

MR Findings of Subcutaneous Panniculitis-like T-Cell Lymphoma: A Case Report¹

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Subcutaneous panniculitis-like T-cell lymphoma (SPTCL) is a rare cancer and it is widely regarded as being distinct from the other subtypes of peripheral T-cell lymphoma. SPTCL commonly presents with subcutaneous nodules that resembles panniculitis. The clinicopathologic features of SPTCL have recently been described. However, only a few cases with their CT and sonographic findings have been reported in the radiologic literature. We illustrate here the MR findings of this rare tumor in one case that presented with a popliteal mass.

Index words : Lymphoma, T-cell peripheral
Subcutaneous tissue
Magnetic resonance (MR)

Peripheral T-cell lymphoma (PTCL) has recently been described as a pathologic entity by the World Health Organization classification system for lymphoid neoplasms, and PTCL represents a relatively small proportion of all the lymphomas (1). It has a lower prevalence in Western countries than elsewhere; it makes up approximately 10 - 15% of all non-Hodgkin's lymphomas in Europe (2), versus 25% in Korea (3). Subcutaneous panniculitis-like T-cell lymphoma (SPTCL) is an unusual type of PTCL. Clinically, it is often confused with inflammatory panniculitis. The medical literature contains little information on the diagnostic images of SPTCL, and especially the MR images. To the best of our knowledge, there are only a few reports on PTCL in the

English-language medical literature (4, 5)

We report here on the MR findings in a case of SPTCL that presented with a popliteal mass.

Case Report

A 65-year-old female presented with 1-month history of a left popliteal mass. A 5 × 3 cm sized hard mass was palpated on the physical examination. The mass was mildly tender and had localized warmth. No evidence of peripheral lymphadenopathy or hepatosplenomegaly was found. Laboratory tests were performed; the WBC count was slightly increased (10290) but the other tests were unremarkable.

MR imaging of the left knee was performed on a 1.5 T unit (Magnetom Vision, Simens Medical Systems, Iselin, NJ, U.S.A.) with using a knee coil. MR imaging of her left knee included the precontrast T1 weighted sagittal and coronal images, the fat suppressed proton density sagittal images, the T2 weighted axial and coronal images, and the fat suppressed T1 weighted axial and sagittal images after contrast injection. The mass was located in the subcutaneous layer of the popliteal fossa. It mea-

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This work was supported by a 2001 Inje University Research Grant.

Received July 23, 2007 ; Accepted September 21, 2007

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sured about $3.5 \times 1.3 \times 3.2$ cm with an ill-defined margin and lower signal intensity than the adjacent subcutaneous fat on the T1-weighted sagittal images. The lesion demonstrated heterogeneous high signal intensity with an infiltrative pattern on the proton density fat suppressed sagittal images, like that seen for panniculitis. After administration of intravenous contrast material (Gd-DTPA; 0.1 mmol/kg body weight), the lesion demonstrated heterogeneous mild enhancement (Fig. 1). During the operation, the lesion was localized in the subcutaneous layer and it displayed inflammatory

changes. Wide excision and then frozen sectioning of the subcutaneous lesion were undertaken.

Histopathologic examination of a mass showed lymphoid cell infiltration in the subcutaneous fat layer, and the lymphoid cells were surrounded by individual adipocytes and granuloma formation on the photomicrograph (H-E stain $\times 100$).

Immunohistochemistry revealed that the atypical lymphocytes and granuloma were positive for CD3 (Fig. 2) and CD20 and they were negative for CD30.

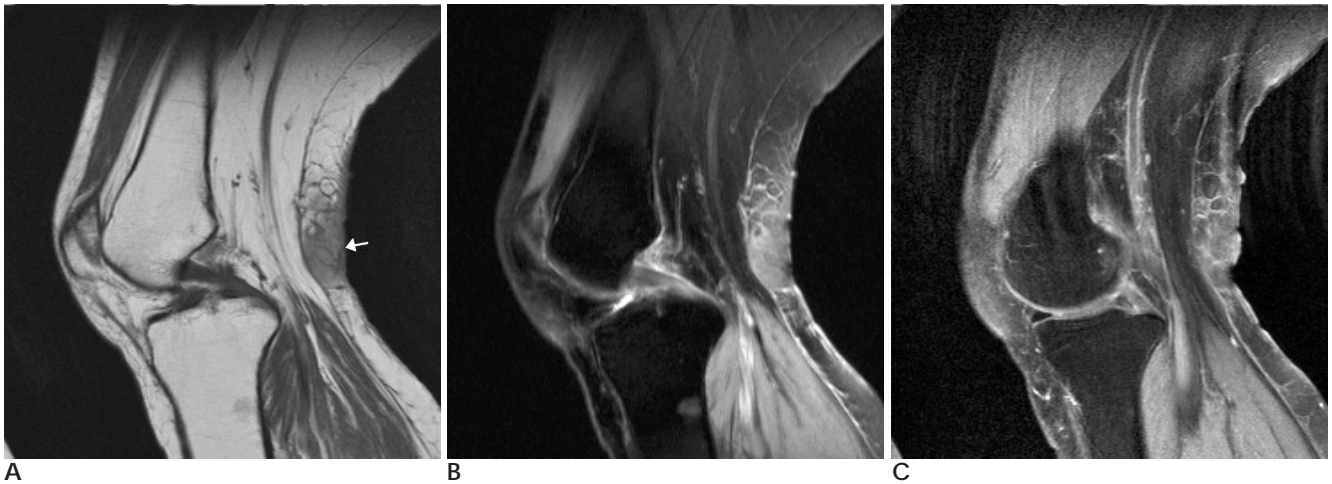


Fig. 1. 65-year-old female with a popliteal mass.

A. The T1 weighted sagittal image shows a low signal intensity lesion with an ill-defined margin and infiltration in the subcutaneous layer of the popliteal fossa (arrow).

B. On the fat suppressed proton density sagittal image, the lesion demonstrates heterogeneous high signal intensity with an infiltrative pattern.

C. The fat suppressed T1 weighted sagittal image with Gd-DTPA demonstrates mild enhancement.

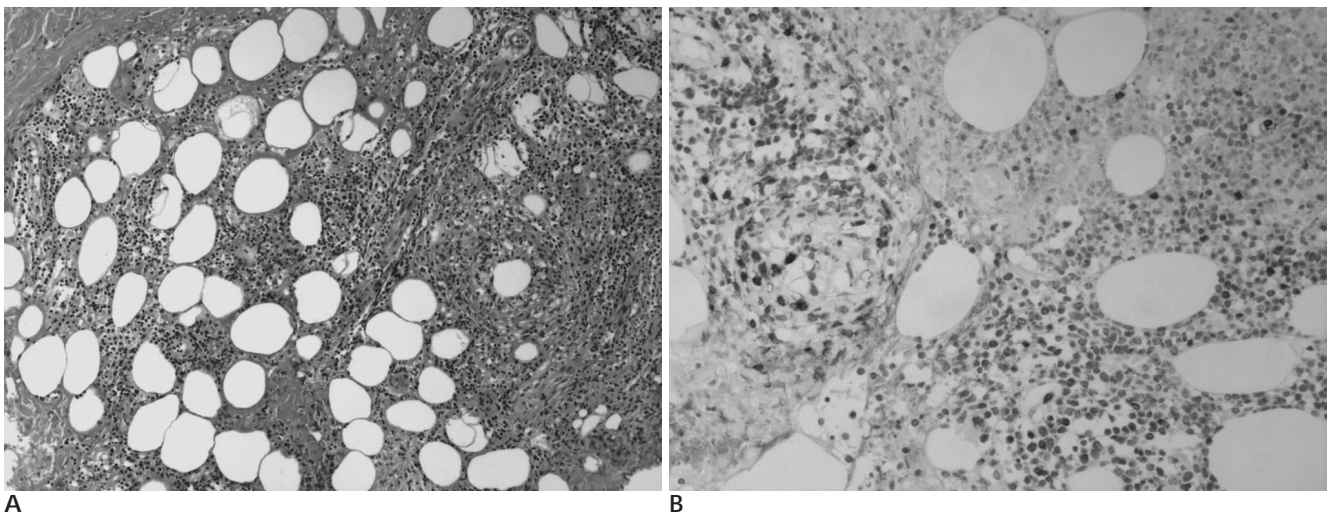


Fig. 2. A. Subcutaneous adipose tissues are surrounded by tumor cells. The right lower corner reveals a granulomatous reaction. (HE $\times 100$)

B. The tumor cells infiltrating the adipose tissue and the granuloma are positive for CD3 staining. ($\times 200$, CD3 immunohistochemistry)

Discussion

According to the World Health Organization (WHO) classification, lymphoid malignancies are divided into B-cell neoplasms, T-cell neoplasms and Hodgkin's disease (1). T-cell neoplasms are divided into precursor T-cell neoplasms and peripheral T-cell neoplasms. The peripheral T-cell neoplasms are also divided into peripheral T-cell leukemia and peripheral T-cell lymphoma (1). Subcutaneous panniculitis-like T-cell lymphoma was originally described by Gonzalez et al. (6) as an uncommon form of cutaneous lymphoma that was localized within the subcutis and it mimicked lobular panniculitis. Subcutaneous panniculitis-like T-cell lymphoma is increasingly being recognized, after having been incorporated as a distinct entity into the recent WHO classification of lymphomas. Yet it remains an uncommon type of cutaneous T-cell lymphoma with fewer than 100 cases having been reported worldwide. It most frequently occurs in women between the 4th and 5th decade, but it also affects people of a broad age range, including children and young adults (7). These patients typically present with multiple subcutaneous tumors or plaques on the lower extremities or trunk, and less commonly on the upper extremities or the face (3-5). Clinically, it is often confused with inflammatory panniculitis associated with connective tissue disease. The prognosis of SPTCL is generally poor. Some of the disease features such as the constitutional symptoms, the pancytopenia, the involvement of multiple sites, and the haemophagocytic syndrome (HPS) tend to be associated with a poor clinical outcome (6, 8). Two clinical courses have been described for this condition: an indolent one and a more aggressive form (8). In the more aggressive form, death is often a result of the HPS, in which there is phagocytosis of platelets, white and red blood cells by macrophages, histiocytes or malignant cells, resulting in pancytopenia.

Histologically, all the previously reported patients exhibited an infiltrate of atypical lymphoid cells with hyperchromatic nuclei, and these cells were labeled with pan T-cell markers such as CD2 and CD3. The proliferated and infiltrated lymphocytes tend to surround individual adipocytes. This is the characteristic rimming of fat spaces (6, 9)

There have been few case reports describing the US, CT or MR imaging as applied to peripheral T-cell lymphoma (4, 5, 10, 11). In these articles, the sonographic

findings of subcutaneous panniculitis-like T-cell lymphoma showed poorly defined, homogeneous hyperechogenicity in the subcutaneous fat layer (5, 10, 11). On CT examination, multiple subcutaneous nodules in SPTCL patients are well recognized as multiple enhancing nodules (4). The MR imaging findings are nonspecific for soft-tissue tumors and soft tissue inflammation, the same as for our case. The tumor of our patient had signal intensity similar to or slightly higher than that of normal muscle on the T1-weighted images and a slightly higher signal than that of fat on the T2-weighted images (11).

For our case, the MR imaging findings were similar to soft tissue inflammation or infection. The lesion had an ill-defined margin and infiltration to the subcutaneous layer with mild enhancement. Unfortunately, we could not determine any specific findings on the MR images for making the diagnosis of SPTCL, but the relatively mild enhancement of the lesion is different from that of soft tissue infection.

In our opinion, although it is a rare condition, SPTCL should be included in the differential diagnosis not only when multiple nodules are noted on US and CT, as previously reported in past studies, but also when subcutaneous inflammation or infection is suspected on the US CT or MR imaging.

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