CASE REPORT

Plasmablastic lymphoma presenting as a paravertebral mass in a patient with Crohn's disease after immunosuppressive therapy

M Redmond, J Quinn, P Murphy, S Patchett, M Leader

J Clin Pathol 2007;60:80–81. doi: 10.1136/jcp.2006.037556

The case of a 32-year-old man with a paravertebral mass and skin nodules, occurring against a background of immunosuppressive therapy for Crohn's disease, is presented. The tumours showed morphological and immunophenotypical features of plasmablastic lymphoma. To our knowledge, this is the first reported case of plasmablastic lymphoma presenting in this location, and also after immunosuppression with infliximab treatment for Crohn's disease.

A 32-year-old man with a 17-year history of Crohn's disease received immunosuppressive therapy for an exacerbation in 2003. His maintenance treatment 1 year previously was azathioprine 100 mg daily and corticosteroids. After the exacerbation, 11 courses of infliximab, 5 mg/kg intravenous infusion every 8 weeks, were given. Subsequent to the 11th course, the patient experienced back pain, night sweats and weight loss. A magnetic resonance imaging scan showed a paravertebral soft tissue mass, 6×3 cm, involving the vertebral and posterior elements of L4. Incisional biopsy specimens showed cores of tissue infiltrated by cells with abundant eosinophilic cytoplasm and centrally or eccentrically located nuclei, with evidence of plasmacytic differentiation. Some cells showed large prominent nucleoli, others showed binucleate forms. Numerous mitotic figures were identified (fig 1).

Immunophenotypically, the cells were negative for the B cell markers CD20 and CD79a, and strongly positive for CD38, CD138, CD3 and vimentin. The features were indicative of a plasma cell tumour. A diagnosis of plasmacytoma with some

plasmablasts was made, and treatment with field radiotherapy was started.

One month later, skin nodules developed on the patient's scalp, elbows and inguinal area, measuring up to 4 cm in diameter. Histological examination showed skin infiltrated by atypical lymphoid cells, in a nested pattern, showing plasmablastic features. The mitotic rate was brisk. The neoplastic cells were positive for CD138 (fig 2) and CD3, and negative for CD20, CD79a and CD38. In situ hybridisation for Epstein-Barr virus (EBV) by EBV-encoded RNA probe performed on the skin biopsy was positive.

Positron emission tomography and magnetic resonance imaging scans showed abnormal signals throughout both sides of the pelvis, extending into the upper femora. Subsequent investigations, including bone marrow aspirate and trephine, serum light chains and complete blood count, were normal.

The morphological and immunophenotypical features of the skin lesions were in keeping with EBV-positive plasmablastic lymphoma (PBL). The lack of mature plasma cells and a monoclonal gammopathy, along with a brisk mitotic rate, were further evidence discouraging the diagnosis of multiple myeloma.

The patient was treated with a combination of intensive chemotherapy (hyperCVAD; hyperfractionated cyclophosphamide, vincristine, doxorubicin and dexamethasone) and radiotherapy. This produced marked symptomatic improvement and disappearance of the skin lesions; however, repeat magnetic resonance imaging and positron emission tomography scans showed persistent abnormalities in the pelvis, believed to represent healing rather than persistent disease. Immunosuppressive therapy was discontinued, and the Crohn's disease was managed with an elemental diet and mesalazine.

DISCUSSION

PBL is a relatively new entity, considered a rare variant of diffuse large B cell lymphoma, with a unique immunophenotype.¹ It has typically been reported in association with HIV infection, often showing a predilection for oral mucosa and the jaw.¹

Numerous single case reports of PBL presenting in HIV-negative patients have been described, including PBL presenting as a lung tumour, a nasal cavity mass, a gastric tumour, a variant of Richter's syndrome, a cervical node mass and an isolated cutaneous mass.^{2–7} It has also been described after cardiac and renal transplantation.^{8,9} The entity has also been recorded in a patient with ulcerative colitis after long-term azathioprine treatment.⁹ PBL in HIV-positive patients in extra-oral locations has also been described, including presentation as a mass in the right nostril and as perianal and anorectal

Figure 1 Neoplastic cells with prominent nucleoli and mitotic figures.

Abbreviations: EBV, Epstein-Barr virus; PBL, plasmablastic lymphoma

Figure 2 Neoplastic cells, positive for CD138.

masses.¹⁰ There are no reports of PBL occurring in patients with Crohn's disease or after treatment with infliximab.

Morphologically, the tumour is composed of large cells with plasmacytoid differentiation. The cells are negative for CD45 and conventional B cell markers, but show strong reactivity for markers of plasma cell differentiation, CD38 and CD138.¹¹ In addition, light chain and IgG heavy chain restriction may be encountered.¹⁰ Aberrant CD3 expression has been observed in some tumours positive for EBV.¹² The differential diagnosis includes poorly differentiated carcinoma, anaplastic plasmacytoma, lymphoblastic lymphoma, Burkitt's lymphoma (plasmablastic variant) and anaplastic lymphoma kinase-1-positive large B cell lymphoma.⁹ The distinct morphological and immunophenotypical phenotype of PBL should allow its differentiation from the above entities.

This case is unusual for three reasons: to our knowledge, this is the first case of PBL presenting in a patient with Crohn's disease; it is the first report of PBL occurring after treatment with infliximab; and it is the first report of PBL presenting as a paravertebral mass.

The development of lymphoproliferative disorders is a known complication of immunosuppressive therapy. EBV is also a known cofactor in several AIDS-related non-Hodgkin's lymphomas.¹⁰ EBV is likely to have a role in tumorigenesis, and although the pathophysiology is unclear, it has been shown to induce plasma cell differentiation of B cells in vitro.⁹ This case highlights the importance of both these known factors. Presumably, the patients' compromised immune status allowed

an EBV-driven proliferation to develop, similar to that seen in post-transplant and HIV-positive patients.

Diagnosis of PBL in patients who are not HIV positive is rare; however, it is important to consider this clinically heterogeneous entity in patients with immunosuppression.

ACKNOWLEDGEMENTS

We thank Professor Elaine Jaffe, Department of Haematopathology, National Cancer Institute, Bethesda, Maryland, USA.

Authors' affiliations

M Redmond, S Patchett, Beaumont Hospital, Dublin, Ireland
J Quinn, P Murphy, Department of Haematology, Beaumont Hospital, Dublin, Ireland
M Leader, Department of Histopathology, Beaumont Hospital, Dublin, Ireland

Competing interests: None.

Written consent has been obtained for the publication of this study.

Correspondence to: Dr M Redmond, Department of Histopathology, Beaumont Hospital, Dublin, Ireland; maeve_redmond@yahoo.ie

Accepted 8 February 2006

REFERENCES

- 1 **Flaitz CM**, Nichols CM, Walling DM, *et al*. Plasmablastic lymphoma: an HIV-associated entity with primary oral manifestations. *Oral Oncol* 2002;**38**:96–102.
- 2 **Lin Y**, Rodrigues GD, Turner JF, *et al*. Plasmablastic lymphoma of the lung: report of a unique case and review of the literature. *Arch Pathol Lab Med* 2001;**125**:282–5.
- 3 **Nguyen DD**, Loo BW, Tillman G, *et al*. Plasmablastic lymphoma presenting in a human immunodeficiency virus-negative patient: a case report. *Ann Hematol* 2003;**82**:521–5.
- 4 **Pruneri G**, Graziadei G, Ermellino L, *et al*. Plasmablastic lymphoma of the stomach. A case report. *Haematologica* 1998;**83**:87–9.
- 5 **Robak T**, Urbanska-Rys H, Strzelecka B, *et al*. Plasmablastic lymphoma in a patient with chronic lymphocytic leukaemia heavily pretreated with cladribine (2-CdA): an unusual variant of Richter's syndrome. *Eur J Haematol Suppl* 2001;**67**:322–7.
- 6 **Lin F**, Zhang K, Quiery A, *et al*. Plasmablastic lymphoma of the cervical lymph nodes in a human immunodeficiency virus-negative patient: a case report and review of the literature. *Arch Pathol Lab Med* 2004;**128**:581–4.
- 7 **Jordan LB**, Lessells AM, Goodlad JR, *et al*. Plasmablastic lymphoma arising at a cutaneous site. *Histopathology* 2005;**46**:113.
- 8 **Nicol I**, Boye T, Carsuzaa F, *et al*. Post-transplant plasmablastic lymphoma of the skin. *Br J Dermatol* 2003;**149**:889.
- 9 **Teruya-Feldstein J**, Chiao E, Filipa A, *et al*. CD20-negative large-cell lymphoma with plasmablastic features: a clinically heterogeneous spectrum in both HIV-positive and -negative patients. *Ann Oncol* 2004;**15**:1673–9.
- 10 **Chetty R**, Hlatwayo N, Muc R, *et al*. Plasmablastic lymphoma in HIV+ patients: an expanding spectrum. *Histopathology* 2003;**42**:605–9.
- 11 **Colomo L**, Loong F, Rives S, *et al*. Diffuse B-cell lymphomas with plasmablastic differentiation represent a heterogeneous group of disease entities. *Am J Surg Pathol* 2004;**28**:736–47.
- 12 **Beatty MW**, Kumar S, Sorbara L, *et al*. A biophenotypic human herpesvirus 8-associated primary bowel lymphoma. *Am J Surg Pathol* 1999;**23**:992–4.