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Case Report

Multiple myeloma with extramedullary plasmacytoma in a renal transplant recipient: a case report and review of literature

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Abstract: Posttransplant lymphoproliferative disorders (PTLDs) are severe complications in allograft recipients treated with immunosuppressive drugs. The incidence of PTLDs is 1%-3% in all solid organ transplant recipients, and they comprise a broad histologic spectrum of conditions ranging from reactive plasmacytic hyperplasia to malignant lymphoma. Transplant recipients have an elevated risk of plasma cell neoplasms such as multiple myeloma and plasmacytoma, but they are rare, making up only about 4% of all PTLDs. Here we report a case of multiple myeloma with extramedullary plasmacytoma in a 44-year-old man following kidney transplantation.

Keywords: Kidney transplant, lymphoproliferative disorders neoplasms, multiple myeloma, plasmacytoma

Introduction

Lymphoproliferative disorders are serious and potentially fatal complications of chronic immunosuppression in organ transplant recipients, and the estimated incidence of 1% to 3% is 30 to 50 times higher than that in the general population [1]. Epstein-Barr virus (EBV) plays an important role in the pathogenesis of the posttransplant lymphoproliferative disorders (PTLDs) [2] that occur in 1% to 2% of kidney transplant recipients [3]. The histologic spectrum of PTLDs includes a broad histologic range of conditions from reactive plasmacytic hyperplasia to malignant lymphoma, and PTLDs are associated with an elevated risk of plasma cell neoplasms (PCNs) such as multiple myeloma and plasmacytoma [4, 5]. In a large series of renal transplant patients who developed PTLD, the overall incidence of multiple myeloma was 0.2%, or ~4% of all those with PTLD [6-8]. We report a rare case of multiple myeloma with extramedullary plasmacytoma in a 44-year-old man presenting 20 years after renal transplantation.

Case report

The patient was a 44-year-old Chinese man who received a kidney transplant 20 years ago. His posttransplant triple immunosuppression therapy included tacrolimus, prednisolone, and mycophenolate mofetil. Serum creatinine was normal after kidney transplantation. His medical history included hypertension for which he was receiving regular medical treatment, and 3 months before admission, he was treated with intravenous famciclovir for Herpes Zoster. On admission, the patient presented with dysphagia and weight loss. Physical examination revealed anemia and cachexia. Laboratory findings are presented in **Table 1**, which shows mild anemia, elevated serum creatinine and serum β-2 microglobulin, and decreased serum albumin. Serum electrophoresis and immunofixation revealed IgG lambda monoclonal paraprotein (3.63 g/dL). EBV and hepatitis C virus serological tests were both positive. Magnetic resonance imaging (MRI) (**Figures 1**, **2**) of the spine showed diffuse lesions of lumbar vertebra and a retroperitoneal soft-tissue mass in front of T8 and L1. Spiral lung computed tomog-

Table 1. Patient laboratory values at the initial evaluation

	Admission value	Reference range
WBC (per μL)	6,800	4,000-10,000
Hb (g/dL)	9	13-16
ESR (mm/h)	40	2-15
β2-MG (mg/L)	8.15	1.09-2.53
LDH (IU/L)	157	85-250
ALB (g/L)	28.7	32-55
GLB (g/L)	56.7	25-45
Total serum protein (g/L)	85.4	65-82
IgG (mg/dL)	4,580	751-1,560
IgA (mg/dL)	136	82-453
IgM (mg/dL)	124	46-304
IgE (mg/dL)	21.8	0-100
Kappa light chain (mg/dl)	544	629-1,350
Lambda light chain (mg/dl)	4,580	317-723
AST (IU/L)	21	10-42
ALT (IU/L)	21	10-40
BUN (mmol/L)	16.52	2.85-7.14
CREA (umol/L)	164.4	53-115
Ca (mmol/L)	2.1	2.1-2.6
P (mmol/L)	1.18	0.81-1.49
EBV-DNA (IU/ml)	5.69×10^3	$<5.0 \times 10^2$

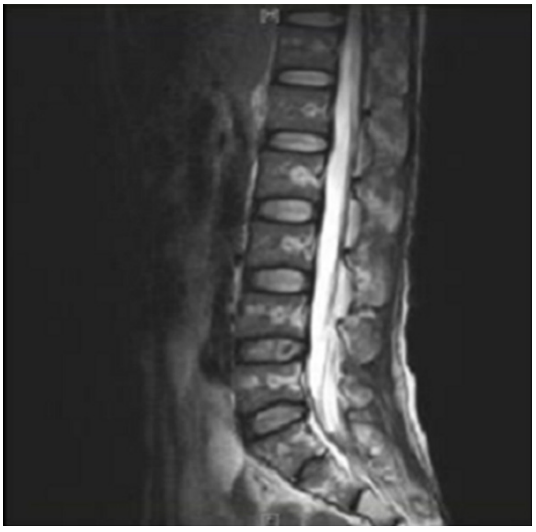

Figure 1. MRI of the spine showing diffuse lesions in the lumbar vertebra.

raphy revealed multiple pulmonary consolidations and right pleural effusion (**Figures 3** and **4**). A bone marrow aspirate revealed 1% plasma cells, and a trephine biopsy showed a scattering of plasma cells (**Figure 5**), and a biopsy of the retroperitoneal mass was consistent with plasmacytoma positive for EBV-encoded small RNAs (EBERs). The diagnosis was PTLD-multiple myeloma. The patient was started on a PDD regimen (velcade 1.3 mg/m^2/day on days 1, 4, 8, and 11, liposomal doxorubicin 30 mg/m^2 on day 1, and dexamethasone 20 mg/day on days 1, 2, 4, 5, 8, 9, 11, and 12). The immunosuppressive medication dosage was adjusted to (tacrolimus 3 mg/day, mycophenolate mofetil, 1 g/day). Dysphagia improved after one cycle of chemotherapy. The patient has

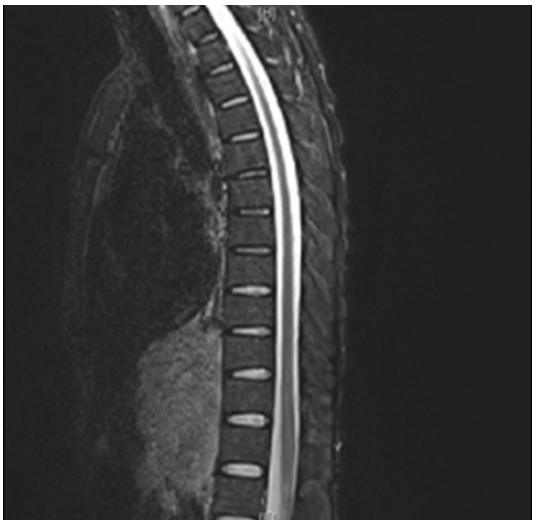

Figure 2. MRI showing a large soft-tissue mass in front of T8-L1.

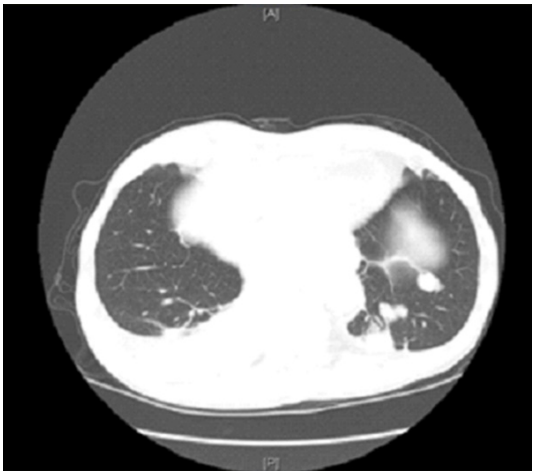

Figure 3. Spiral lung computed tomography revealed multiple pulmonary consolidation and right pleural effusion.

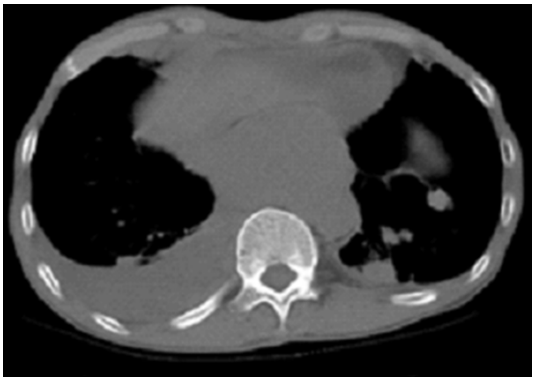

Figure 4. Spiral lung computed tomography revealed multiple pulmonary consolidation, right pleural effusion and a soft-tissue mass in the posterior mediastinum.

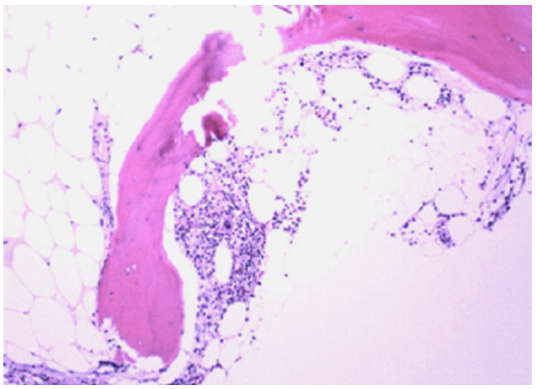

Figure 5. Hematoxylin and eosin staining of trephine biopsy tissue showing a scattered distribution of plasma cells (× 100).

completed four cycles of the PDD regimen and remains in follow-up.

Discussion

PTLD, ranging from reactive plasmacytic hyperplasia to malignant lymphoma, is one of the most worrisome complications of organ transplantation. The estimated incidence of PTLD in solid organ transplant recipients is 1.7%-3.5% [3, 9]. The highest occurrence is immediately after transplantation, followed by a decrease and a subsequent increase 4-5 years after transplantation [10]. Close posttransplant follow-up is advisable to monitor the appearance of hematologic disease. Plasma cell myeloma after renal transplant is extremely rare, reported in only 0.2% of recipients [8]. Multiple myeloma is usually reported 2-7 years after transplantation [11-14]. We summarized similar case reports in **Table 2**. In this patient, the interval was 20 years.

Because the EBV genome is found in ~80% of PTLD specimens, EBV infection is thought to be involved in the pathogenesis and/or etiology of PTLD [15]. Engels et al. reported that 39% of the PCNs in a series of posttransplant patients were EBV-positive [16], which was consistent with previous reports of EBV RNA or proteins in tumor cells in varying proportions of posttransplant PCNs [6, 14, 17]. In this patient, EBER of biopsy tissue was positive and the serum EBV-DNA level was much higher than normal. It was thus considered that EBV infection played a key role in the genesis of multiple myeloma. However, the baseline EBV status of this patient was missing.

This rare case of transplant-related multiple myeloma with extramedullary plasmacytoma developed 20 years after renal transplantation. The diagnosis of multiple myeloma was based on the presence of an IgG monoclonal band in serum and urine, bone marrow biopsy, and retroperitoneal plasmacytoma. There is no consensus on the optimal therapy for transplant-related myeloma because only sporadic reports are documented in the literature. As with other types of PTLD, reducing the immunosuppressant dosage is effective and should be the first-choice therapy. Karuturi et al. reported reduction in immunosuppression, plus radiation and resection were effective a case series of nine patients with plasmacytic post-transplant lymphoproliferative disorder [6]. Bortezomib is highly effective medicine in classical multiple myeloma, but one of the nine did not respond to it [6]. The optimal treatment for PTLD myeloma remains unclear, and should be individualized according to patient cytogenesis, clinical presentation, and response. This patient had a partial response to reduction of immunosuppressants and four cycles of a PDD regimen. Continuing follow-up is needed to confirm the efficacy of the treatment strategy.

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Disclosure of conflict of interest

None.

Table 2. Similar cases which were reported previously

Title	Author	Year	Journal
Successful treatment with lenalidomide of secondary multiple myeloma with extramedullary liver plasmacytoma in a renal transplant recipient: A case report and review of the literature	Xie et al. [18]	2015	Oncol Lett
High-grade solitary extramedullary plasmacytoma arising in skeletal muscle of a kidney transplant recipient	Bidros et al. [19]	2011	Leuk Res
Plasmacytoma of the urinary bladder in a renal transplant recipient	Takahashi et al. [20]	2005	Int J Hematol
Extramedullary plasmacytoma of the gastrointestinal tract in a renal transplant recipient	Hara et al. [21]	1979	Acta Pathol Jpn

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