A 35-year-old woman presented to her general practitioner with a 6-week history of left flank pain. Her past medical history included renal dysplasia and right lower quadrant renal transplantation. The differential diagnosis included hydronephrosis or urinary tract infection; therefore, she underwent abdominal ultrasound.

**Imaging Findings:**

Abdominal ultrasound demonstrated no acute abnormality relating to her renal transplant or native kidneys. At the site of clinical tenderness, multiple solid hypoechoic lesions with internal Doppler flow were identified within her spleen. The largest lesion measured 2.2 cm. There was no associated splenomegaly. Upon review, the spleen was normal on contrast-enhanced CT abdomen performed 4 years previously.

Contrast-enhanced CT of chest, abdomen and pelvis was recommended, which revealed widespread lymphadenopathy on both sides of the diaphragm. This included individual nodes in the base of neck measuring 4.3 cm in short axis and a 6.8 cm retroperitoneal lymph node mass. CT also confirmed the presence of multifocal splenic lesions without splenomegaly. No further solid organ lesions were present.

A diagnosis of “likely lymphoma” was offered, and the patient proceeded to ultrasound-guided biopsy of a left-sided cervical lymph node.

**Discussion:**

Histopathology revealed Epstein Barr Virus (EBV) negative, monomorphic post-transplant lymphoproliferative disorder (PTLD), resembling diffuse large B-cell lymphoma.

PTLD complicates between 1-20% of solid organ transplants [1]. A proposed theory suggests reduced T-cell function in immunosuppressed patients allows uncontrolled proliferation of EBV infected B-lymphocytes [2, 3]. Approximately 20-40% of PTLD patients are EBV negative, as in this case.
Risk factors for PTLD include but are not limited to EBV, cytomegalovirus, age <14 and >60 years old and the total volume of immunosuppression [4-6]. Multi-organ transplant recipients have a higher risk of developing PTLD [7].

Clinical presentation ranges from asymptomatic to multi-organ failure and tumour lysis syndrome. This spectrum presents a diagnostic challenge, often making differentiation from allograft failure and infection difficult [8]. There is currently no role for imaging in asymptomatic patients.

The gastro-intestinal (GI) tract and the allograft are the sites most frequently affected by PTLD. Therefore, persistent GI upset, or signs of allograft dysfunction should raise suspicion of PTLD, as should any fever or lymphadenopathy. In these circumstances, there should be a low threshold for appropriate cross-sectional imaging or biopsy [9].

Generally, imaging findings in PTLD are non-specific. The liver is the most commonly affected solid organ overall, though in renal transplants the kidney remains the most commonly affected site [9-10]. When the spleen is involved the most common finding is splenomegaly with multiple focal low attenuation splenic lesions also seen [11-12]. In contrast to non-Hodgkin’s lymphoma, PTLD has a high incidence of extra-nodal involvement [13]. Histopathology is the gold standard for diagnosis, achieved using image-guided biopsy.

Contrast-enhanced CT is the most widely used imaging modality in the investigation of PTLD. PET-CT with FDG can identify avid glucose uptake at extra-nodal sites and may be helpful in identifying response to treatment. Studies have shown that FDG PET-CT is more sensitive and specific than CT alone. [14]

Treatment options for PTLD include reduction of immunosuppression, surgery and/or radiotherapy for local disease, rituximab, immunochemotherapy, chemotherapy, stem-cell transplantation, and cellular immunotherapy. The optimal treatment remains unknown.

PTLD should be included in the differential diagnosis of imaging post-transplant patients with non-specific symptoms. Knowledge of the distribution and radiologic features of PTLD enables radiology to play an integral role in achieving an early diagnosis.

Histopathologic diagnosis following image-guided biopsy is the gold standard. Treatment options are wide ranging, and FDG PET/CT may be helpful to assess treatment response.

Written informed consent was obtained from the patient prior to submission for consideration of publication.

**Differential Diagnosis List:** EBV negative, monomorphic post-transplant lymphoproliferative disorder resembling diffuse large B-cell lymphoma, Disseminated fungal infection with multiple splenic micro abscesses, Splenic metastases from unknown primary malignancy, Multiple benign splenic lesions such as hamartomas or haemangiomases

**Final Diagnosis:** EBV negative, monomorphic post-transplant lymphoproliferative disorder resembling diffuse large B-cell lymphoma

**References:**


Description: Hypoechoic rounded lesion measuring just over 1cm within the spleen (solid blue arrow). There is no associated splenomegaly. Origin: © Department of Radiology, Royal Victoria Hospital, Belfast, Northern Ireland, November 2018
Figure 2

Description: Ultrasound of the abdomen show faint peripheral intrinsic doppler flow within one of the hypoechoic splenic lesions (red arrow). Origin: © Department of Radiology, Royal Victoria Hospital, Belfast, Northern Ireland, November 2018
Figure 3

**Description:** CT imaging at the level of the upper abdominal viscera demonstrating multifocal hypoattenuating lesions throughout the spleen (orange arrow) and right retrocrural lymphadenopathy (purple arrow). **Origin:** © Department of Radiology, Belfast City Hospital, Belfast, Northern Ireland, December 2018.
Description: CT image of the mediastinum shows a pre-vascular solid appearing mass of presumed lymph node origin (yellow arrow). Origin: © Department of Radiology, Belfast City Hospital, Belfast, Northern Ireland, December 2018.
Description: CT scan of the chest, abdomen and pelvis demonstrating 6.8 cm retroperitoneal lymph node mass adjacent to the abdominal aorta (blue arrow). Origin: © Department of Radiology, Belfast City Hospital, Belfast, Northern Ireland, December 2018.
Description: Coronal CT reconstruction demonstrating the mediastinal mass (red arrow) measuring 4.3 cm in short axis and a 6.8 cm retroperitoneal lymph node mass (blue arrow). CT also confirmed the presence of multifocal splenic lesions without splenomegaly (green arrow). Origin: © Department of Radiology, Belfast City Hospital, Belfast, Northern Ireland, December 2018.
**Figure 7**

(a) Histopathological specimen showing diffuse proliferation of large lymphoid cells with areas of necrosis (x 40). (b) Immunohistochemistry showing CD20 positive tumour cells (x40). (c) Immunohistochemistry CD10 positive tumour cells. (d) MIB1: tumour cells have a high proliferation fraction. **Origin:** © Department of Pathology, Royal Victoria Hospital, Belfast, Northern Ireland. December 2018.

(b)

Description: (a) Histopathological specimen showing diffuse proliferation of large lymphoid cells with areas of necrosis (x 40). (b) Immunohistochemistry showing CD20 positive tumour cells (x40). (c) Immunohistochemistry CD10 positive tumour cells. (d) MIB1: tumour cells have a high proliferation fraction. **Origin:** © Department of Pathology, Royal Victoria Hospital, Belfast, Northern Ireland. December 2018.

(c)

Description: (a) Histopathological specimen showing diffuse proliferation of large lymphoid cells with areas of necrosis (x 40). (b) Immunohistochemistry showing CD20 positive tumour cells (x40). (c) Immunohistochemistry CD10 positive tumour cells. (d) MIB1: tumour cells have a high proliferation fraction. **Origin:** © Department of Pathology, Royal Victoria Hospital, Belfast, Northern Ireland. December 2018.
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