Case Report

Positron emission tomography-computed tomography in subcutaneous panniculitis-like T-cell lymphoma

ABSTRACT

Subcutaneous panniculitis-like T-cell lymphoma (SPTCL) is a rare and poorly differentiated type of cutaneous T-cell lymphoma. In this variant, the lymphoma cells infiltrate preferentially into the subcutaneous adipose tissue. It is an indolent type of non-Hodgkin's lymphoma and can be mistaken for panniculitis. Here, we describe the case of a 59-year-old female patient who presented with altered skin pigmentation with diffuse plaque-like patches in the skin around the thighs and legs. A skin biopsy revealed subcutaneous lobular panniculitis composed of lymphocytes, epithelioid histiocytes, and occasional giant cells admixed with atypical lymphoid cells, which were suggestive of cutaneous lymphoma. Immunohistochemistry showed CD3 positive, CD20 negative, CD8 positive, CD4 occasional cells positive, CD56 negative, and CD5 few cells positive, confirming the diagnosis of SPTCL. Therefore, cases with atypical and nonresolving dermatological lesions should raise a suspicion of SPTCL as diagnosis against other benign conditions.

Keywords: Fluorodeoxyglucose positron emission tomography-computed tomography, non-Hodgkin's lymphoma, subcutaneous panniculitis-like T-cell lymphoma

INTRODUCTION

Subcutaneous panniculitis-like T-cell lymphoma (SPTCL) is a very rare form of skin lymphoma. It is estimated that SPTCL accounts for <1% of all non-Hodgkin's lymphomas. It is localized primarily to the subcutaneous adipose tissue without palpable involvement of the lymph nodes. It was first described by Gonzalez in 1991 in an 8-case series,[1] but was not recognized as a distinct entity by the World Health Organization until 2001.[2] It usually presents as multiple, painless, subcutaneous nodules on the extremities and trunk. In its early phase, the nodules may resolve without treatment, but subsequently, new nodules may develop on the same or different skin locations. The diagnosis of SPTCL is a challenge, especially during the early phase of the disease as symptoms mimic other, more common conditions, such as benign panniculitis, eczema, dermatitis, psoriasis, cellulitis, and other skin and soft-tissue infections. Clinical and systemic symptoms are nonspecific and can include fever, chills, and weight loss; approximately half of the patients develop mild cytopenias. More serious conditions associated with SPTCL include hepatosplenomegaly, mucosal ulcers, serosal effusions, hemophagocytic syndrome (HPS), and pancytopenia, though these are less common.[3,4]

CASE REPORT

A 59-year-old previously healthy female presented with altered skin pigmentation with diffuse plaque-like patches in the skin around the thighs and legs that she noticed while undergoing surgery for a revision total knee

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replacement (TKR). She complained of severe pain and itching around these skin lesions. She later noticed these lesions at various other sites. After she was operated for a revision TKR, she was referred to a dermatologist for the management of these skin lesions. She was diagnosed to have a benign condition and treated with multiple courses of antibiotics, but appreciated no improvement. There was no history of significant weight loss or other symptoms. Examination revealed multiple discolored plaque-like skin lesions which were tender and associated with itching. There was no regional lymphadenopathy or hepatosplenomegaly.

Her routine hematological and biochemical parameters were within normal limits. Her rheumatoid factor, anti-cyclic citrullinated peptide, and antinuclear antibody profile were normal. Erythrocyte sedimentation rate was elevated. Color Doppler done for lower limb swelling showed diffuse subcutaneous and interstitial edema with increased echogenicity of subcutaneous fat suggestive of cellulitis. A skin biopsy revealed subcutaneous lobular panniculitis composed of lymphocytes, epithelioid histiocytes, and occasional giant cells admixed with atypical lymphoid cells, which were suggestive of cutaneous lymphoma. Immunohistochemistry showed CD3 positive, CD20 negative, CD8 positive, CD4 occasional cells positive, CD56 negative, and CD5 few cells positive, confirming the diagnosis of SPTCL.

Whole-body positron emission tomography-computed tomography (PET-CT) scan showed multiple areas of diffuse skin and subcutaneous thickening with fat stranding in the right arm, anterior and posterior chest wall, posterior abdominal wall, perianal region, and right thigh with a maximum standardized uptake value of 7.9 [Figures 1,2 and 3].

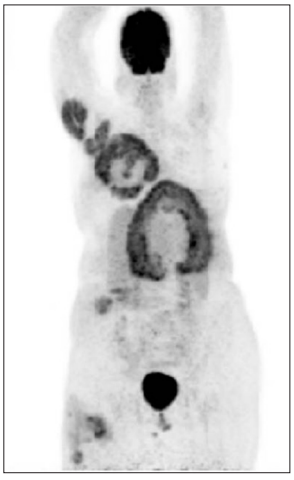

Figure 1: Maximum-intensity projection image showing multiple areas of abnormal increased skin and subcutaneous fluorodeoxyglucose uptake

DISCUSSION

SPTCL is an uncommon type of cutaneous lymphoma initially described by Gonzalez in 1991. The Revised European American Lymphoma and European Organization for Research and Treatment of Cancer classification of cutaneous tumors considered SPTCL as a provisional entity, which was subsequently considered as a distinct cutaneous lymphoma by the WHO in 2001.

SPTCL occurs most often in people who are 40–60 years old. More women develop SPTCL than men. Some people who develop SPTCL have an autoimmune disease. A study by Go and Wester showed that 75% of the patients were aged between 18 and 60 years.[5] Usually, patients present with plaques and subcutaneous nodules involving the extremities without lymph node involvement, and diagnosis may become difficult as the symptoms mimic conditions such as eczema, cellulitis, dermatitis, and benign panniculitis. The clinical course of the disease is mostly indolent, but rapid progression is not uncommon. It is less commonly associated with hepatosplenomegaly, HPS, cytopenias, and these associations indicate a poor prognosis.

Histopathological findings reveal lobular panniculitis-like infiltration by atypical lymphoid cells, which are seen rimming the adipocytes in a lace-like pattern. Nuclear pleomorphism, mitoses, karyorrhexis, and hemophagocytosis by histiocytes with "beanbag" appearance are usually seen. Immunohistochemical studies have demonstrated that these atypical neoplastic lymphoid cells have a cytotoxic T-cell phenotype.[6] Most of the atypical lymphoid cells express CD3, CD8, T-cell intracellular antigen (TIA-1), and perforin and lack CD4, CD30, and CD56 expression. TCR gene analysis by polymerase chain reaction-single-strand conformational polymorphism divides SPTCL into two subtypes: (i) those derived from T-cells expressing TCR-α/β and normally

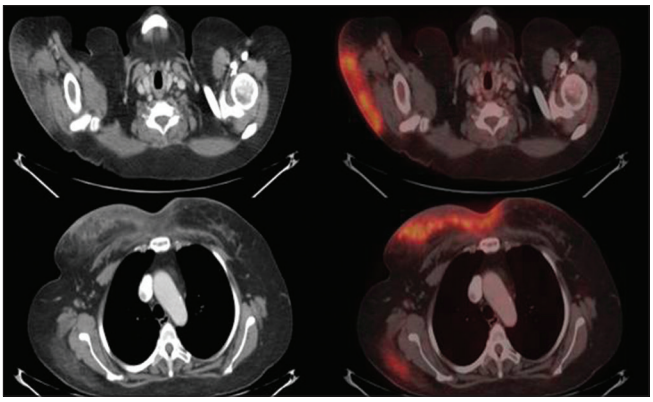

Figure 2: Axial images of positron emission tomography-computed tomography showing areas of skin and subcutaneous thickening and fluorodeoxyglucose uptake

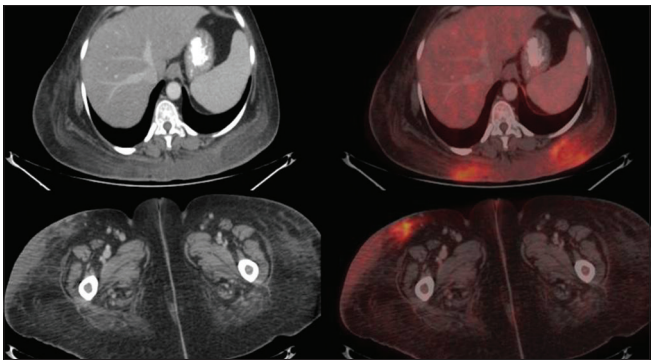

Figure 3: Axial images showing subcutaneous thickening and FDG uptake

CD8+ and (ii) those derived from γ/δ T-cells and commonly expressing the natural killer cell marker, CD56.[7]

There are few case reports showing the usefulness of PET-CT in SPTCL. Kim *et al*. described the usefulness of ^{18}Fluorodeoxyglucose (FDG) PET/CT in evaluating the disease extent and treatment response in SPTCL.[8] Ding *et al*. reviewed seven patients with SPTCL and the usefulness of ^{18}F-FDG PET/CT for defining the distribution and extent, finding visceral involvement, judging the malignant degree, predicting the prognosis, and making an effective therapeutic plan.[9]

CONCLUSION

PET-CT is a very helpful diagnostic tool in the assessment of the extent of SPTCL, evaluating the treatment response and restaging when a relapse is seen. All the subcutaneous lesions of SPTCL show FDG avidity, and this shows the superiority of PET-CT over CT alone in detecting more number of lesions.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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Nil.

Conflicts of interest

There are no conflicts of interest.

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