An Atypical Presentation of Subcutaneous Panniculitis-like T-cell Lymphoma Misdiagnosed as Preseptal Cellulitis

Sirinda Leelaudomlipi MD*, Patlada Ingkanininanda MD, Suthep Chirasuthat MD***, Tanaporn Borriboon MD*.**

**Institute of Dermatology, Department of Medical Services, Ministry of Public Health, Bangkok, Thailand.*
***Division of Dermatology, Rajavithi Hospital, Ministry of Public Health, Bangkok, Thailand.*
****Division of Dermatology, Faculty of Medicine, Ramathibodi Hospital, Mahidol University, Bangkok, Thailand.*

ABSTRACT:
Subcutaneous panniculitis-like T-cell lymphoma (SPTCL), is an uncommon cutaneous malignancy that mainly affects subcutaneous tissue and is distinguished by the expression of a cytotoxic T-cell immunophenotype. Diagnosis of SPTCL is complex, hinging on skin biopsy analyses and T-cell lineage-specific immunohistochemical markers identification. We report a Thai female 28-year-old presented with periorbital swelling, facial edema with multiple subcutaneous nodules and plaques on the face, trunk, and extremities for 2 months. The identification of the disorder has been established using clinical presentations, histopathology, and immunohistochemistry. The patient was treated with a combination of prednisolone and cyclosporine A. The lesions gradually regressed and were not recurrent during the 1-year follow-up.

Key words: Subcutaneous panniculitis-like T-cell lymphoma, SPTCL, Periorbital edema, Preseptal cellulitis, Cyclosporine A

Case report

A 28-year-old Thai woman presented with progressive multiple subcutaneous nodules and plaques on the chest and abdomen for two months. A skin biopsy at a private hospital revealed mixed septal and lobular panniculitis, leading to her diagnosis. She was subsequently treated with oral prednisolone 10 mg/day for three weeks without improvement. One month later, she developed bilateral periorbital swelling, facial edema, and a low-grade fever, and then she subsequently visited Rajavithi Hospital. The physical examination revealed that the patient had a body temperature of 38.5°C. There were bilateral, ill-defined, non-scaly erythematous edematous plaques in the periorbital area, accompanied by facial swelling. Additionally, the patient displayed several indurated reddish subcutaneous nodules and plaques on her abdomen and left forearm. (Figure 1, 2).

The ophthalmologist initially suspected preseptal cellulitis, a form of eyelid cellulitis that does not penetrate through the orbital septum to involve the orbit. She received intravenous amoxicillin-clavulanic acid in the In-Patient Department. Despite this treatment, her clinical condition did not improve. During admission, she experienced worsening progressive painful subcutaneous nodules on the trunk, and extremities and a persistent fever. A dermatological consultation was done.

Correspondence Author: Tanaporn Borriboon MD, Email: Tanaporn.borriboon@gmail.com

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Figure 1 Bilateral ill-define non-scaly erythematous edematous plaques at the periorbital area and facial swelling

Figure 2 Multiple indurate erythematous subcutaneous nodules and plaques on the abdomen and left forearm

The patient underwent a repeat skin biopsy. Histopathology reveals lobular panniculitis. The presence of atypical lymphocytes rimming of the adipocytes at the fat lobules and nuclear dust is observed (Figure 3).

The immunohistochemical staining identified atypical T lymphocytes, which were positive for CD3, CD8, granzyme B, TIA-1, and Ki-67's high proliferative index (40%). Conversely, CD4, CD20, CD56, and Epstein-Barr virus (EBV)-encoded small RNA (EBER) were negative. The important immunohistochemistry that contributed to the definitive diagnosis of TCR α/β-phenotype subcutaneous panniculitis-like T-cell lymphoma demonstrated positivity for βF1, although the TCR γ/δ test was not performed in this scenario (Figure 4). A systemic workup for staging was done. CBC: Hb 12.3 g/dL, Hct 38.1%, WBC 7080 /µL, Platelet 195,000/µL, MCV 82.7 fL; Ferritin 1595 ng/mL (5-204); ALT 84 IU/L (9–50), AST 89 IU/L (13–35); LDH 1037 U/L (125-220).

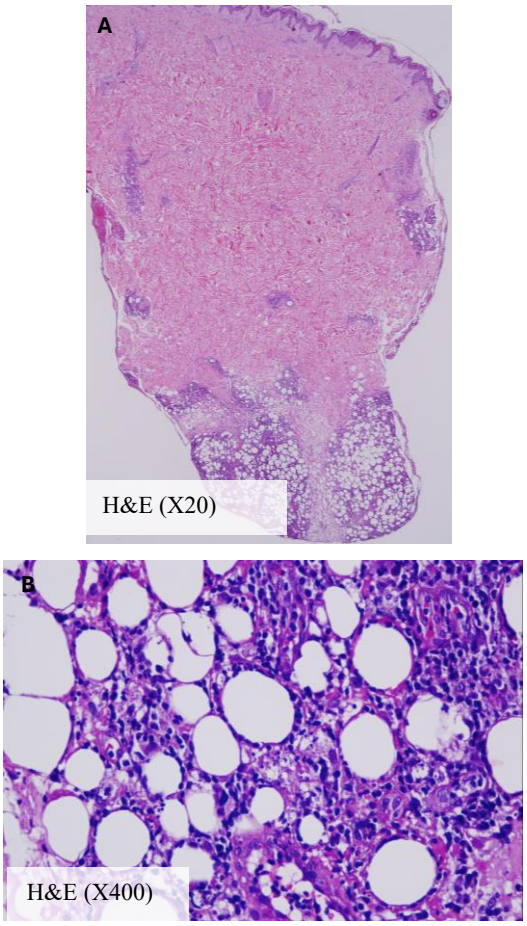

Figure 3 (A-B) Lobular panniculitis with atypical lymphocytes rimming adipocytes

Computer tomography imaging revealed no nodal involvement. Bone marrow biopsy showed no histologic evidence of lymphoma. No systemic involvement has been observed.

The patient was given prednisolone 60 mg/day combined with cyclosporine 200 mg/day. Clinical resolved within three months after the initiation of the treatment.

Prednisolone was gradually, tapered off within 8 months. Cyclosporine 200 mg/day was maintained without recurrent during the 1-year follow-up (Figure 5).

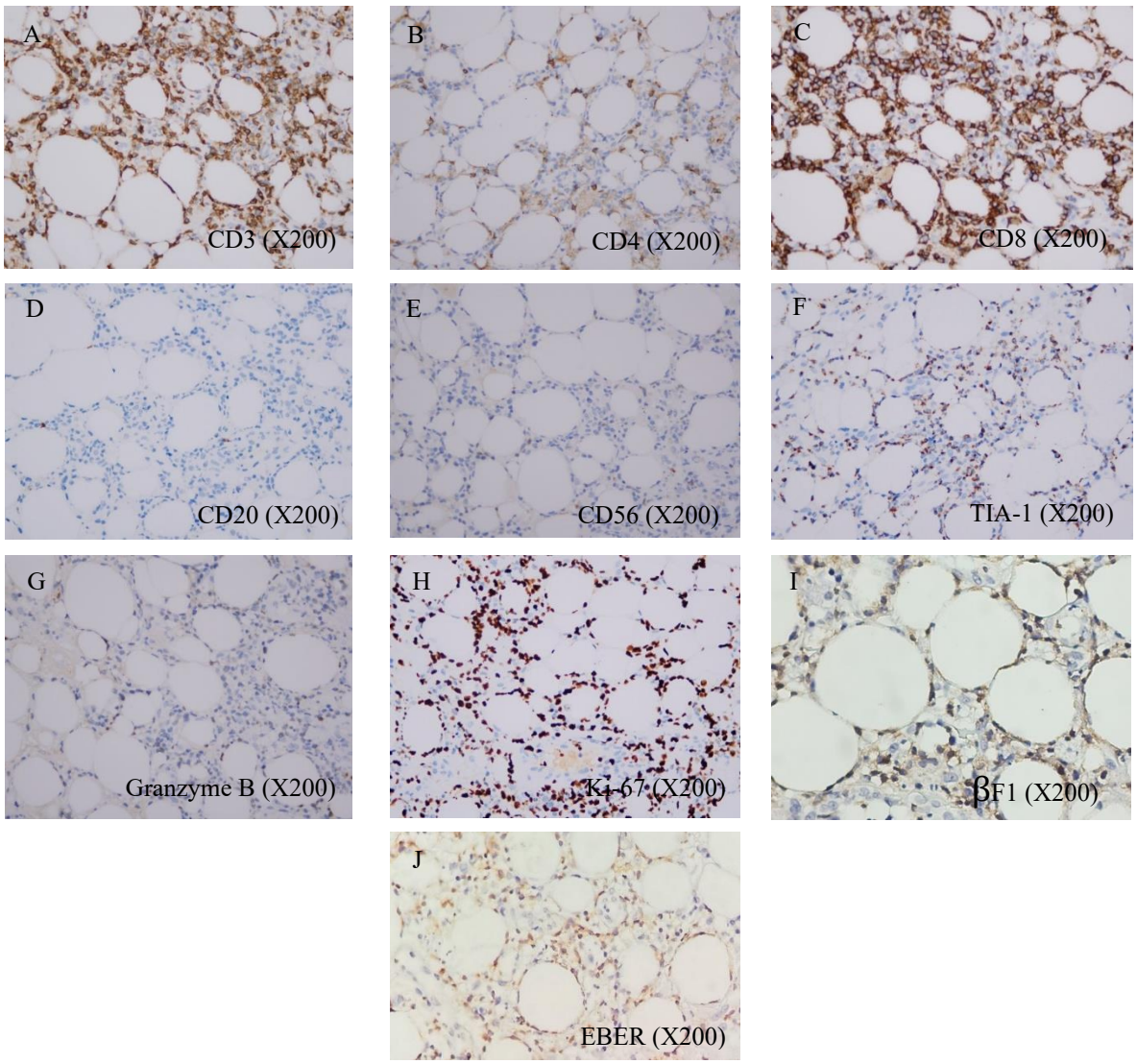

Figure 4 Immunohistochemical staining showed (A) CD3+, (B) CD4-, (C) CD8+, (D) CD20-, (E) CD56-, (F) TIA-1 weakly+, (G) Granzyme B, (H) Ki-67+(40%), (I) βF1+

Discussion

The 2018 revision of the WHO-EORTC classification for primary cutaneous lymphomas classified SPTCL among the various subtypes of cutaneous T-cell lymphomas (CTCLs). SPTCL has been defined as CD8+ cytotoxic T-cell lymphoma that expresses αβ T-cell receptors (TCRs) and shows CD3+, CD4-, and CD8+ phenotypes, localized to subcutaneous fat[1]. With a median age between 30 and 40, it primarily affected young individuals and showed little female preponderance[2]. The typical appearance of SPTCL consists of one or more subcutaneous

nodules, frequently pain-free or poorly demarcated indurated plaques. The most commonly affected regions are the lower extremities (71%), upper extremities (62%), trunk (56%), and/or facial areas (25%). The diameter of the nodules may range from 0.5 cm to over 20 cm. Ulceration is rare (6%), but necrosis may be present. Patients may display symptoms including weight loss, fever, and exhaustion[3].

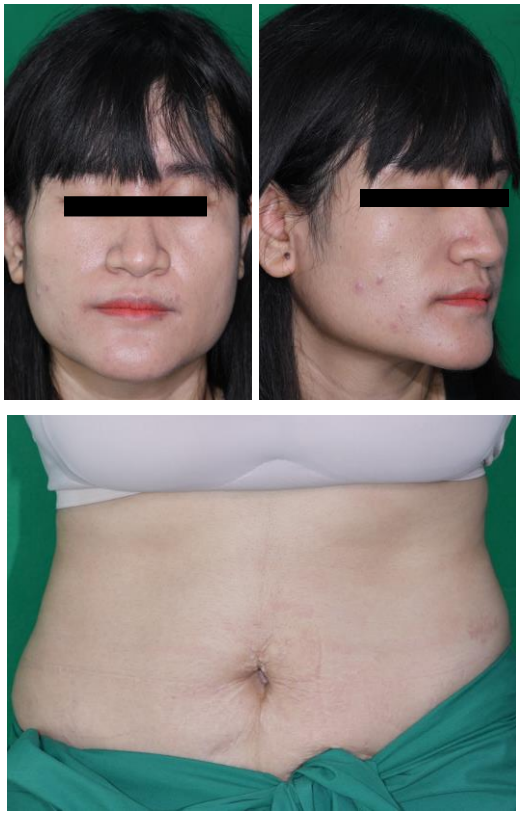

Figure 5 One year after treatment: complete remission of facial swelling and subcutaneous nodule on abdomen

An uncommon serious complication of SPTCL is hemophagocytic syndrome (HPS). HPS has primary (genetic) or secondary (acquired), with the most frequent secondary causes of HPS including infection (EBV) and malignancy (lymphoma). HPS frequently manifests with symptoms such as fever, hepatosplenomegaly, rashes, cytopenia, elevated liver enzymes, lactate dehydrogenase, and ferritin. HPS occurs in approximately 20% of SPTL patients and is related to a poor prognosis, with a 5-year survival rate of 46%. [3] If conditions are untreated, it can lead to multiorgan failure.

SPTCL should be differentiated from subcutaneous nodules and plaques such as erythema nodosum, erythema induratum, polyarteritis nodosa, lupus erythematosus panniculitis (LEP), subcutaneous Sweet's syndrome, and infectious causes involving subcutaneous fat. Because the clinical symptoms and histological characteristics of lupus erythematosus panniculitis and SPTCL overlap, distinguishing between the two conditions can be particularly challenging. Pathology, immunophenotypic results, and distinctive clinical symptoms provide the basis for the diagnosis. LEP primarily affects the face and proximal extremities, while SPTCL usually affects the trunk and extremities.[4] Both conditions exhibit histological features characteristic of lobular lymphocytic panniculitis. The subcutaneous infiltration of atypical T-lymphocytes that have a rimming effect around adipocytes and the presence of fat necrosis are the distinctive characteristics in the histopathology of SPTCL[4]. Hyalinized fat necrosis, a characteristic feature of LEP, can also be observed in SPTCL. Other histologic features supporting LEP consist of an inflammatory cell involvement in the dermis, mucin deposition, and interface change.

To distinguish between these two conditions, ancillary testing through immunohistochemistry is necessary. Immunohistochemistry staining of atypical T-lymphocytes such as CD3, CD8, TIA-1, granzyme-B, and beta-F1 were positive in SPTCL, whereas CD4, CD20, and CD56 were negative[5]. LEP displays a combination of plasma cells, lymphoid follicles or B-cell aggregates, and CD4 and CD8 positive T-cells.

Finding the increase in the Ki-67 proliferation index in atypical T-lymphocytes surrounding the adipocytes is another helpful auxiliary test for distinguishing SPTCL from LEP. A Ki-67 proliferation index greater than 20% is highly suggestive of SPTCL[4,5].

The five-year survival rate for SPTCL ranges from 85% to 91%, indicating a favorable prognosis and outcome.[6] The administration of prednisone, either as a standalone treatment or in combination with immunosuppressive therapies such as methotrexate, cyclosporine, and chlorambucil, may suffice for attaining complete remission in SPTCL without HPS. More intensive treatment using cyclophosphamide, vincristine, doxorubicin, and prednisone (CHOP)-like regimens are required in resistant cases or with HPS[7-8].

Reaching a diagnosis in this case is challenging, requiring two skin biopsies before arriving at a definite diagnosis. The clinical presentation was unique in this case, as the patient displayed several painful subcutaneous nodules on the trunk and limbs with predominantly lesions involving the periorbital area such as bilateral periorbital swelling and facial edema. Several reports have shown that SPTCL can exhibit a range of clinical manifestations in facial regions. These manifestations may include periorbital swelling, facial edema, subcutaneous nodules or plaques on the face, and facial nerve palsy[4,9,10]. Laodheerasiri et al. documented a case of SPTL characterized by an atypical presentation with periorbital and facial edema, with no lesions observed on the trunk and extremities[7]. In our case, the patient presented with primary subcutaneous nodules on the trunk and extremities and then progressed to the face.

In our patient, the persistent high-grade fever is accompanied by periorbital swelling and facial edema. The clinician initially considered an infectious cause, resulting in a diagnosis of preseptal cellulitis. The most prevalent ophthalmic disorder is preseptal cellulitis. The orbital septum divides orbital cellulitis into two types: pre-septal and post-septal. Preseptal cellulitis is the term used to describe an infection in front of the septum. Clinical distinction is a key factor in determining the severity and prognosis of eye conditions. Interestingly, the progression of subcutaneous nodules and plaques on the trunk prompts the clinician to reassess the condition and perform a repeat skin biopsy. Histopathological examination revealed infiltration of atypical T-lymphocytes surrounding adipocytes within the subcutaneous tissue, accompanied by adjacent karyorrhectic debris. Immunohistochemistry revealed that atypical T cells exhibited stained CD3+, CD8+, TIA-1+, Granzyme B+, βF+, and Ki-67 with a proliferation index exceeding 20%, consistent with a diagnosis of SPTCL. She received a high dose of prednisolone, which was subsequently tapered off while being maintained on cyclosporine. The clinical symptoms have subsided within three months after the initiation of the treatment and no recurrent during the 1-year follow-up.

References

1. Willemze R, Cerroni L, Kempf W, et al. The 2018 update of the WHO-EORTC classification for primary cutaneous lymphomas. Blood 2019; 133:1703-14.
2. Ohtsuka M, Takako M, Yamamoto T. Clinical characteristics, differential diagnosis, and treatment outcome of subcutaneous panniculitis-like T-cell lymphoma: a literature review of published Japanese cases. Eur J Dermatol 2017;27:34-41.
3. Tran NT, Nguyen KT, Le LT, Nguyen KT, Trinh CT, Hoang VT. Subcutaneous Panniculitis-Like T-Cell Lymphoma With Hemophagocytic Lymphohistiocytosis. J Investig Med High Impact Case Rep 2024:12:1-7.
4. Nourbakhsh SMK, Bahadoram M, Kosari F, Jafari M, Aslani N, Hassanzadeh S. Subcutaneous panniculitis-like T-cell lymphoma in a young girl presenting with periorbital edema and fever: A case report. Clin Case Rep 2022;10:e05462.

5. Lee DW, Yang JH, Lee SM, et al. Subcutaneous panniculitis-like T-cell lymphoma: A clinical and pathologic study of 14 Korean patients. Ann Dermatol 2011; 23:329-37.
6. Lin EC, Liao JB, Fang YH, Hong CH. The pathophysiology and current treatments for the subcutaneous panniculitis-like T cell lymphoma: An updated review. Asia-Pac J Clin Oncol 2023;19: 27-34.
7. Laodheerasiri S, Intarasupht J. An atypical presentation of subcutaneous panniculitis-like T-Cell lymphoma. Thai J Dermatol 2019;35:176-181.
8. Grinich E, Koon SM, Cascio MJ, Fett N. Subcutaneous panniculitis-like T-cell lymphoma responsive to combination therapy with methotrexate and corticosteroids. Dermatol Online J 2018; 24: 9.
9. Velez NF, Ishizawar RC, Dellaripa PF, et al. Full Facial Edema: A Novel Presentation of Subcutaneous Panniculitis-Like T-Cell Lymphoma. J Clin Oncol 2012;30:e233-6.
10. Hashimoto R, Uchiyama M, Maeno T. Case report of subcutaneous panniculitis-like T-cell lymphoma complicated by eyelid swelling. BMC Ophthalmology 2016;16:117.