# Primary cutaneous T-cell lymphoma occurring after organ transplantation

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Lymphoma occurring after organ transplantation has been well described. The majority of cases are B-cell lymphomas and are usually associated with Epstein-Barr virus. Only a minority of posttransplant lymphomas are of T-cell origin, and primary cutaneous T-cell lymphoma (CTCL) is extremely rare. In this article, we report a case of cutaneous peripheral T-cell lymphoma, pleomorphic $CD30^+$ large-cell type, and review the literature relating to posttransplant primary CTCL. Of the 23 cases of posttransplant primary CTCL, 5 patients had erythrodermic disease, and 8 had primary cutaneous anaplastic large cell lymphoma. In addition, there are two cases of mycosis fungoides, one case of subcutaneous panniculitis-like T-cell lymphoma, one case of $CD30^+$ lymphomatoid papulosis, and 6 cases of peripheral T-cell lymphoma, of which 3 were $CD30^+$ large cell lymphomas. Seventeen cases had renal transplants and the majority received both cyclosporine and azathioprine. No consistent viral association was noted among these cases. The sex ratio was 18:5 (male/female), and the mean age at diagnosis was 53 years. Mean time from transplantation to diagnosis is 6.4 years and mean survival time from diagnosis is 14.5 months. The prognoses normally associated with particular subsets of CTCL do not apply in the posttransplant setting. (J Am Acad Dermatol 2006;54:668-75.)

Diagnosis and classification of posttransplant primary cutaneous T-cell lymphoma can be difficult. Most patients, including the case described below, will develop aggressive disease and are unlikely to survive beyond the first year after diagnosis.

*Abbreviations used:*

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| ALCL: | anaplastic large-cell lymphoma |
| CTCL: | cutaneous T-cell lymphoma |
| EBV: | Epstein-Barr virus |
| EORTC: | European Organization for the Treatment and Research of Cancer |
| HHV: | human herpesvirus |
| ISH: | in situ hybridization |
| MF: | mycosis fungoides |
| NHL: | non-Hodgkin's lymphoma |
| PCALCL: | primary cutaneous anaplastic large cell lymphoma |
| PCR/SSCP: | polymerase chain reaction/single-strand conformation polymorphism |
| PTLD: | posttransplant lymphoproliferative disorder |
| RR: | relative risk |
| WHO: | World Health Organization |

## CASE REPORT

A 53-year-old white man had received a cadaveric kidney transplant more than 10 years earlier for end-stage renal failure secondary to chronic glomerulonephritis. He had subsequently been maintained on immunosuppressive therapy with cyclosporine, 230 mg daily, and prednisolone, 5 mg daily. Two years before referral, a scaly lesion had developed above the right eyebrow. This was initially treated with cryotherapy, but was later curetted and reported as Bowen's disease. In June 2001, a tumor developed at the same site as well as lesions involving the scalp, neck (Fig 1), and axilla. In addition, there was bilateral submandibular and axillary lymphadenopathy. The dermal nodules subsequently became more extensive, such that there was confluent involvement of the scalp with hair loss and confluent lesions around the neck with nodules on the trunk and arms.

Histology of the cutaneous lesions showed that the entire dermis had been replaced by an infiltrate of large pleomorphic cells containing numerous mitotic figures (Figs 2 and 3). In some areas there was marked epidermotropism with intraepidermal collections of large atypical lymphocytes.

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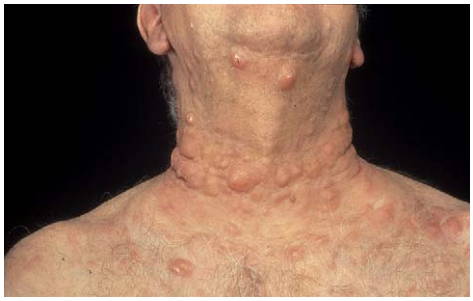

**Fig 1.** Multiple extensive tumors on the neck.

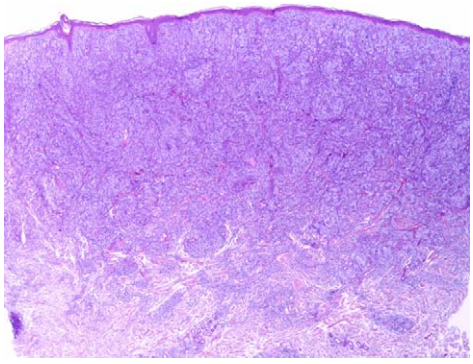

**Fig 2.** Low-power view shows widespread tumor infiltration. (Hematoxylin-eosin stain.)

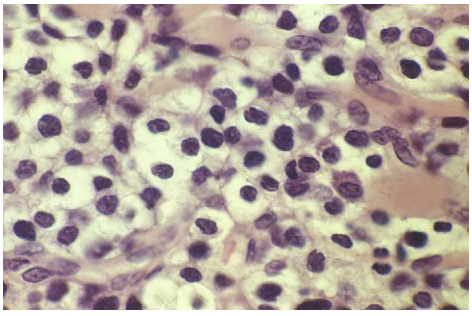

**Fig 3.** High-power view showing large pleomorphic cells containing numerous mitotic figures. (Hematoxylin-eosin stain.)

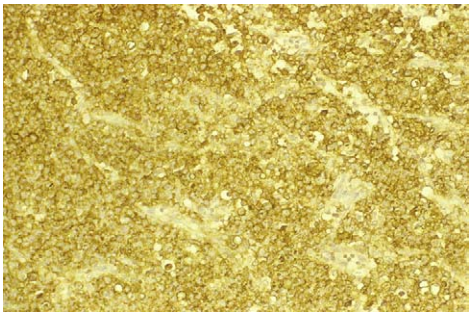

**Fig 4.** Tumor cells are $CD30^+$.

Immunophenotyping showed that the neoplastic cells were $CD2^+$, $CD3^+$, $CD4^+$, and $CD30^+$ (Fig 4), $CD8^-$, $CD20^-$, and $CD56^-$, and were negative for cytotoxic granules TIA-1 and granzyme B. Immunostaining for Epstein-Barr virus (EBV) with latent membrane protein-1 and in situ hybridization (ISH) for Epstein-Barr encoded RNA was negative. Anaplastic lymphoma kinase staining for the t(2:5) fusion protein was negative, indicating that this was not a systemic anaplastic large cell lymphoma (ALCL) with secondary cutaneous involvement. Review of the original skin biopsy specimen taken from the right eyebrow showed that at the margin of this lesion, there was an identical infiltrate of large pleomorphic cells. Fine needle aspiration from a submandibular node showed large lymphoid cells with the same cytologic features and immunophenotype as the cutaneous infiltrate. Polymerase chain reaction/single-strand conformation polymorphism (PCR/SSCP) analysis of the T-cell receptor gene revealed a T-cell clone in the skin and blood using the V gamma 1 consensus primer. The blood film, however, showed no evidence of any atypical cells and the CD4/CD8 ratio was normal. Lactate dehydrogenase was within normal limits and human T-lymphotropic virus serology was negative. Computed tomographic scanning of the neck, chest, abdomen, and pelvis showed extensive subcutaneous thickening of the skin around the occiput. There was also cervical, supraclavicular, axillary, and inguinal lymphadenopathy. Bone marrow examination was not performed.

The classification of this case was problematic. Review of the original histologic material indicated that the initial presentation was cutaneous, as it demonstrated $CD30^+$ large cell lymphoma 2 years before nodal involvement. The $CD4^+$ phenotype and epidermotropism raised the possibility of mycosis fungoides (MF), but the earliest skin pathology did not show small to medium-sized lymphocytes. According to the European Organization for Research and Treatment of Cancer (EORTC) classification, this case should be classified as a primary cutaneous large cell lymphoma of T-cell origin, and the CD30 positivity would be expected to confer a favorable prognosis.[1] However, the World Health Organization (WHO) classification does not recognize $CD30^+$ large-cell lymphomas in the skin unless the cytology is anaplastic.[2] According to the WHO classification, therefore, our patient has a peripheral T-cell lymphoma with a cutaneous presentation. The new combined WHO-EORTC classification brackets all $CD30^+$ large-cell lymphomas with primary cutaneous peripheral T-cell lymphoma (PCALCL); therefore under this joint classification, this case would fit in the spectrum of primary cutaneous $CD30^+$ lymphoproliferative disorders.[3]