sized atypical lymphocytes (Fig 2, C). Atypical mitoses were easily identified. There was rimming of adipocytes by atypical lymphocytes (Fig 2, D). The infiltrate consisted of $\alpha\beta$ cytotoxic T cells (CD3⁺/CD4⁻/CD8⁺/CD5⁺/CD45RO⁺/ β F1⁺/TIA1⁺; Fig 2, E-L). Ki-67 stain exhibited a lesional nuclear marking rate of approximately 75% (Fig 2, M). Epstein Barr virus in situ hybridization was negative. These findings were consistent with SPTCL. Positron emission tomography (PET) computed tomography (CT) showed diffuse subcutaneous involvement throughout the body and lymphadenopathy in the bilateral axillae (SUVm 3.0) and groin (Fig 2, A and B). Bone marrow biopsy found no morphologic evidence of involvement by lymphoma or hemophagocytosis, and T cell monoclonality was not identified by PCR analysis for T-cell receptor β and γ gene rearrangements. The patient was treated with cyclosporine starting at a dose of 5 mg/kg/d by mouth divided twice a day and titrated for a goal level of 200 ng/mL. Four months later, all lesions except those on the scalp were completely resolved on restaging PET-CT. On recent follow-up visits, PET-CT showed mildly hypermetabolic foci on her

vertex scalp (the scalp findings are shown in Fig 1, G); therefore, her scalp was biopsied. Biopsy findings included a deep dermal lymphocytic infiltrate consistent with LEP without atypia (Fig 3, A-D).

DISCUSSION

Even when limiting the diagnosis of lupus erythematosus to patients who fit American College of Rheumatology criteria for systemic lupus erythematosus, the incidence of SPTCL in these patients appears to be higher than that of the general population.^{10,11} The incidence is even higher if patients with a preceding diagnosis of lupus panniculitis/profundus are included.¹⁴ Different authors have suggested a variety of reasons for this apparent association between the 2 diseases: (1) LEP misdiagnosed as SPTCL, (2) SPTCL misdiagnosed as LEP, (3) the existence of a spectrum of disease from LEP to SPTCL, or (4) a predilection for the coexistence of these 2 disparate diseases in the same patient. With regard to the latter explanation, patients with SLE do have an increased incidence of B-cell lymphoma, and, conversely, patients with SPTCL have a tendency toward autoimmunity.¹¹ This case lends support to the same patient potentially having both LEP and SPTCL.

Other cases in the literature support that there may be a spectrum of disease. Pincus et al¹¹ reported 5 patients who exhibited overlapping features of both SPTCL and LEP. Magro et al¹⁵ suggested such patients may have a transitional state with overlapping histopathologic and molecular features termed *atypical lymphocytic lobular panniculitis*.¹⁵ In contrast, our patient had 2 completely different histopathologic patterns (LEP in 2 and SPTCL in 1) in her 3 biopsies, indicating that our patient truly has 2 different processes. In addition, cyclosporine monotherapy led to resolution of all lesions of SPTCL, whereas her scalp LEP persisted.

Gonzalez et al¹⁶ found that SPTCL was often associated with hemophagocytic syndrome (HPS). Willemze et al⁹ found that 20% of SPTCL patients and 50% of $\gamma\delta$ T-cell lymphoma patients may have HPS, and SPTCL patients with HPS had a poor prognosis with a 5-year overall survival rate of 46%. In contrast, SPTCL patients without HPS had a good prognosis with a 5-year overall survival rate of 91%. However, no significant differences were observed in $\gamma\delta$ T-cell lymphoma patients with and without HPS, and both had poor prognosis. No evidence of HPS or involvement of her bone marrow was found in our patient. Her SPTCL was successfully controlled without recurrence during 2 years of follow-up.

We report on a patient with both LEP and SPTCL in different biopsies, with a different clinical course for

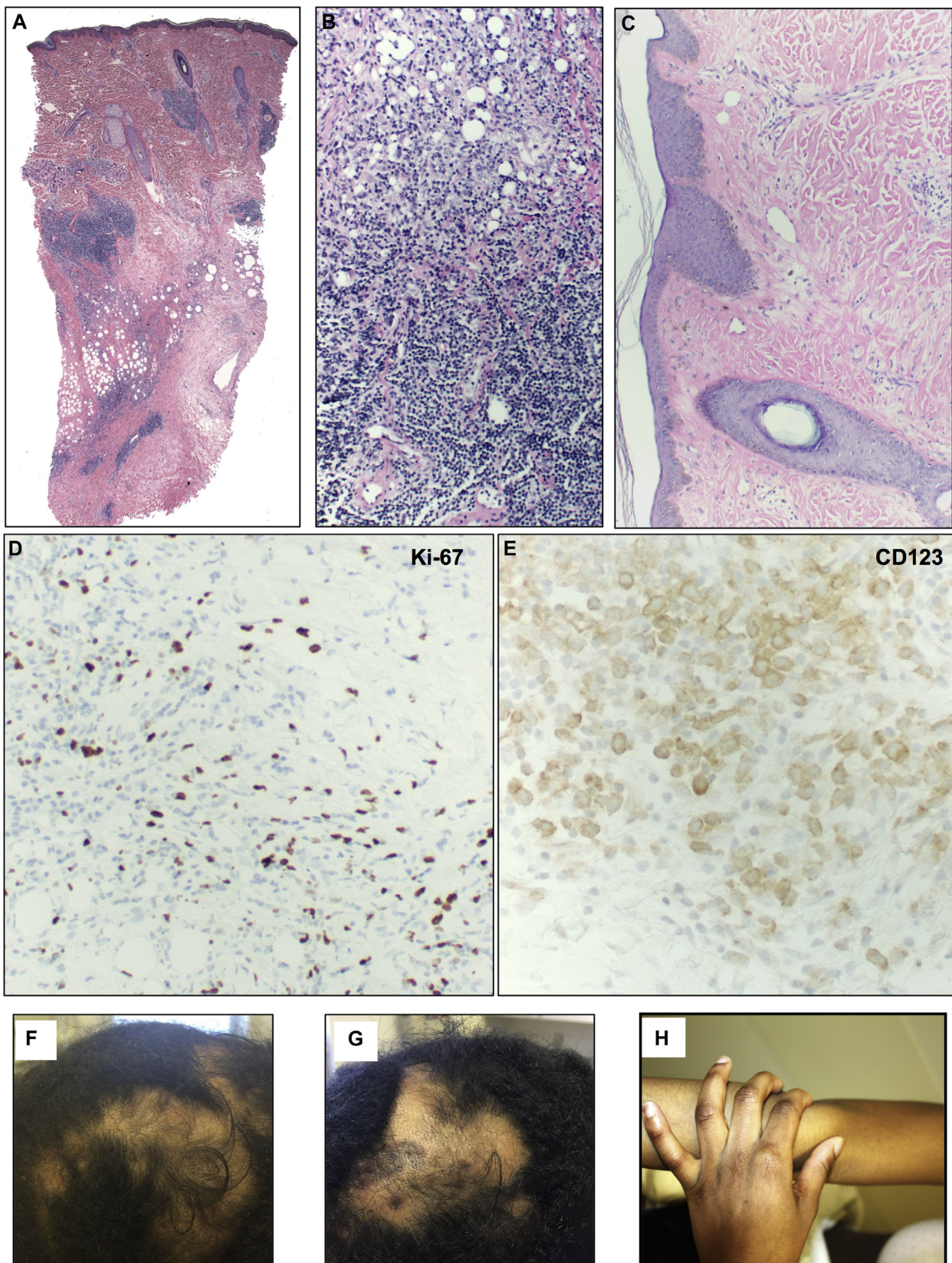


Fig 1. Histopathology of discoid lupus erythematosus and lupus panniculitis on scalp. **A,** Hematoxylin-eosin stain shows periadnexal, dermal, and subcutaneous lymphocytic infiltrate. **B,** Hyaline necrosis in the fat with foci of lobular panniculitis. **C,** Epidermal atrophy and basement membrane zone thickening. **D,** Ki-67 highlighted scattered lymphocytes. **E,** CD123 highlighted clusters of plasmacytoid dendritic cells. **F-H,** The skin findings in scalp and forearm.

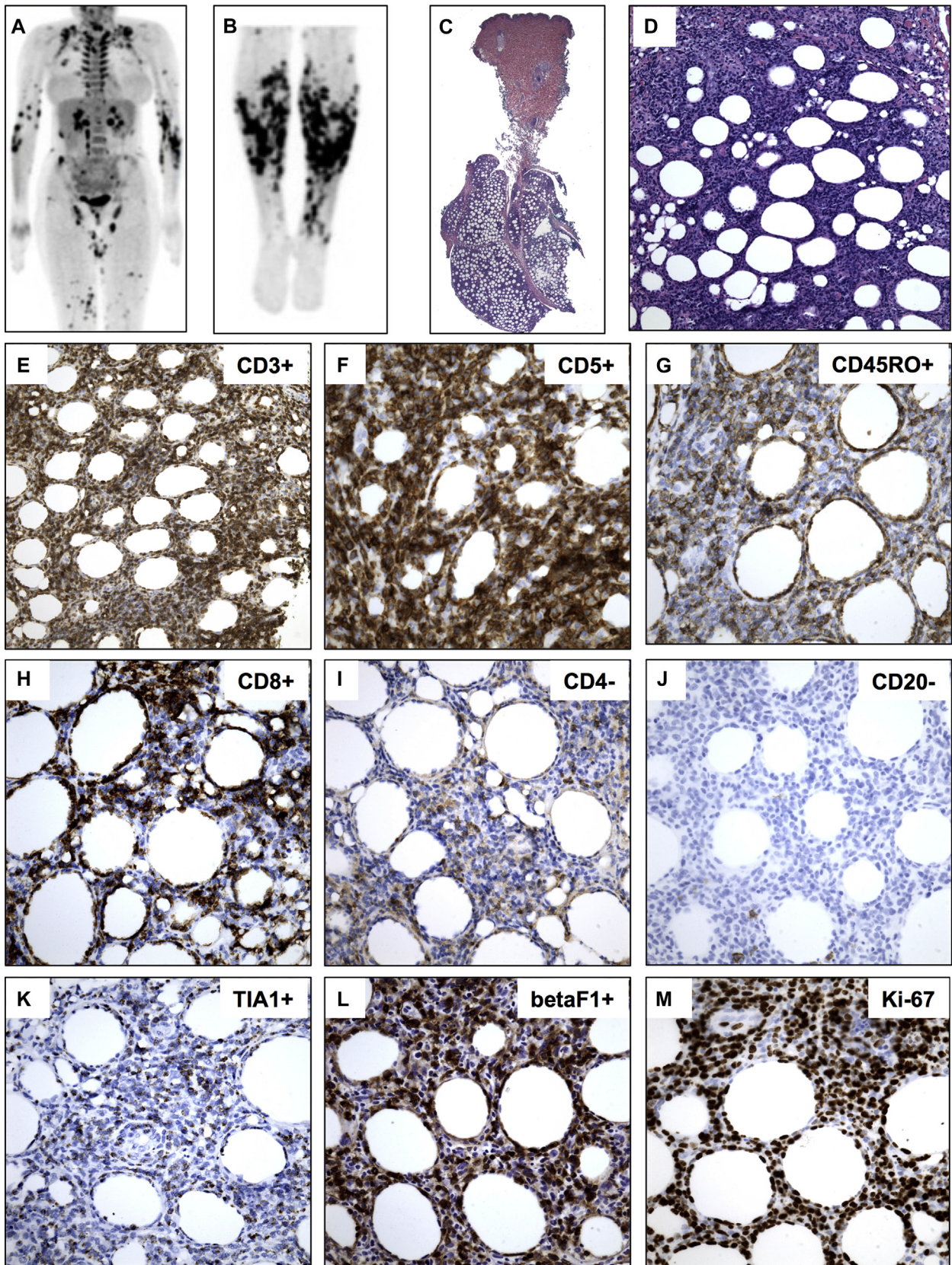


Fig 2. Histopathology of SPTCL on left forearm. **A** and **B**, PET-CT showed extensive neoplastic involvement throughout the body, especially lower extremities. **C** and **D**, Hematoxylin-eosin stain showed variably sized lymphocytes infiltrating subcutaneous adipose tissue. Atypical mitoses and rimming of adipocytes were identified. Involvement of epidermis or dermis was absent. **E-M**, The infiltrate consisted of $\alpha\beta$ cytotoxic T cells ($CD3^+/CD20^-/CD4^-/CD8^+/CD5^+/CD45RO^+/\beta F1^+/TIA1^+$).

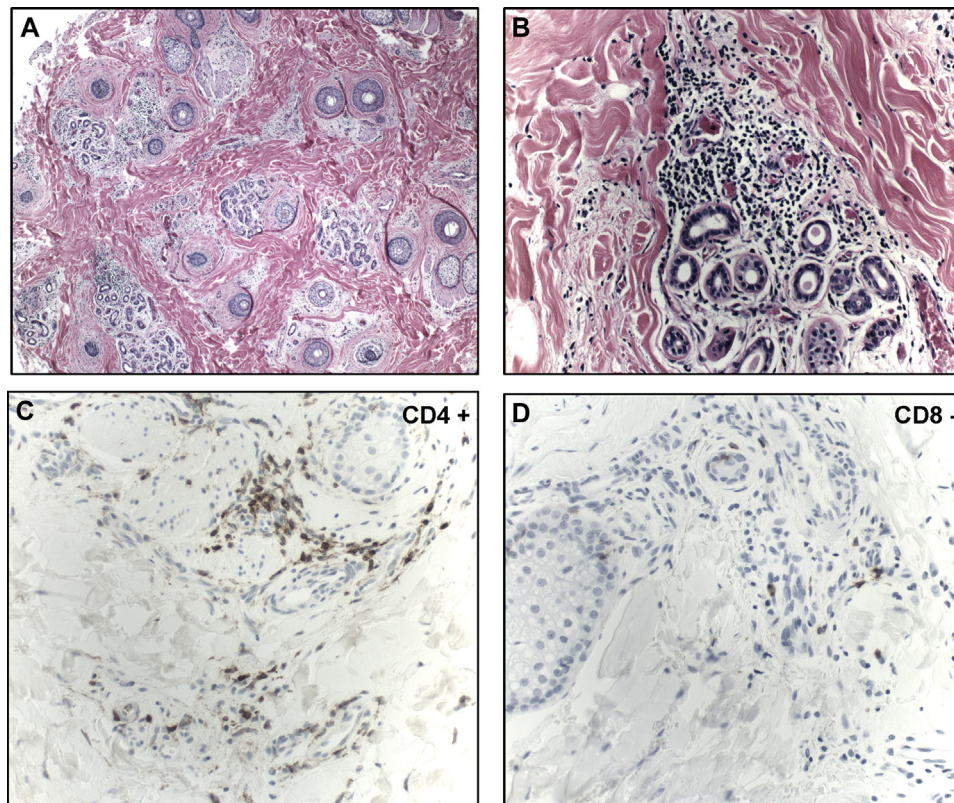


Fig 3. Histopathology of recurrent lupus erythematosus on scalp. **A** and **B**, Hematoxylin-eosin stain shows superficial and deep lymphocytic infiltrate with perieccrine and perifollicular accentuation. **C** and **D**, CD4 highlighted more lymphocytes than CD8.

each disorder. This case suggests that the accurate diagnosis of these 2 diseases is important in clinical management. Furthermore, patients with LEP should be monitored carefully because of the association between SPTCL and LEP.

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