PostScript

LETTERS TO THE EDITOR

Primary cardiac post-transplantation lymphoproliferative disorder—T cell type: a case report and review of the literature

Post-transplantation lymphoproliferative disorder (PTLD) has been recognised as a significant complication affecting 2% of all organ allograft recipients.¹ The incidence of PTLD has increased in recent years because of the steady increase in the number of organs transplanted.¹ The early diagnosis of PTLD is complicated by its wide spectrum of clinical presentations and the difficulty in distinguishing it from other more frequent complications—allograft rejection and opportunistic infection.

Case report

A 20-year-old man presented with fever, headache and cough. He was a recipient of live-related

renal allograft 7 years previously, at which time he started receiving standard immunosuppressive treatment. He was found to be positive for hepatitis B s antigen and e antigen. Other systemic examinations were normal.

Laboratory tests revealed bicytopenia. Despite appropriate antibiotic coverage, the patient sustained cardiac arrest.

A complete autopsy was performed after obtaining informed consent. A grey-white fish flesh mass measuring 2×1.5×1.5 cm was noted in the pericardium (fig 1A). Microscopically, the mass comprised a monomorphic population of tumour cells possessing oval and indented nuclei with prominent nucleoli (fig 1B). The cells infiltrated the myocardium, encroaching up to the inner surface of the endocardium. Vascular dissemination of the tumour to capillaries of the lung, sinusoids of the spleen and liver, choroid plexus (fig 1C) and kidney (fig 1D) was noted. Immunostaining for CD45, CD20, CD3, CD5, epithelial membrane antigen, anaplastic lymphoma kinase 1 protein and Epstein-Barr virus-related latent membrane protein-1 antigen (Dako, Glostrup, Denmark) was per-

formed. The cells showed positivity for leucocyte common antigen, CD3 (fig 1E) and CD5 only. Bone marrow revealed erythroid hyperplasia and haemophagocytosis.

Discussion

According to the World Health Organization, PTLD has been classified as:

- an early lesion: reactive plasmacytic hyperplasia and infectious mononucleosis-like;
- PTLD, polymorphic: polyclonal and monoclonal;
- PTLD, monomorphic: B cell lymphomas and T cell lymphomas; and
- others.

T cell PTLD was first described in 1987,² and since then >70 cases have been described. The incidence of T cell lymphomas after solid organ transplant is approximately 14%.³ In comparison with B cell PTLD, T cell PTLD tends to occur later, is less likely to involve the allograft and is less frequently associated with Epstein-Barr virus infection (33%). T cell PTLD is also different in

Figure 1 Heart involvement seen at a (A) gross level (arrow); (B) immature lymphoid cells infiltrating the myocardium (×200, H&E stain). Disseminated vascular spread into (C) choroid plexus (×200, H&E stain) and (D) peritubular capillaries of native kidney (×200, H&E stain). (E) CD3 immunostain showing cytoplasm positivity (×400, immunoperoxidase).

Table 1 Review of T cell lymphomas affecting the heart after organ transplantation

Case	Sex	Age at Dx (years)	Transplant organ	Immunosuppressive Tx	Time between Tx and Dx	Survival after Dx	T cell lymphoma type	Location	Viral association	Reference
1	M	11	Bone marrow	MTX/prednisone	21 months	6 months	WF: lymphoblastic	Pleural effusion, myocardium	EBV+ve HTLV+ve	Zutter <i>et al</i> ^a
2	F	30	Kidney	CIT	3 years	17 months	ALCL T cell type	Multiorgan infiltration	EBV+ve HTLV-ND	Coyne <i>et al</i> ^b
3	M	30	Kidney	Cy-A, Aza/prednisone	5 years	Few days	T cell	Pleural effusion	ND	Canoz <i>et al</i> ^c
Index case	M	23	Kidney	CIT	7 years	Dx at autopsy	Peripheral extranodal T cell unspecified	Multiorgan infiltration with mass lesion only in heart	EBV+ve HTLV-ND	—

ALCL, anaplastic large cell lymphoma; Aza, azathioprine; CIT, conventional immunosuppressive treatment (azathioprine and/or cyclophosphamide combined with prednisone); CyA, cyclosporin A; Dx, diagnosis; EBV, Epstein-Barr virus; F, female; HTLV, human T cell lymphocyte virus; M, male; MTX, methotrexate; ND, not done; Tx, treatment; WF, Working Formulation classification; +ve, negative; +ve, positive.

that polyclonality is seen in a lower percentage.³ Only one case in the literature shows human T cell lymphocyte virus-1 genome.⁴

Our case of PTLT is unusual for several reasons: its primary pericardial involvement, T cell phenotype, pattern of spread and the late onset. The literature search revealed that the involvement of heart and pericardium was seen in only three cases in the previously recorded T cell PTLTs (table 1).⁵⁻⁷ The index case is a 30-year man who developed T cell PTLT 7 years after renal transplantation. This is in accordance with T cell PTLT, which usually is of late onset. The reasons for bicytopenia in the index case are anaemia of a chronic disorder, chemotherapy, megaloblastosis and haemophagocytosis. Kaplan *et al*⁸ have described haemophagocytosis associated with post-transplantation T cell lymphoma arising in the vulva. The direct cause-and-effect relationship of haemophagocytosis and T cell lymphoma is unclear. T cell PTLT has a poor prognosis when it is monoclonal and/or possesses multiorgan involvement, as seen in the index case.

The mode of spread of lymphoma cells to various visceral organs and the brain is interesting in our case. This seems to be vascular in nature—that is, through the systemic circulation.

This case exemplifies that post-transplantation lymphoma can develop in various unusual sites with protean clinical manifestations. In a post-transplant patient who presents, a long time after transplantation, with serous cavity effusions or pericarditis, the possibility of lymphoproliferative disease apart from the opportunistic infections should be considered and investigated, so that the immunosuppression can be reduced or the patient treated with specific therapy such as interferon α or monoclonal antibodies.

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References

- 1 **Craig FE**, Gully ML, Banks PM. Posttransplantation lymphoproliferative disorders. *Am J Clin Pathol* 1993;**99**:265–76.
- 2 **Lippman SM**, Grogan TM, Carry P, *et al*. Post-transplantation T-cell lymphoblastic lymphoma. *Am J Med* 1987;**82**:814–16.
- 3 **Costes-Martineau V**, Delfour C, Obled S, *et al*. Anaplastic lymphoma kinase (Alk) protein expressing lymphoma after liver transplantation: case report and literature review. *J Clin Pathol* 2002;**55**:868–71.
- 4 **Zanke BW**, Rush DN, Jeffery JR, *et al*. HTLV-1 T-cell lymphoma in a cyclosporine-treated renal transplant recipient. *Am J Clin Pathol* 1990;**94**:95–101.
- 5 **Zutter MM**, Durnam DM, Hackman RC, *et al*. Secondary T-cell lymphoproliferation after marrow transplantation. *Am J Clin Pathol* 1990;**94**:714–21.
- 6 **Coyne JD**, Banerjee SS, Bromley M, *et al*. Post-transplant T-cell lymphoproliferative disorder/T-cell lymphoma: a report of three cases of T-anaplastic large-cell lymphoma with cutaneous presentation and a review of the literature. *Histopathology* 2004;**44**:387–93.
- 7 **Canoz O**, Soyuer I, Taskapan H, *et al*. T cell extranodal lymphoma case involving pleura and pericardium in a renal transplant patient. *Clin Nephrol* 2001;**55**:416–18.
- 8 **Kaplan MA**, Jacobson JO, Ferry JA, *et al*. T-cell lymphoma of the vulva in a renal allograft recipient with associated hemophagocytosis. *Am J Surg Pathol* 1993;**17**:842–9.

A novel rapid and sensitive BRCA1/2 mutation detection method based on pooled DGGE and targeted sequencing

In 2005, we published a paper in the *Journal of Clinical Pathology* describing a novel BRCA2

mutation in an Indonesian family detected using a novel rapid and sensitive BRCA1/2 mutation detection method based on pooled denaturing gradient gel electrophoresis and targeted sequencing.¹ In this paper, we described the method used in detail as there was, at that time, only a published abstract from the Groningen group to refer to as the original source.² However, we did not realise that a contract signed by one of us some years earlier prohibited us from describing this method in detail before the developers of this technique had published it themselves. In the meantime, this has been realised.³ It was, therefore, unjustified for tables 1–4 to enclose such detail in our paper, for which we apologise to the Groningen group.

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References

- 1 **Purnomosari D**, Kartikawati D, Aryandono T, *et al*. A novel BRCA2 mutation in an Indonesian family found with a novel rapid and sensitive mutation detection method based on pooled denaturing gradient gel electrophoresis and targeted sequencing. *J Clin Pathol* 2005;**58**:493–9.
- 2 **van der Hout AH**, Mulder IM, Wu Y, *et al*. A DGGE system for comprehensive mutation screening of the complete coding regions of BRCA1 and BRCA2 outside exons 11. *Am J Hum Genet* 1999;**65**:2322.
- 3 **van der Hout AH**, van den Ouweland AM, van der Luijt RB, *et al*. A DGGE system for comprehensive mutation screening of BRCA1 and BRCA2: application in a Dutch cancer clinic setting. *Hum Mutat* 2006;**27**:654–66.