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CASE REPORT

Tumour-stage mycosis fungoides with large-cell transformation and partial CD30 expression clinically mimicking primary cutaneous anaplastic large cell lymphoma

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Abstract

Mycosis fungoides (MF) can progress to tumour stage with expression of CD30 antigens, creating a diagnostic overlap with other CD30 positive lymphoproliferative disorders, particularly cutaneous anaplastic large cell lymphoma (c-ALCL). Accurate distinction between these entities is essential, as they differ significantly in prognosis and management.

We report a 69-year-old man who presented with rapidly progressive, generalised cutaneous nodules with ulceration over a period of two months, on a background of chronic pruritic dermatosis. Histopathological examination of skin biopsies revealed sheets of large, atypical lymphocytes with diffuse CD3 and CD4 positivity and partial CD30 expression involving approximately 30 – 40% of tumour cells.

In the absence of uniform CD30 expression (>75%), and in the context of a preceding chronic dermatosis with widespread multifocal lesions, a diagnosis of tumour-stage MF with features suggestive of large cell transformation was favoured over c-ALCL following clinicopathological correlation.

This case highlights the diagnostic challenge posed by CD30-positive cutaneous lymphoid infiltrates and the importance of integrating clinical evolution, lesion distribution, histopathological features and quantitative immunophenotypic findings in establishing an accurate diagnosis.

Keywords: mycosis fungoides; tumour stage; large cell anaplastic lymphoma; cutaneous T-cell lymphoma; CD30 antigen

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Introduction

Mycosis fungoides (MF) is the commonest form of primary cutaneous T-cell lymphoma, which represents a heterogeneous group of non-Hodgkin lymphomas confined primarily to the skin. MF typically affects older adults, with a median age at diagnosis of 55-60 years.[1] The disease classically progresses through three stages: patch, plaque, and tumour that follows a protracted course over several years.[1]

In advanced stages, MF may undergo large-cell transformation (LCT), reported in approximately 20–55% of patients with advanced MF, and is associated with a more aggressive clinical course and poorer prognosis, with a mean 5-year survival of less than 20%.[2] This transformation can be associated with the expression of CD30, which may also be seen in a spectrum of cutaneous lymphoproliferative disorders. According to the WHO-EORTC classification, primary cutaneous CD30-positive lymphoproliferative disorders include lymphomatoid papulosis (LyP) and primary cutaneous anaplastic large cell lymphoma.[3] Differentiating between these entities is challenging but important, as they carry different prognostic and therapeutic implications.[4]

We report a patient with rapidly progressive, generalised cutaneous nodules that demonstrated partial CD30 expression on immunohistochemistry, which led to a diagnostic dilemma between c-ALCL and MF in tumour stage, with concern of large cell transformation. This case highlights the clinical and histological considerations that guided the determination of the final diagnosis.

Case Presentation

A 69-year-old man with a history of squamous cell carcinoma of the anus treated with abdominoperineal resection and adjuvant radiotherapy 10 years previously, and chronic obstructive pulmonary disease (COPD) with a cigarette smoking history of 20 pack-years, presented with a history of generalised exfoliation and pruritus of more than one year's duration. A previous skin biopsy done two months after the onset of symptoms showed non-specific histological features with a moderate perivascular lympho-histiocytic infiltrate and pigmented macrophages without evidence of atypical lymphoid infiltration. Despite treatment with emollients and topical corticosteroids, his cutaneous lesions failed to subside, and he developed diffuse generalized hyperpigmentation. Over the subsequent two months, he experienced a rapid eruption of multiple intensely pruritic skin nodules, some of which ulcerated, with progression from trunk to involve the upper and lower limbs, face, scalp, palms, and soles. He developed loss of eyebrows (madarosis), scalp alopecia, and multiple infiltrated hyperpigmented papules and nodules over his face and scalp. He denied fever, icterus, bleeding manifestations, abdominal pain, altered bowel habits, loss of appetite, but reported a significant unintentional weight loss of around 10kg over the past year.

On examination, he was of thin built with diffuse alopecia over the scalp and madarosis. There was generalised hyperpigmentation with multiple firm-to-hard, tender nodules ranging from 1×1cm to 3×4cm, some of which were ulcerated. These lesions were distributed over the trunk, face, scalp, upper and lower limbs, including the palms and soles. Multiple infiltrated papules and nodules, some with follicular prominence, deepening of facial furrows, and induration of the earlobes were noted, resulting in a leonine facies (Figure 1A-C). Bilateral inguinal lymphadenopathy was present, with hard nodes measuring 2×2cm on the right and 5×5cm on the left. There was no cervical or axillary lymphadenopathy, and no hepatosplenomegaly.

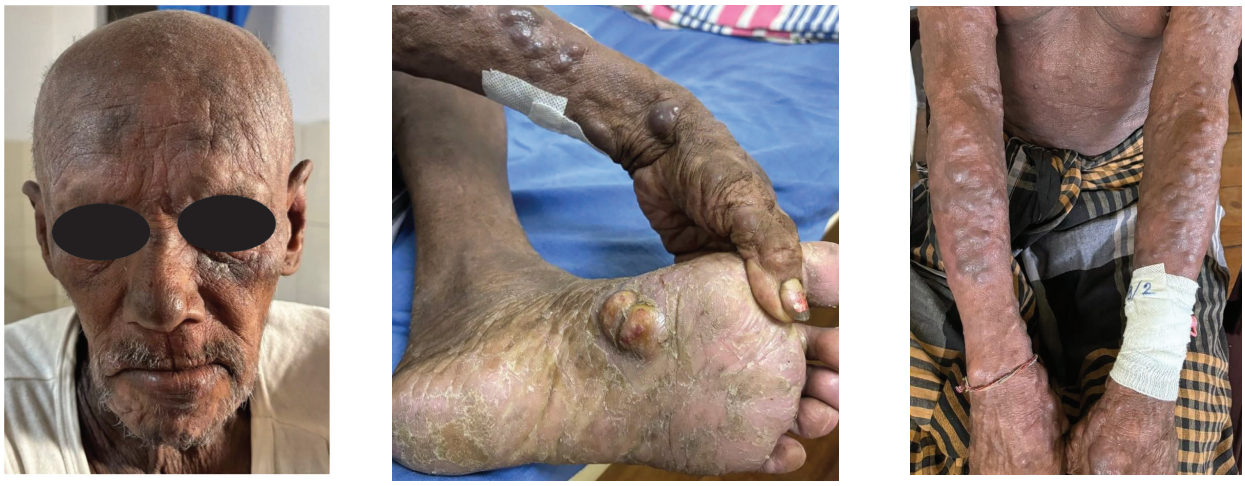
Baseline investigations, including full blood count, urinalysis, renal and liver functions, were normal. Inflammatory markers, including C-reactive protein and erythrocyte sedimentation rate, were normal. Ultrasonography of the abdomen did not reveal any hepatosplenomegaly or intraabdominal lymphadenopathy. Chest X-ray findings were in keeping with COPD features, with no hilar or lung masses. Contrast-enhanced computed tomography (CECT) scan of the chest, abdomen, and pelvis showed bilateral enlarged suspicious inguinal lymph nodes with cortical thickening, but no intra-abdominal, retroperitoneal, or pelvic lymphadenopathy and no hepatosplenomegaly. Colonoscopy performed to exclude the possibility of a recurrence of anorectal malignancy with cutaneous metastasis was unremarkable.

Diagnosis and Management: Histology of two deep incisional biopsies from skin nodules demonstrated sheets of large, atypical lymphocytes admixed with plasma cells, eosinophils, and a few neutrophils in the dermis. The neoplastic cells exhibited irregular nuclear contours and prominent nucleoli. Focal epidermotropism was identified (Figure 2A-D).

Immunohistochemical staining showed diffuse positivity for CD3 and CD4 in the large neoplastic lymphoid cells. Occasional and scattered lymphoid cells were positive for CD8. Approximately 30–40% of the neoplastic cells showed membrane staining for CD30 (Figure 3A-E). Anaplastic lymphoma kinase-1 (ALK-1) immunohistochemistry was not performed, as the histological and clinical picture did not suggest systemic ALCL with secondary skin involvement, and due to resource limitations. Excisional biopsy of an inguinal lymph node showed reactive changes without atypical lymphoid infiltration. Bone marrow biopsy was normal, and a peripheral blood flow cytometry showed 11% atypical lymphocytes by morphology. Immunophenotyping by flow cytometry showed 9.9% of CD3 dim positive, CD4 positive, CD8 negative, CD7 heterogeneously positive, CD5 negative T lymphocytes. According to ISCL/EORTC criteria, B2 (high blood tumour burden) requires ≥1000/μL Sézary cells, a CD4:CD8 ratio ≥10, or ≥40% CD4+CD7– or ≥30% CD4+CD26– T cells, while B1 denotes a low burden not meeting B2 criteria.[3] As the absolute Sézary-like cell count in our patient did not reach the B1 threshold and there was no erythroderma, this case was staged as B0, and Sézary syndrome was excluded.

Several differential diagnoses were considered, including MF, given the preceding exfoliative dermatitis for more than a year, progressing into tumour stage. The rapid evolution of cutaneous nodules raised the suspicion of a large cell transformation. c-ALCL was also considered, given the CD30-positive large cells seen on histological examination. LyP was considered unlikely given the absence of recurrent spontaneously regressing lesions. Following a multidisciplinary clinicopathological discussion, a diagnosis of tumour-stage MF, of TNMB staging T3 N1 M0 B0 and stage IIB, with features suggestive of large cell transformation was made. The multifocal distribution of lesions, preceding history of chronic pruritic dermatosis, and CD30 expression below the typical threshold for c-ALCL were considered in arriving at the diagnosis.

The patient was referred for oncological management and commenced on combination chemotherapy with intravenous cyclophosphamide, doxorubicin, vincristine, etoposide, and oral prednisolone. Concurrent skin-directed therapy with acitretin, topical corticosteroids, and emollients was also initiated. Unfortunately, despite the initiation of chemotherapy, the patient succumbed to the illness.



A **B** **C**

Figure 1. Clinical features of tumour-stage mycosis fungoides. (A) Leonine facies with madarosis, deepening of facial furrows, and indurated skin-coloured papules. (B) Hyperpigmented cutaneous nodules involving the upper limbs and soles. (C) Numerous hyperpigmented nodules with smooth surfaces involving the forearms and trunk.

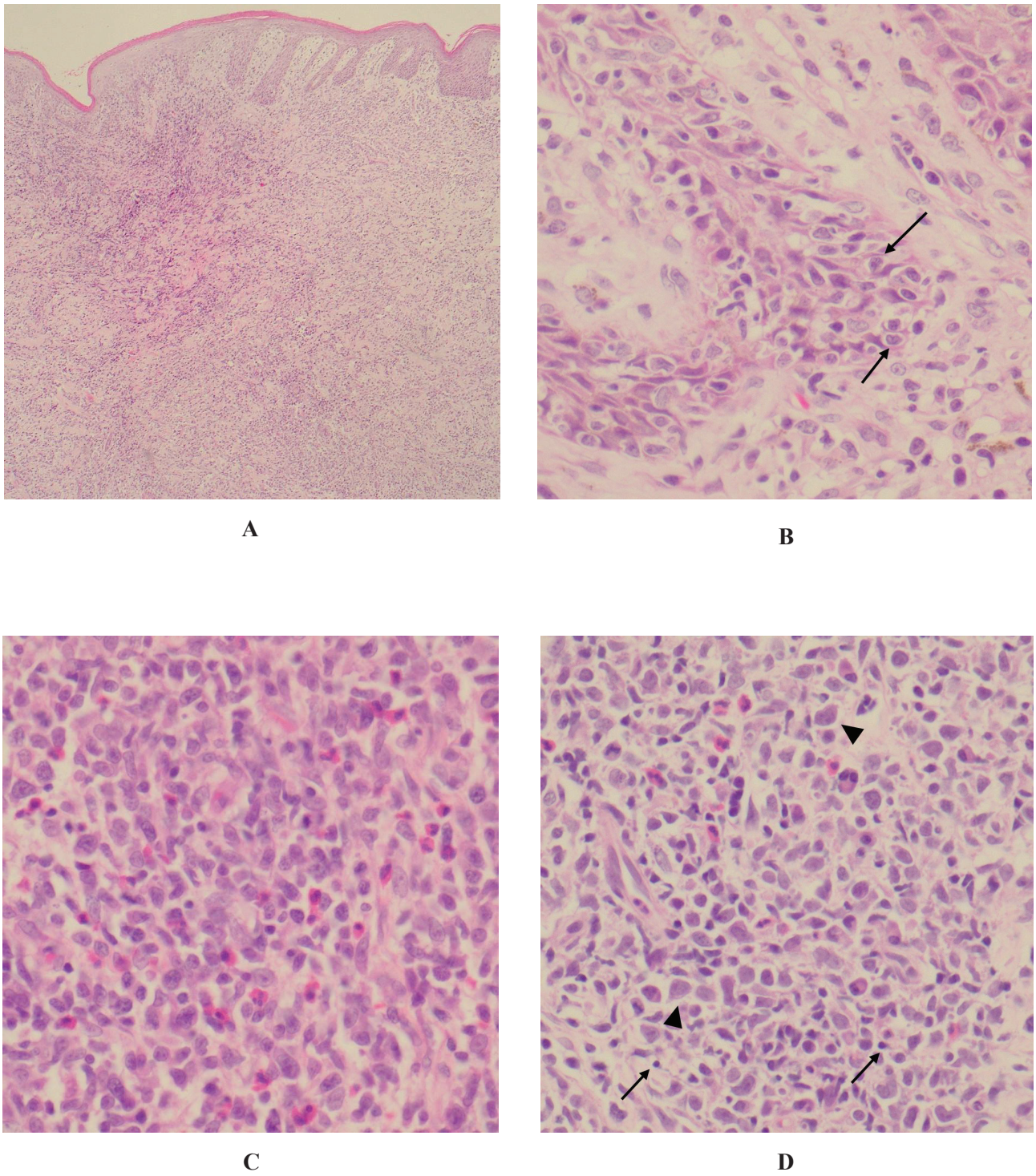


Figure 2. Histopathological features. (A) Diffuse and predominant atypical lymphoid proliferation extending into the deep dermis (H&E, x40). (B) Epidermotropism showing epidermal tagging of atypical lymphoid cells with cerebriform nuclei (arrows) (H&E, x400). (C) Large atypical lymphoid cells admixed with eosinophils; some cells show irregular, folded nuclei with prominent nucleoli (H&E ×400). (D) Large-cell transformation. Tumour cells (>4× the size of small lymphocytes) indicated by arrowheads; small lymphocytes indicated by arrows (H&E ×400).

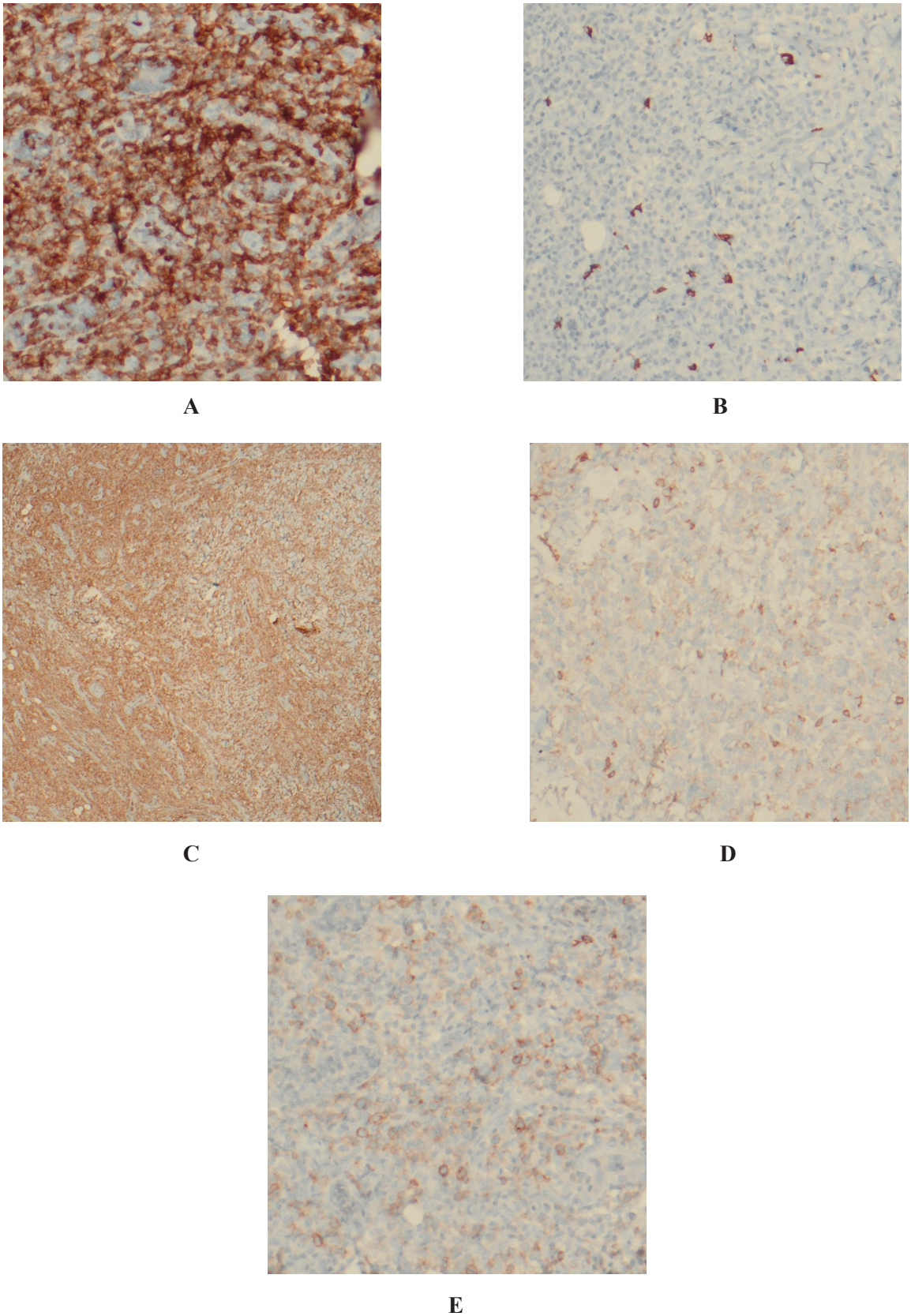


Figure 3. Immunohistochemical findings. (A) CD3: diffuse staining in neoplastic lymphoid cells (IHC ×200). (B) CD20: occasional scattered resting B lymphocytes (IHC ×200). (C) CD4: diffuse staining in neoplastic lymphoid cells (IHC ×100). (D) CD8: scattered lymphoid cells showing positivity (IHC ×200). (E) CD30: Golgi and membranous positivity in a significant proportion of neoplastic lymphoid cells (IHC ×200).

Discussion

This case highlights the clinical and histopathological criteria to be considered to differentiate between skin lesions demonstrating CD30 positivity on immunohistochemical examination.

This patient's history of a chronic generalized pruritus and exfoliation over one year, which later evolved into rapidly progressing nodules, fits the classical history of MF evolving into tumour stage. While epidermotropism of atypical lymphocytes with cerebriform nuclei is recognized as a hallmark of mycosis fungoides (MF), this characteristic may or may not be present during the tumour stage.

The rapid evolution of tumours indicates a possible large cell transformation. Histologically, large cell transformation in MF is defined by the presence of >25% of large cells (≥4 times the size of a small lymphocyte) in the infiltrate or forming microscopic nodules, in which the cells may be either CD30 positive or negative.[5]

CD30 antigen can be expressed across a spectrum of lymphoproliferative disorders, including tumour stage of MF, large cell transformation of MF, lymphomatoid papulosis (LyP), systemic anaplastic large cell lymphoma with secondary skin involvement, and c-ALCL.[1] Histologically, these may show considerable overlap, and

Table 1. Comparison between tumour-stage mycosis fungoides with large-cell transformation and cutaneous anaplastic large-cell lymphoma.[5]

	Tumour stage MF with large cell transformation	c-ALCL
Clinical features	History of long-standing dermatosis (patch/plaque stage), pruritus	Typically, no preceding dermatosis
	The gradual progression of multiple generalized nodules may become rapid with transformation	Often rapid onset, solitary or localized nodules commonly involving limbs
	Extracutaneous disease, including lymphadenopathy, may be present	Usually, no extracutaneous disease
Histopathology	Dermal infiltrate with >25% large, atypical lymphocytes or sheets of large cells; background small cerebriform lymphocytes	Diffuse sheets of large anaplastic (with hallmark horseshoe/kidney-shaped nuclei), pleomorphic or immunoblastic cells. Abundant neutrophils and eosinophils
		No epidermotropism
Immunophenotyping	CD30 - Variable, usually <75% of tumour cells	CD 30 - Strong, diffuse, >75% of tumour cells
	CD3+, CD4+; variable loss of CD7	CD4+; usually ALK negative (cutaneous type)
		Variable loss of pan-T cell markers (e.g., CD3)
Prognosis: 5-year overall survival	Poor (45%)	Good (77.4%)

clinicopathological correlation is essential for accurate diagnosis. c-ALCL typically presents with solitary or localized rapidly enlarging tumours, commonly affecting the limbs, without a preceding dermatosis.[5] In contrast, transformed MF usually occurs in patients with a known or clinically suspected history of patch or plaque stage disease, as seen in our patient with antecedent exfoliative dermatitis and pruritus. LyP characteristically demonstrates recurrent, self-healing papulonodular lesions with a waxing and waning course, which was absent in this case. Systemic ALCL with secondary skin involvement, particularly ALK-negative ALCL, may be morphologically indistinguishable from c-ALCL and therefore requires exclusion through staging investigations and clinical assessment for extracutaneous disease.

c-ALCL is defined as a tumour composed of large cells with anaplastic, pleomorphic, or immunoblastic morphology that expresses the CD30 antigen in >75% of tumour cells and carries a better prognosis.[4] In contrast, MF, particularly in tumour stage with large cell transformation, will have variable CD30 positivity, typically in <75% of the infiltrate. Although the >75% CD30 positivity threshold supports a diagnosis of c-ALCL, no single immunohistochemical marker reliably distinguishes c-ALCL from CD30-rich transformed MF, and a substantial proportion of cases show overlap.[4]

Clinically, a preceding dermatosis suggestive of MF, multiple lesions on the trunk, extracutaneous disease including lymphadenopathy, all of which were seen in this patient, favour a diagnosis of tumour stage of MF over c-ALCL. A previously reported case series of 45 patients with transformed MF, of which CD30 positivity was present in 31%, transformation commonly occurred several years after the initial diagnosis of MF, with a median interval of 6.5 years.[6] Some patients had a long-standing history of dermatitis clinically suggestive of MF prior to histological confirmation, similar to the current case.

A comparison between the tumour stage of MF with large cell transformation and c-ALCL about their clinical features, histopathology, immunophenotyping and prognosis is shown in Table 1. A schematic diagnostic algorithm used to differentiate the types of cutaneous lymphomas is shown in Figure 4.

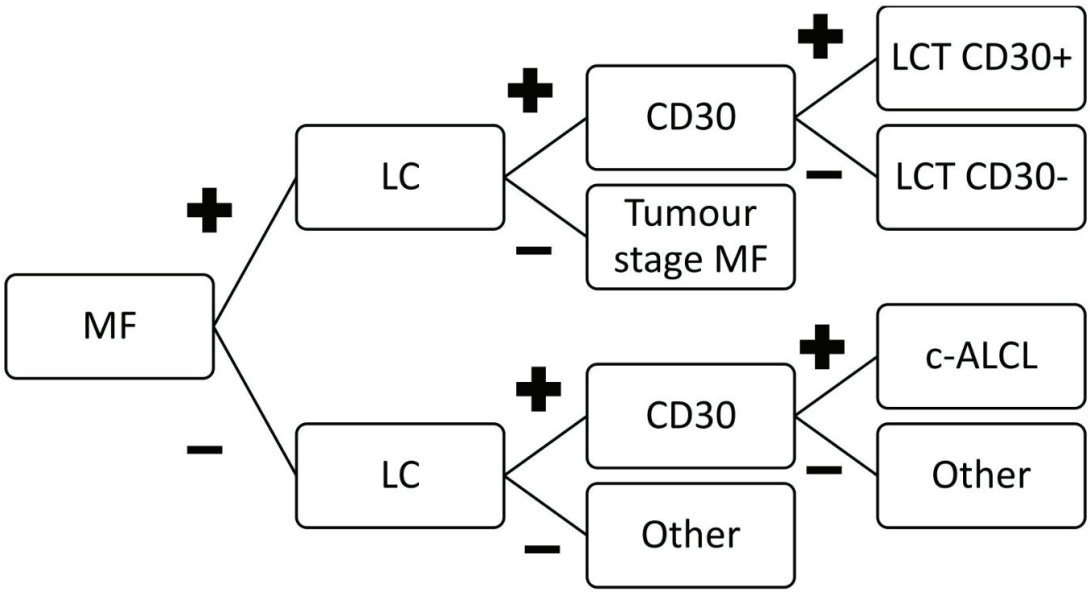


Figure 4. Diagnostic algorithm for cutaneous lymphomas. (Adapted from US Cutaneous Lymphoma Consortium[5]). The algorithm is based on the presence or absence of 3 features (indicated as '+' or '-'): (1) pre-existent mycosis fungoides (MF); (2) large-cell lymphoma cytology (LC); and (3) CD30 expression by large cells. "Other" refers to non-MF T-cell lymphomas that can affect the skin.

c-ALCL, cutaneous anaplastic large-cell lymphoma; LCT, large-cell transformation.

CD30 expression in transformed MF may carry therapeutic and prognostic implications. CD30-positive transformed MF is generally associated with better outcomes, compared to CD30-negative disease, and CD30-targeted therapy with brentuximab vedotin has demonstrated efficacy in CD30-positive cutaneous T-cell lymphomas, including transformed MF.[7]

Conclusion

Tumour stage of MF with partial CD30 positivity, especially in the presence of large cell transformation, can pose a diagnostic challenge due to its close resemblance to other CD30-positive lymphoproliferative disorders, particularly c-ALCL. A strong clinicopathological correlation is needed as CD30 expression must be interpreted considering the clinical evolution, distribution of lesions, and quantitative immunohistochemistry.

Ethics statement

Informed written consent for publication of the patient's clinical details and images was obtained from the patient's next of kin, as the patient had died prior to consent for publication being secured. During his lifetime, the patient had provided consent for clinical photographs to be taken and used for academic and publication purposes. All efforts have been made to preserve patient anonymity.

Authors' contribution

ADS contributed to the writing of the original manuscript draft and clinical management of the patient. LD contributed to the manuscript draft, clinical photography, and clinical management of the patient. ND, KR, and HJ were involved in the investigation and clinical management of the patient. RE performed the histopathological analysis and provided pathological photographs. SK, as a consultant histopathologist, supervised histopathological analysis, provided pathological photographs, and supervised the manuscript. JA was the treating consultant dermatologist and contributed to the conceptualisation of the report and supervised the manuscript. All authors contributed, critically reviewed, and approved the final version of the manuscript for publication.

References

1. Bolognia JL, Schaffer JV, Cerroni L, Callen JP, editors. Dermatology. 5th ed. Philadelphia: Elsevier; 2025.
2. Pulitzer M, Myskowski PL, Horwitz SM, et al. Mycosis fungoides with large cell transformation: clinicopathological features and prognostic factors. Pathology. 2014;46(7):610-6. doi:10.1097/PAT.0000000000000166
3. Willemze R, Cerroni L, Kempf W, Berti E, Facchetti F, Swerdlow SH, et al. The 2018 update of the WHO-EORTC classification for primary cutaneous lymphomas. Blood. 2019;133(16):1703–14. doi: 10.1182/blood-2018-11-881268
4. Fauconneau A, Pham-Ledard A, Cappellen D, et al. Assessment of diagnostic criteria between primary cutaneous anaplastic large-cell lymphoma and CD30-rich transformed mycosis fungoides; a study of 66 cases. Br J Dermatol. 2015;172(6):1547-54. doi: 10.1111/bjd.13690
5. Kadin ME, Hughey LC, Wood GS. Large-cell transformation of mycosis fungoides–differential diagnosis with implications for clinical management: A consensus statement of the US Cutaneous Lymphoma Consortium. J Am Acad Dermatol. 2014;70(2):374-6. doi: 10.1016/j.jaad.2013.09.007
6. Vergier B, de Muret A, Beylot-Barry M, Vaillant L, Ekouevi D, Chene G, et al. Transformation of mycosis fungoides: clinicopathological and prognostic features of 45 cases. French Study Group of Cutaneous Lymphomas. Blood. 2000;95(7):2212–8.
7. Travaglino A, Russo D, Varricchio S, Pignatiello S, Baldo A, Picardi M, et al. Prognostic Significance of CD30 in Transformed Mycosis Fungoides. Am J Clin Pathol. 2021;156(3):350–5. doi: 10.1093/ajcp/aqaa261