

Case Report

A case of primary cutaneous Langerhans cell sarcoma clinically mimicking pyogenic granuloma

臨床形似化膿性肉芽腫的原發性皮膚朗格漢斯細胞肉瘤一例

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Langerhans cell sarcoma (LCS) is a rare neoplasm of Langerhans cell lineage with prominent malignant cytological features. Currently, complex histological evaluation is required for accurate diagnosis and treatments providing have not been standardised due to its rarity. A thirty-five-year-old female patient presented with a solitary coin-sized dome-shaped mass on the left shin for two months. Histology confirmed Langerhans cell sarcoma with immunohistochemical stains being positive for S-100, Ki-67 and CD1a. Herein, we present a rare case of a single-site LCS in light of expanding the currently available knowledge on LCS and to underline the importance of immunohistochemical analysis since Langerhans cell sarcoma may cause diagnostic confusion due to clinical and histological similarities with other diseases.

朗格漢斯細胞肉瘤是一種罕見的朗格漢斯細胞系腫瘤，具有顯著的惡性細胞學特徵。礙於其罕有而尚未有標準化，目前需進行複雜的組織學評估才能確診此病。一名三十五歲的女病人在其左小腿前端出現了一個單一像硬幣般大小的圓拱形腫塊，歷時兩個月之久。綜合 S-100、Ki-67 和 CD1a 的免疫組織化學染色皆呈陽性，組織學證實為朗格漢斯細胞肉瘤。我們在這裡提出了一例罕見的單一位置朗格漢斯細胞肉瘤，希望能增長此病現有的認知，並強調免疫組織化學分析的重要性，來避免因朗格漢斯細胞肉瘤與其他疾病在臨床和組織學上的相似性，做成診斷上的混淆。

Keywords: Langerhans cell sarcoma, malignant melanoma, pyogenic granuloma

關鍵詞：朗格漢斯細胞肉瘤、惡性黑色素瘤、化膿性肉芽腫

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Introduction

Langerhans cell sarcoma (LCS) is a rare neoplasm of Langerhans cells with malignant cytological features and high mortality due to progression.¹ The World Health Organisation (WHO) classifies Langerhans cell tumours into LCS and Langerhans cell histiocytosis (LCH) based on cytological atypia and clinical aggressiveness.² Clinical presentation depends on the subtypes of the cells, involved organs, cutaneous features (encompassing papules and ulcerative plaques), and extracutaneous features such as fever, weight loss, lymphadenopathy, hepatosplenomegaly with pulmonary and bone involvement.³ While LCS commonly presents with multiple organ involvement, a focal and primary skin LCS without any extracutaneous site is rare with only a few cases reported.⁴ In addition to its vast clinical features, the similarity of microscopic features in metastatic cancer, malignant melanoma, anaplastic large cell lymphoma, and myeloid sarcoma hinders accurate diagnosis.⁵ Therefore, making the correct diagnosis can be challenging when LCS presents as a solitary cutaneous mass. We present a case of primary cutaneous LCS clinically masquerading as pyogenic granuloma with histological variation.

Case

A 35-year-old female patient presented with a solitary coin-sized dome-shaped mass on the left shin, which had been present for two months. Physical examination revealed 20 × 17 × 7 mm sized erythematous to slightly ulcerated granulation tissue with discharge and easy-bleeding nature (Figure 1). The patient did not have any symptoms and the lesion had slowly enlarged in size during the past few months. She had enjoyed good health with no medical conditions and had no family history of malignancy.

Laboratory findings, including complete blood count, biochemistry, and urinalysis were within the normal range. Incisional biopsy from the left shin showed extensive necrosis of epidermis with massive infiltration of histiocytes and dendritic cells in the overlying dermis (Figure 2A). Visible clear cells interspersed throughout the epidermis were seen on higher magnification (Figure 2B). Atypical large cells with pale cytoplasm containing hyperchromatic nuclei were noticeable with numerous numbers of mitotic cells (Figure 2C).

Immunohistochemical tests were conducted to rule out pagetoid presentation of malignant disorders



Figure 1. (A) Clinical image of the patient presenting solitary coin-sized dome shaped mass on left shin. (B) Close up image of the lesion elucidating 20 x 17 x 7 mm sized erythematous to slightly ulcerated granulation tissue with oozing discharge and easy-bleeding surface.

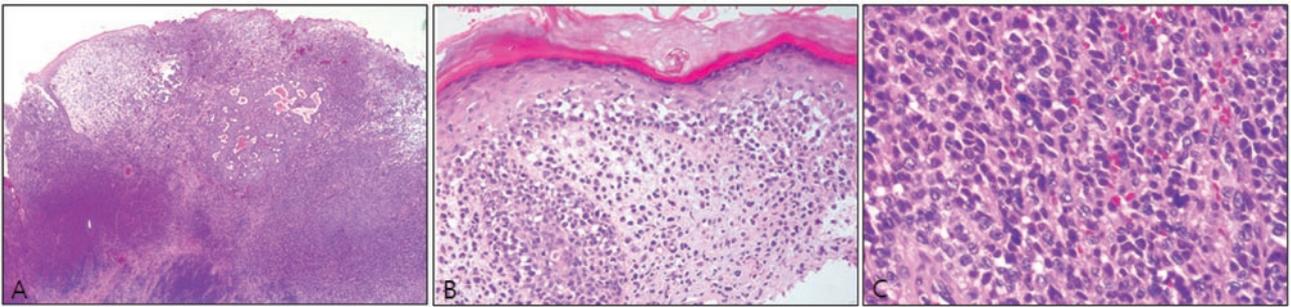


Figure 2. (A) Massive infiltration of histiocytes, dendritic cells overlying dermis (H&E x20). (B) Visible clear cells are interspersed throughout the epidermis on higher magnification (H&E x200). (C) Atypically large cells with pale cytoplasm containing hyperchromatic nuclei were noticeable with numerous numbers of mitotic cells (H&E x400).

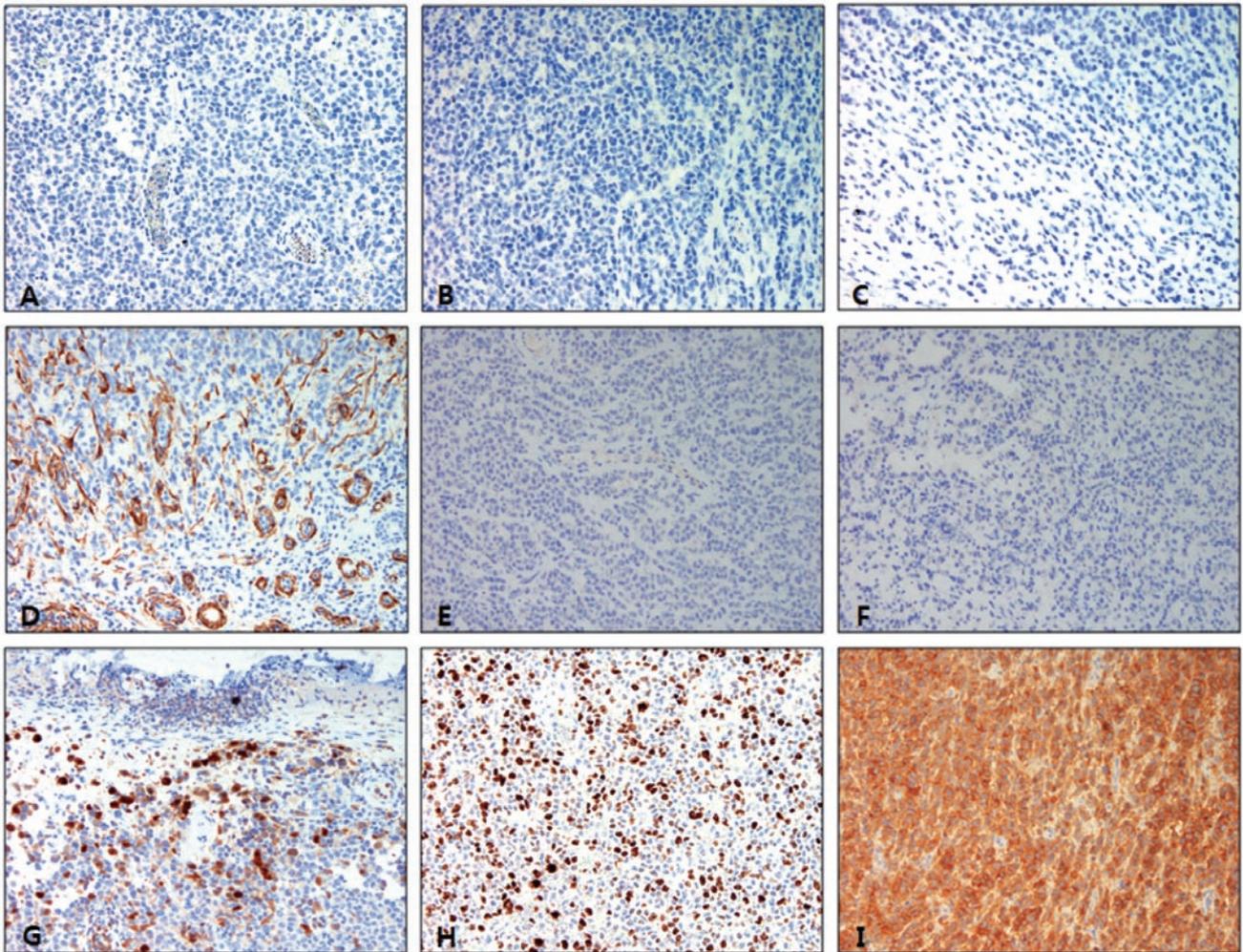


Figure 3. Tumour cells express negative immunoreactivity for (A) HMB 45 (x200), (B) Melan-A (x200), (C) Cytokeratin (CK20 x200), (D) Smooth muscle antigen (SMA x200) (E) CD 21 (x200), (F) CD 23 (x200). Positive immunoreactivity for (G) S-100 (x200), (H) Ki-67 (x200), (I) CD1a (x200).

such as malignant melanoma, extramammary Paget's disease, and myeloid sarcoma. Tests showed that the cells were negative for homatropine methylbromide 45 (HMB 45), melanocyte antigen (Melan-A), cytokeratin 20 (CK 20) and smooth muscle antigen (SMA) but positive for S-100 and Ki-67 (Figure 3A-G). The immunohistochemical findings were suggestive of a proliferative malignant disease but was inconclusive about the origin of the disease. Additional staining, including CD1a, CD21, and CD 23 was done of which CD1a was positive (Figure 3I). Based on these findings, the diagnosis was confirmed as LCS. A whole body positron emission tomography (PET) scan showed focal and mild fludeoxyglucose (FDG) uptake on the left lower shin, which was the site of the presenting lesion, and no evidence of abnormal hypermetabolic lesions to suggest lymph node invasion or distant metastasis. After discussion among a multi-disciplinary team of physicians, it was decided that wide excision of the lesion was the most appropriate treatment. The patient was referred to a plastic surgery department at another tertiary medical institution for a wide margin excision.

Discussion

Langerhans cell sarcoma is a rare neoplastic proliferation of Langerhans cells with marked malignant cytological features. Due to its rarity, a definite clinical spectrum from diagnosis to treatment modalities has not been characterised.⁵ Varying presentations and histological similarities with other malignant disorders present a diagnostic challenge.¹ According to a review by Howard et al, the most commonly affected sites at diagnosis were lymph nodes followed by skin, lung, liver, and spleen. Within the single-site cohort, the skin was most commonly involved and lesions usually presented as erythematous papules, ulcers, or plaques.^{1,2} However, the present case had an unusual presentation. The lesion had an eroded surface consisting of

granulomatous tissue that was prone to bleeding and discharge. To the best of our knowledge, these findings have never been reported in cases of Langerhans cell sarcoma, and thus may easily be mistaken as a pyogenic granuloma or granulomatous tissue caused by abscess; this further necessitates the importance of histological evaluation in tumorous lesions.

In terms of classification of the disease, the WHO 2008 classification defines LCS as neoplastic proliferation of Langerhans cells with apparent malignant cytological characteristics, thus further complicating the differential diagnosis with another similar but benign entity, LCH.¹ The Langerhans cell neoplasm retains a biological spectrum that makes it difficult to pinpoint whether a given lesion is LCH or LCS.³ Furthermore, Langerhans cell histiocytosis also possesses a pagetoid spread of clear cells and can only be differentiated from LCS by immunohistochemical staining.⁶ In the majority of cases, LCS is immunohistochemically positive for CD1a and S-100 protein and negative for CD 21 and CD 35. Ki-67 is higher in LCS than LCH.⁷ Notably, the patient in our case was initially suspected of having malignant melanoma which was subsequently excluded by negative staining of HMB 45 and Melan A. It is important to rule out other disease entities, such as cutaneous lymphomas, extramammary Paget's disease, and sarcomas through immunohistochemical stains. Recently, identification of langerin (CD207) was updated as a diagnostic criterion for Langerhans cell tumours.⁸ Additional studies indicate the BRAF 600E mutation as the underlying genetic causes and the rearrangement pattern of immunoglobulin heavy chains have been associated with LCS.⁹ In our case, positive CD1a and S-100 with other negative stains were sufficient to conclude the lesion as Langerhans cell originated tumour and studies such as CD 207 or genomic studies were not conducted.

Since LCS is rare, no standard treatment with good efficacy has been suggested to date.⁶ Local

resection is usually considered as the treatment of choice for focal LCS lesions while chemotherapy and radiotherapy are used for more advanced lesions. Modified ESHAP (etoposide, carboplatin, cytarabine, and methylprednisolone) and MAID (mesna, doxorubicin, ifosfamide, dacarbazine) regimens have been demonstrated to be effective in a proportion of patients.^{10,11} In addition, a cervical lymph node LCS treated with 59.4 Gy radiotherapy achieved complete remission without any recurrence for over 45 months.¹² In the current case, the patient showed no signs of metastasis, including the adjacent lymph nodes, and was concurrently referred for a wide excision of the lesion. Given the poor outcome and prognosis of LCS, more aggressive and effective standard therapies are urgently required and a careful follow-up plan is necessary. The present study reported a rare case of a single-site LCS in light of expanding the currently available knowledge on LCS. LCS may cause diagnostic confusion by clinical and histological similarities with other diseases. This should be distinguished from LCH with immunohistochemical studies together with long-term follow-up.

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