Case Report

Primary cutaneous peripheral T cell lymphoma not otherwise specified (PTL-NOS): an aggressive cutaneous lymphoma

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Abstract

Background: Peripheral T cell lymphoma not otherwise specified (PTL-NOS) is the rare subset of peripheral T cell lymphoma, which is a heterogeneous group of Non-Hodgkin lymphoma. It often presents with rare dermatological manifestations and fatal outcomes.

Case Presentation: A 35 years old male with no known comorbidity presented with 4 months history of progressively growing multiple small to medium sized nodules and plaques on face, shoulder, chest, back, and abdomen. Plaques were smooth, erythematous with erosion and ulceration present over some of the lesions. Histopathology shows dense lymphoid infiltrate involving epidermis as well as up to deep dermis. Immunohistochemistry and histopathology findings favoured the diagnosis of Peripheral T-cell Lymphoma Not Otherwise Specified. CT scan of brain, chest and abdomen excluded visceral involvement.

Conclusion: PTCL-NOS is a rare subgroup of peripheral T cell lymphoma often confused with other cutaneous T cell lymphoma like Mycosis Fungoides. But this is more aggressive and often needs standard combination chemotherapy upon diagnosis.

Keywords: PTCL-NOS, Primary Cutaneous Peripheral T cell Lymphoma Not Otherwise Specified

Introduction

Though primary cutaneous peripheral T-cell lymphoma not otherwise specified (PTL-NOS) is aggressive and fatal skin cancer, initially it presents with plaques resembling many common benign dermatological conditions.[1] Peripheral T cell lymphoma is a term that refers to a heterogeneous group of skin lymphomas that are classified by the World Health Organization- European Organization for Research and Treatment of Cancer (WHO-EORTC) based on their morphological, genetic, and clinical features.[2] Peripheral T-cell Lymphoma Not Otherwise Specified (PTCL-NOS) is one of those subtypes.[2] It is the most frequent subtype of PTCLs is PTCL, not otherwise specified (PTCL-NOS) an umbrella term to cover those who fail to belong to known entities within the 2008 WHO classification.[3] It comprises 5-10% of lymphoproliferative disorders in western countries.[3] Its histopathological and immunohistochemical features are mostly inconclusive and do not match with other varieties of CTCL.[4] To reach a final decision repeated biopsy may be needed. In fact, PTCL-NOS is a diagnosis of exclusion where the diagnosis is established after excluding the other differentials. It includes three provisional entities: i. Primary cutaneous aggressive epidermotropic CD8+ T cell lymphoma, ii. Cutaneous γ/δ+ T cell lymphoma, iii. Primary cutaneous CD4+

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small/medium-sized pleomorphic T cell lymphoma.[4-5] The 5-year survival rate is less than 20% for PTL-NOS.[1] So, a prompt diagnosis is crucial for a favourable outcome.

Case report:

A 35 years old male with no known comorbidity, a farmer by profession presented to Haemato-oncology outpatient department (OPD) with 4 months history of progressively growing multiple small to medium-sized nodules and plaques on the face, shoulder, chest, back, and abdomen. Some of the lesions ulcerate spontaneously. He denied any history of trauma, weight loss, or constitutional symptom. Past medical history was not significant. On examination, multiple erythematous variously sized and shaped plaques and nodules were present over the chest, abdomen, and extremities. Plaques were smooth, erythematous, nontender with erosion and ulceration present over some of the lesions (fig. Ia and Ib).

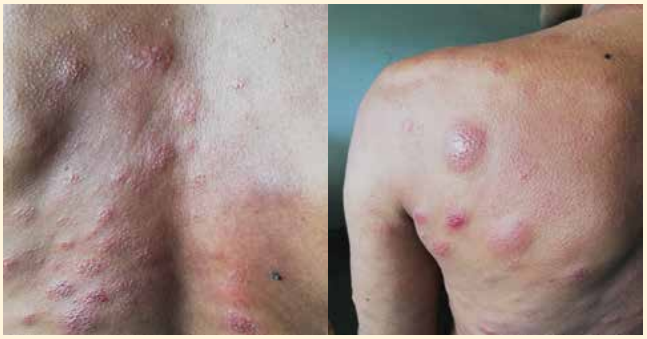

Figure I(a) and I(b): Skin lesions before treatment.

There was no lymphadenopathy and the systemic examination revealed nothing contributory. Initially the patient consulted with a dermatologist and a biopsy was taken from a plaque over the anterior abdominal wall. He was initially diagnosed as a case of Mycosis Fungoides and treated with oral methotrexate (MTX). Unfortunately, MTX proved to be ineffective and within a month disease continue to progress with ulceration of some of the lesions. After recognition of the aggressive nature of the disease immunohistochemistry was done and amended the diagnosis as PTCL NOS (fig. II). Histopathology (fig. III) shows dense lymphoid infiltrate involving epidermis as well as the upper, mid, and deep dermis. The epidermis shoes breakdown and ulceration. There is a diffuse infiltrate of a monotonous population of medium to large sized lymphoid cells admixed with few small lymphocytes and some histiocytes. The lymphoid cells have oval to slightly indented nuclei, dispersed chromatin, inconspicuous nucleoli, and scanty cytoplasm compatible with cutaneous lymphoma.

Table I: Immunohistochemistry profile.

IHC MARKERS	RESULT
CD20	Negative in lesional cells, few small cells are positive
CD3	Positive in majority of lesional cells
CD5	Positive in majority of lesional cells
CD4	Negative in cells, Positive in small lymphocytes only
CD8	Negative in cells, Positive in small lymphocytes only
CD2	Positive in majority of lesional cells
CD56	Negative
CD30	Negative
EMA	Negative
ALK-1	Negative
Ki-67	75%

Impression: Peripheral T celllymphoma, NOS

Figure II: View of Immunohistochemistry (CD3X200)- Positive in reactive T cell population.

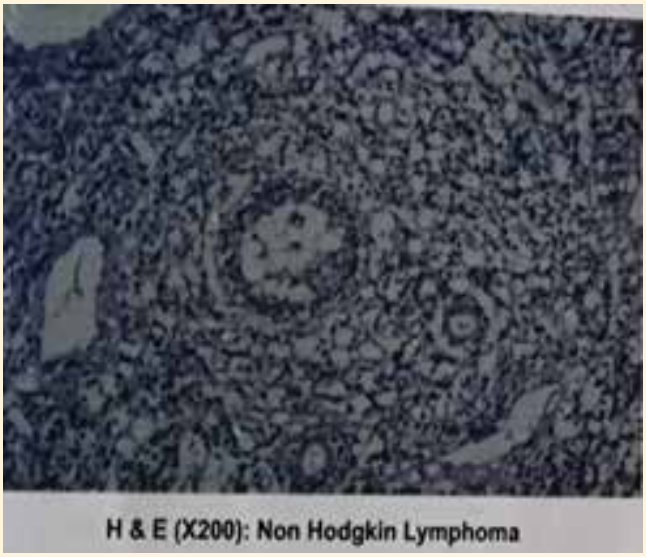

Figure III: View of Histopathology slide, H & E (200)- non Hodgkin lymphoma.

Other routine investigations and CT scan of brain, chest and abdomen reveals no abnormalities. Then patient got 6 cycle of combination chemo with Cyclophosphamide, Doxorubicin, Vincristine and Prednisolone. Disease was responsive to this multiple chemo protocol (fig. IV). Now patient is on follow-up for last 4 months without any physical complaints and laboratory abnormalities.

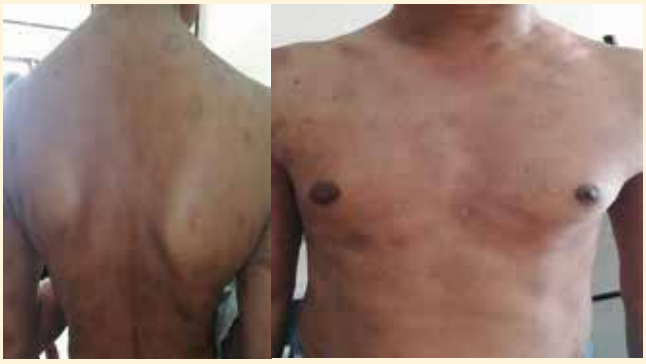

Figure IV(a) and IV(b): Healed skin lesions after treatment.

Discussion:

Cutaneous T-Cell Lymphoma (CTCL) is a rare form of Non-Hodgkin Lymphoma that primarily involves T-cells that concentrate within the skin.[5] It has an annual prevalence of nearly seven cases per million population.[6] Two-thirds of these are included in Mycosis fungoides (MF) or Sézary syndrome (SS).[7] Different types of CTCL present with different clinical presentations, histological and immunophenotypical features.[5] PTCL NOS is the rarest form among all types.[2] The WHO-EORTC established a set of criteria to help define PTL-NOS from other more well-defined rare subtypes of primary cutaneous Lymphomas.[2] This criterion is based on the exclusion of three other entities that have been recognized as part of these subtypes: primary cutaneous CD4-Positive small/medium T-Cell lymphoma (CD4+ SMTL), primary cutaneous CD8-positive aggressive epidermotropic T-Cell lymphoma (CD8+ AECTCL), and primary cutaneous Gamma/Delta T-Cell Lymphoma (CGD-TCL). Each subtype has its own unique immunohistochemical and clinical characteristics.[5,8] All these subtypes have different prognostic values. Out of these subtypes, only CD4+ SMTL confers a good prognosis.[5,9] CD8+ AECTCL usually presents like PTL-NOS with rapidly progressing necrotic nodules and plaques, but in histopathology where epidermotropic CD8+ atypical lymphocytes present.[10] Patients with PTL-NOS may present with a solitary red-violaceous tumor-like nodule on any area of the body; however, most commonly patients present with scattered multifocal or diffuse nodules.[5] Many of these tumors become ulcerated at times and subsequently infected and ultimately lead to a life-threatening condition. Unfortunately systemic involvement is a key feature of PTL-NOS contributing to the five-year survival rate of less than 20%.[2,5] Due to the rarity of PTL-NOS, there are gaps in the knowledge about evidence-based treatments and survival.[9] However, it has been shown that there are some independent predictors of decreased survival like age more than sixty, Eastern Cooperative Oncology Group (ECOG) performance status of equal to or greater than two, lactate dehydrogenase levels at normal values or above, and involvement of the bone marrow.[11]

Immunophenotypically there is a predominance of CD4 with loss of one of the pan T-cell antigen (CD2, CD3, CD5, or CD7) as seen in 75% of the cases, among which CD7 and CD5 are mostly absent, although in this case CD3 and CD5 were found to be positive in large atypical cells.[12-13] Due to the rarity of cases, PTL-NOS is not well understood and algorithms for treatment are lacking.[2,5] Due to the rapidly evolving nature of PTL-NOS, treatment usually includes systemic chemotherapy and/or hematopoietic stem cell transplantation.[5,10] Systemic chemotherapy often has a multi-agent regimen that includes cyclophosphamide, hydroxy-daunorubicin, vincristine and prednisolone. However high dose

chemotherapy along with allogeneic bone marrow transplantation as primary therapy for PTCL-NOS is still under investigation.[10] The progress of this patient is being monitored through regular follow-ups.

Conclusion:

Peripheral T cell lymphoma not otherwise specified can be solely present with cutaneous involvement and diagnosis of such cases can be very challenging. CTCL must be suspected in patients with patches, plaques, or nodules that persist for a long time despite conventional treatment. We should consider PTL-NOS as the initial diagnosis for such a presentation bearing in mind the rarity and aggressive nature of the disease and nonspecific immunohistochemical analysis, though Mycosis Fungoides is the most common form of CD4-positive CTCL . To diagnose such rare cases patient's history, physical examination, immunohistochemical techniques, and imaging findings should be carefully measured and optimal treatment must be started through combined chemotherapy or allogeneic bone marrow transplantation for a better outcome in these cases.

Conflict of interest:

None.

References:

1. Bolognia J, Jorizzo J, Rapini R Cutaneous T-cell lymphoma in Dermatology, Mosby/Elsevier, St. Louis, Mo, USA, 2008: 2017–2036.
2. Willemze R, Jaffe ES, Burg G et al. WHO-EORTC classification for cutaneous lymphomas. Blood. 2005 May 15;105(10):3768-85.
3. Federico M, Bellei M, Marcheselli L et al. Peripheral T cell lymphoma, not otherwise specified (PTCL-NOS). A new prognostic model developed by the International T cell Project Network. Br J Haematol. 2018 Jun;181(6):760-769.
4. Vasile D, Vladareanu AM, Bumbea H Peripheral T and NK cell non-hodgkin lymphoma a challenge for diagnosis. Maedica. 2014 Mar;9(1):104.
5. Aderhold K, Carpenter L, Brown K et al. Primary cutaneous peripheral T-cell lymphoma not otherwise specified: a rapidly progressive variant of cutaneous T-cell lymphoma. Case reports in oncological medicine. 2015;2015.
6. Dobos G, de Masson A, Ram-Wolff C et al. Epidemiological changes in cutaneous lymphomas: an analysis of 8593 patients from the French Cutaneous Lymphoma Registry. Br J Dermatol. 2021 Jun;184(6):1059-1067.
7. Criscione VD, Weinstock MA. Incidence of cutaneous T-cell lymphoma in the United States, 1973-2002. Arch Dermatol. 2007 Jul;143(7):854-9.
8. Paulli M, Berti E. Cutaneous T-cell lymphomas (including rare subtypes). Current concepts. II. Haematologica. 2004 Jan 1;89(11):1372-88.
9. Kempf W, Rozati S, Kerl K et al. Cutaneous peripheral T-cell lymphomas, unspecified/NOS and rare subtypes: a heterogeneous group of challenging cutaneous lymphomas. G ItalDermatolVenereol. 2012 Dec 1;147(6):553-62.
10. Rodriguez-Abreu D, Filho VB, Zucca E Peripheral T-cell lymphomas, unspecified (or not otherwise specified): a review. Hematological oncology. 2008 Jan;26(1):8-20.
11. Gallamini A, Stelitano C, Calvi R et al. Peripheral T-cell lymphoma unspecified (PTCL-U): a new prognostic model from a retrospective multicentric clinical study. Blood. 2004 Apr 1;103(7):2474-9.
12. Kung TA, Smith LB, Chung KC Atypical presentation of isolated peripheral T-cell lymphoma in the hand: Case report. The Journal of hand surgery. 2014 Apr 1;39(4):732-6.
13. Blakolmer K, Vesely M, Kummer JA et al. Immunoreactivity of B-cell markers (CD79a, L26) in rare cases of extranodal cytotoxic peripheral T-(NK/T-) cell lymphomas. Modern Pathology. 2000 Jul;13(7):766-72.