CASE REPORT

T-CELL LYMPHOMA MIMICKING SUBCUTANEOUS PANNICULITIS: A CASE REPORT AND LITERATURE REVIEW.

Myo Thet Tin[1], Khin Saw Than[2], Aye Aye Myint[3] and Than Than Htwe[4]

1. Department of Clinical Pathology, Yangon General Hospital, Myanmar.
2. Department of Medicine, Yangon General Hospital, Myanmar.
3. Department of Pathology, University of Medicine 1Yangon, Myanmar.
4. Discipline of Pathology, Preclinical-Based Department, Faculty of Medicine, Universiti Kuala Lumpur – Royal College of Medicine Perak, Malaysia.

Corresponding Author
Dr. Than Than Htwe
Faculty of Medicine, UniKL RCMP, No. 3, Jalan Greentown, 30450 Ipoh, Malaysia.
Email: ththan@unikl.edu.my

Abstract

T-cell lymphoma mimicking subcutaneous panniculitis is a rare type of non-Hodgkin lymphoma, also known as subcutaneous panniculitis-like T-cell lymphoma (SPTCL). Literatures describe SPTCL as a distinct type of T-cell lymphoma with a variable clinical behaviour, depending on molecular phenotype of T-cell receptor (TCR) and on the presence or absence of haemophagocytic syndrome. We report the first case detected and confirmed by immunohistochemistry which was diagnosed earlier as subcutaneous panniculitis.

Key words: Panniculitis, Lymphoma

Introduction

T-cell lymphoma mimicking subcutaneous panniculitis is a rare type of non-Hodgkin lymphoma. It is also known as subcutaneous panniculitis-like T-cell lymphoma (SPTCL). It is usually presented as nodular lesions that are localized primarily in the subcutaneous adipose tissue of the extremities or trunk, without involvement of the lymph nodes. Literatures describe SPTCL as a distinct type of T-cell lymphoma with a variable clinical behaviour, depending on molecular phenotype of T-cell receptor (TCR) and on the presence or absence of haemophagocytic syndrome. [1]

Case report

A 16-year-old boy presented with pallor and multiple infected nodular skin manifestation for six-month duration. He was first consulted from a dermatology outpatient department, Yangon General Hospital and clinically diagnosed as erythema nodosum. Laboratory investigations were done in the same hospital laboratory and it revealed pancytopenia in his peripheral blood picture. Bone marrow examination revealed a marrow infiltration which is suggestive of non-Hodgkin lymphoma with a few atypical form of cells from lymphoid lineage. CT-scan showed mild hepatosplenomegaly and left-sided pleural effusion. Wound swab for culture and sensitivity from the skin lesion was reported as having heavy growth of *Staphylococcus aureus*. Finally, a provisional diagnosis of disseminated lymphoma with widespread infection was given. A skin biopsy was performed with the consent obtained from the patient. Slides were reviewed under conventional hematoxylin and eosin stain. Immunohistochemistry slides were prepared from the diagnostic laboratory of Grand Hantha International Hospital. Microscopic features of the slides revealed nodular lesions located deep within the subcutaneous tissue (Fig. 1A). These cells composed of normal adult fat cells in which individual fat spaces are rimmed by lymphocytic infiltrates. The lymphocytic infiltrates were mostly of small to medium-sized cells having hyperchromatic irregular nuclei with thin pale cytoplasm (Fig. 1B). Scattered among them are reactive histiocytic macrophages with phagocytized lymphocytes and erythrocytes. (Fig 1C). Histopathological findings were in favour of Subcutaneous Panniculitis like T-cell Lymphoma SPTCL). Further immunostainings confirmed that the atypical cells rimming the adipocytes were stained positive for TIA1, CD8, and BF1 (Fig. 2, 3, and 4). Based on the morphological and immunohistochemistry findings, the case was concluded as panniculitic T-cell lymphoma mimicking subcutaneous panniculitis or subcutaneous panniculitis-like T-cell lymphoma (SPTCL).

Discussion

Subcutaneous panniculitis-like T-cell lymphoma (SPTCL) is a rare type of tumour of T-cell origin representing <1% of all non-Hodgkin's lymphomas.[1] It was described in 1991 in an eight-case series, but was not recognized as a distinct entity by the World Health Organization until 2001, where it was categorized as a type of mature T-cell and natural killer cell lymphoma.[2,4] Clinically, it affects young adults, with a median age at diagnosis of 39 years.[5] Most patients present with generalized lymphadenopathy, sometimes accompanied by eosinophilia, pruritus, fever, and weight loss. The skin lesions are usually slow growing painless multiple subcutaneous nodules on the extremities and trunk.[5] As such, patients tend to seek consultation from dermatologist. Diagnosis of SPTCL is challenging, especially in the early stages when the symptoms mimic other non-tumorous inflammatory conditions such as benign panniculitis, dermatitis, and soft tissue infections. About three-fourths of patients with SPTCL have multifocal cutaneous involvement.[5] By definition, all peripheral T-cell lymphomas are

derived from mature T cells. They usually express CD2, CD3, CD5, and either αβ or γδ T-cell receptors. Some also express CD4 or CD8; such tumours are taken to be of helper or cytotoxic T-cell origin, respectively. However, many tumours have phenotypes that do not resemble any known normal T cell. In difficult cases where the differential diagnosis lies between lymphoma and a florid reactive process, DNA analysis is used to confirm the presence of clonal T-cell receptor rearrangements.[6]

Diagnosis of SPTCL is based on pathological examination of skin and subcutaneous tissue, clinical characteristics, immunohistochemistry staining patterns, and molecular analysis. There are two distinct types of SPTCL based on the T-cell receptor phenotype and immunohistochemistry characteristics. The first, T-cell receptor αβ, is characterized by an indolent, protracted course and is usually CD4−, CD8+, and CD56−. The second, T-cell receptor γδ, is associated with rapid clinical deterioration and coexisting haemophagocytosis. It is usually CD4−, CD8−, and CD56+.[7] Currently, the T-cell receptor αβ subtype is designated as SPTCL, whereas the T-cell receptor γδ is designated as cutaneous gamma/delta positive T-cell lymphoma.[8] Although SPTCL mostly presented as subcutaneous nodule, there were very few cases presented as mesenteric masses.[9,10] Recently, a rare case of panniculitic T-cell lymphoma with morphological and immunohistochemical features of SPTCL constituting mesenteric mass without involvement of subcutaneous fat, was first reported by Hrudka J et.al in 2019.[1, 10]

SPTCL is distinct from primary cutaneous γ/δ T-lymphomas, which are typically CD4-, CD8-, CD56+, granzyme B+, perforin+, TIA1+, may involve the epidermis and/or dermis.[11,12] It may present with panniculitic pattern and have a very poor prognosis. More serious conditions associated with SPTCL include serosal effusions, haemophagocytosis syndrome, and pancytopenia.[13,14] Hrudka J et.al in 2019 also mentioned that α/β lymphomas represent often an indolent disease, whilst γ/δ phenotype harbors a poor prognosis.[1] So also, peripheral T-cell lymphomas are reported to have significantly worse prognosis than comparably aggressive mature B-cell neoplasms (e.g., diffuse large B-cell lymphoma).[6] Although our patient is categorized as α/β TCL, the CT scan result with pleural effusion and hepatosplenomegaly with microscopic features indicating the presence of haemophagocytic cells will need further investigation and regular follow ups.

The γ/δ-TCR-rearranged lymphomas are more frequently associated with haemophagocytic syndrome (hemophagocytic lymphohistiocytosis, HLH) compare to T-cell receptor αβ subtype. One of the clinical criterias for the diagnosis of HLH syndrome is bicytopenia. Our patient had bicytopenia, and histopathological finding of haemophagocytosis (Fig 1B). With limited facility, we were not able to perform other serology tests to exclude γ/δ-TCR-rearranged lymphomas. There are multiple reports of HLH associated with subcutaneous T-cell lymphomas.[15, 16] Regarding tumours triggering HLH, the most common are haematological neoplasms, more frequently T-cell than B-cell lymphomas or leukaemias, and only rarely solid tumors.[17, 18, 19] The pathogenesis of HLH is related to deranged immune response. Dysfunctional cytotoxic CD8+ T lymphocytes (CTLs) and NK cells are unable to initiate appropriate response against malignant or infected cells. The immune system is unable to control the hyper-inflammatory response, which often leads to multiple organ failure and death. Hence, there is a major role play for the pathologists to get a specific diagnosis in supporting the appropriate management for the clinicians.

Conclusion

We reported a first case of SPTCL diagnosed from our laboratory using available immunohistochemistry. This case highlights the diagnostic challenge for clinicians as well as for pathologists. Further molecular diagnostic features will be supportive to obtain a specific diagnosis being TCL expressing in variable prognostic and treatment indicators.

Authors Contribution

MTT performed the laboratory diagnostic investigation and confirmation of the case. KST performed the case investigation, management and case review. AAM performed bone marrow aspiration and trephine biopsy investigation. TTH performed the concept designing, literature search, manuscript preparation, editing and review.

Conflict of Interest

The authors declare no conflict of interest.

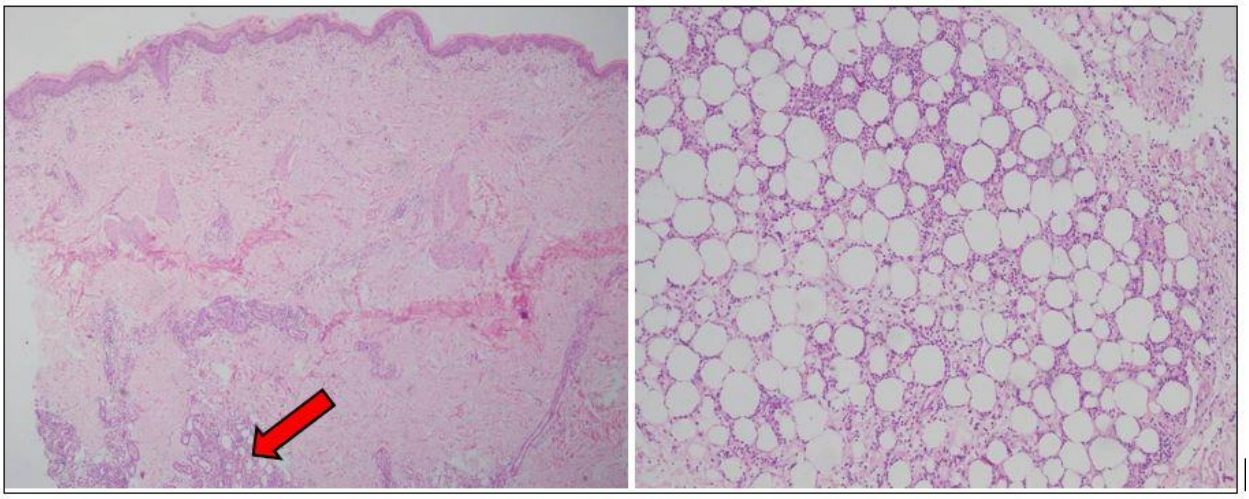

Fig. 1A H&E x10 **Fig. 1B H&E x20**

Figure 1A Histopathological feature of the lesion deep within the subcutaneous tissue underneath the skin shown by a red arrow. (H&E x10) Figure 1B Histopathological feature of the skin lesion showing normal mature adipocytes rimmed by lymphocytic cells and arranged in nodular pattern. (H&E x20)

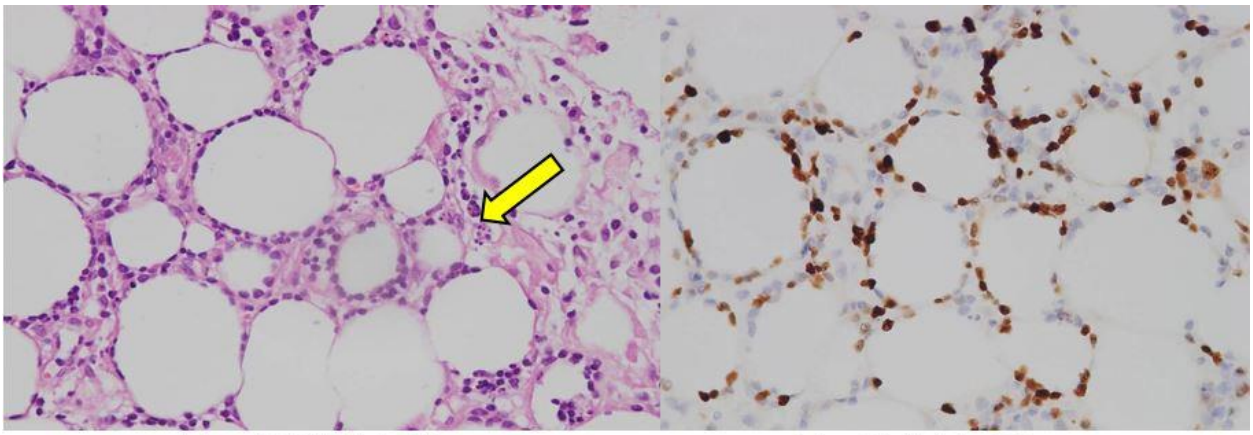

Fig. 1C H&E x40 **Fig. 2 TIA1 x20**

Figure 1C Histopathological feature of the skin lesion showing normal mature adipocytes rimmed by lymphocytic cells. Two haemophagocytic cells are noticed shown by a yellow arrow. (H&E x40). Figure 2. Immunohistochemistry indicating these rimmed lymphocytic cells are strongly positive for TIA1 (x40).

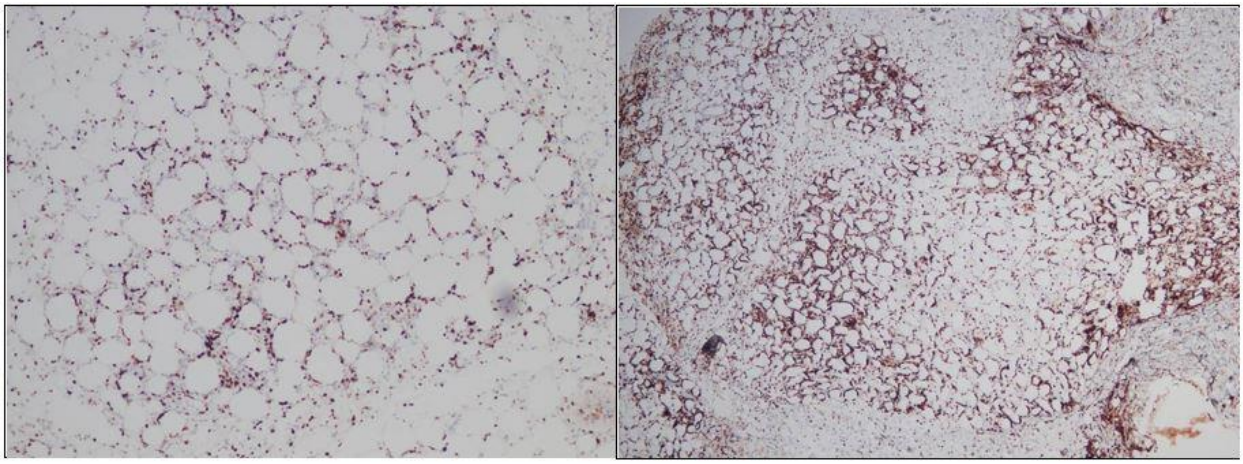

Fig. 3 BF1 x20 **Fig. 4 CD8 x10**

Figure 3. Immunohistochemistry revealing these rimmed lymphocytic cells as moderately positive for BF1 (x20). Figure 4. Immunohistochemistry revealing these rimmed lymphocytic cells are also positive for cytotoxic CD8 cells (x10).

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