POST-TRANSPLANT LYMPHOPROLIFERATIVE DISORDER PRESENTING AS CLOUDY PERITONEAL DIALYSATE

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Introduction

Peritonitis is a major complication of peritoneal dialysis therapy, and a carries a significant burden of morbidity and mortality. The aetiology is typically infections and presentation is classically characterised by cloudy peritoneal dialysate fluid, abdominal pain and fever. Diagnostic criteria vary but typically will rely on microscopy of peritoneal fluid demonstrating a white cell count greater than 100 $x10^6$/L with a composition of at least 50% polymorphonuclear leucocytes. Atypical features should prompt a search for non-infectious causes, these include a peritoneal dialysate white cell differential showing a lymphocyte predominance, sterility on repeated cultures and recurrent presentation.

Case

A 63-year-old female with end stage renal disease secondary to FSGS was established on peritoneal dialysis when she presented with recurrent cloudy peritoneal dialysate fluid. She had received a renal transplant 18 years previously and had developed skin limited post-transplant lymphoproliferative disorder (PTLD) two years prior to presentation for which she had received rituximab to good effect. Peritoneal fluid microscopy showed a markedly raised white cell count but gram stain and repeated cultures were negative.
Further cytological analysis and immunohistochemistry revealed numerous markedly pleomorphic cells with overall appearances consistent with PTLD (see Figure 1 -3) Table 1 summarises key investigations. Following radiological staging, chemotherapy was commenced and crucially peritoneal dialysis was continued successfully during the treatment course.

Blood tests	Haemoglobin 124 g/L (120-150 g/L) White blood cell 8.4 $x10^9$/L (4-10 $x10^9$/L) Platelets 363 $x10^9$/L (150-400 $x10^9$/L)	Albumin 16 g/L (35-50 g/L) Calcium (corr.) 2.37 nmol/L (2.2-2.6 nmol/L) CRP 65 mg/L (<5 mg/L) LDH 569 U/L (125-220 U/L)
Microscopy	WCC 5680 $x10^9$/L with 20% polymorphs, 80% lymphocytes and no organisms on gram staining.	
Other	Negative staining for acid-fast bacilli. QuantiFERON®-TB Gold ELISA negative. Cytomegalovirus PCR negative. Serum Epstein Barr Virus quantitative PRC 47456 IU/L Peritoneal dialysate positive for Epstein Barr Virus	

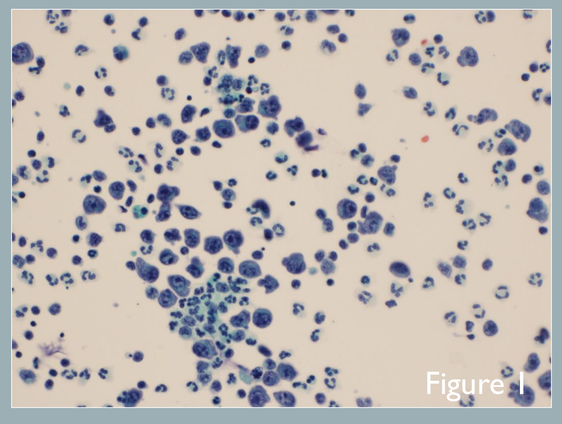
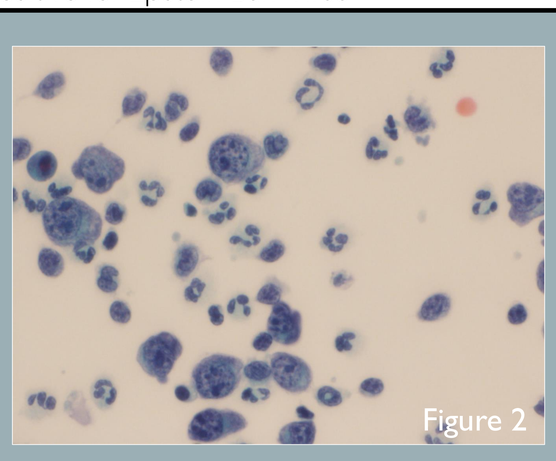


Figure 1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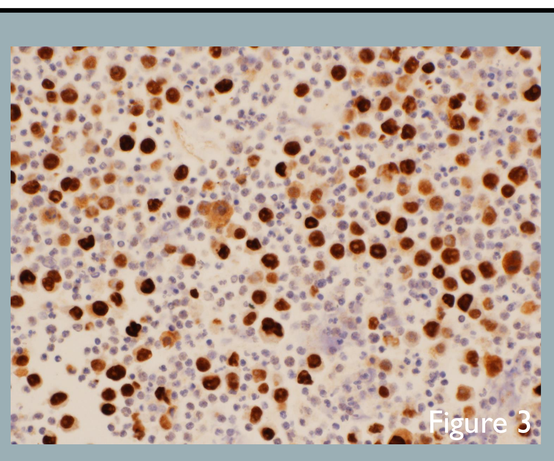
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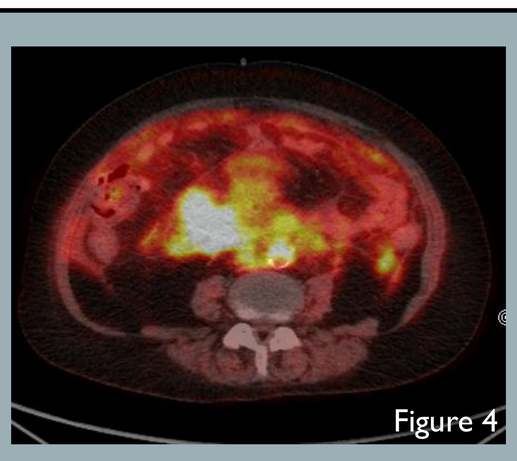
Figure 4

Figure 1(x10) and 2(x20): Papanicolaou stain demonstrating numerous markedly pleomorphic cells with large vesicular nuclei, multiple prominent nucleoli and abundant cytoplasm suggestive of lymphoma. Figure 3 EBV-ISH, Figure 4. PET-CT showing increased uptake in inflammatory appearing mass within mesentery with associated nodularity. (an atypical appearance for a lymphoma)

Review: All Cases Of Malignancy Presenting As Cloudy Dialysate

Case	WCC Microscopy	Morphology	Malignancy	PD
1	5680 x 10^9/L, 20% polymorphs, 80% lymphocytes	Pleomorphic cells with large vesicular nuclei, multiple prominent nucleoli and abundant cytoplasm.	PTLD: Plasmablastic lymphoma	Continued
2	450 × 10^9/L "unidentified cells"	Atypical multi-nucleated lymphoid-like cells	Hodgkin's lymphoma	Withdrawn
3	N/A	Atypical epithelioid cells with finely vacuolated cytoplasm, ovoid nuclei, and small prominent nucleoli.	Prostatic adenocarcinoma	Continued
4	300 × 10^9/L, 84% atypical cells, 4% lymphocytes, 12% neutrophils	"adenocarcinoma cells"	Endometrial adenocarcinoma	Continued
5	700 leukocytes× 10^9/L, 80% mononuclear, 20% polymorphonuclear	Atypical lymphocytes	Large B cells non-Hodgkin lymphoma	Continued
6	< 100 × 10^9/L	Atypical lymphocytes with irregular nuclear outline and coarse chromatin	Large B cells non-Hodgkin lymphoma	Withdrawn

Conclusion

The literature describing such presentations is limited. Cellular atypia is not uncommon in peritoneal dialysate and it is speculated that peritoneal dialysis itself may play a role in the development of mesothelial cell atypia, but malignancy presenting in such a manner is extremely rare.
Encouragingly, peritoneal dialysis was continued successfully in the majority of patients. It is notable that there was wide variability of the initial microscopy. Thus when suspicious of malignancy, clinicians should not be falsely reassured by seemingly normal white cell differentials and maintaining a low threshold for cytological analysis is likely the most pragmatic approach.

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