

*Nephroquiz*  
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## Blunt abdominal trauma: a hidden culprit

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### Case

A 36-year-old uraemic woman presenting with blunt abdominal trauma after a motor vehicle collision was referred to the emergency department. She had been undergoing continuous ambulatory peritoneal dialysis (CAPD) for 1 week due to end-stage renal disease. On physical examination, she was normotensive, and the only abnormal physical findings were periumbilical tenderness without rebounding pain. Laboratory studies showed haemoglobin 10.8 g/dL, leukocyte count  $8.34 \times 10^3/\mu\text{L}$ , and normal liver function. Notably, plain film radiography of the chest demonstrated massive intraperitoneal free air (Figure 1). Besides, the 2-L exchange bag of dialysate solution showed markedly cloudy peritoneal effluent (Figure 2). A serum-to-ascites albumin gradient was 0.8 g/dL and analyses of the turbid peritoneal effluent only yielded high triglyceride concentration (287 mg/dL, compared with serum level 98 mg/dL) without evidence of microorganism or cellular components (Figure 3).

### Question

What is your diagnosis?



**Fig. 1.** Standing chest radiography showed extensive bilateral subphrenic free air with an air-fluid level.



**Fig. 2.** Chylous peritoneal dialysate effluent.

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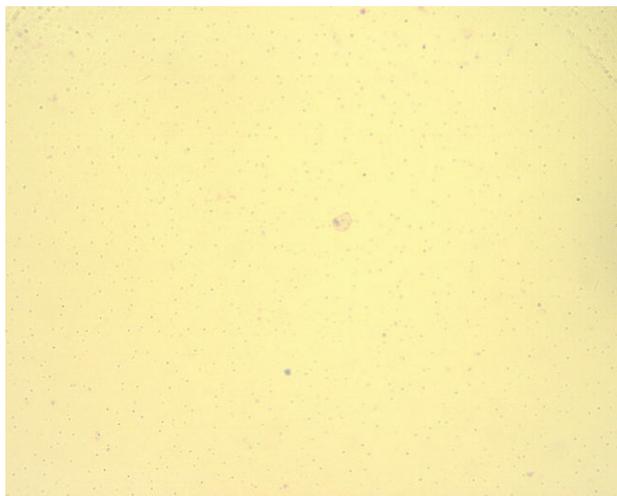


Fig. 3. Cytology of peritoneal dialysate effluent.

#### Answer

Comprehensive imaging studies failed to show any evidence of hollow organ perforation. On reviewing her current medication, it was found that she started newly prescribed oral antihypertensive lercarnidipine 10 mg once daily 2 days previously. After using the standard bag exchange procedure along with discontinuation of lercarnidipine, chylous effluent and pneumoperitoneum resolved within 4 days without compromise of peritoneal function. Reintroduction of lercarnidipine provoked the same adverse reaction rapidly.

#### Discussion

Chylous ascites is defined as the extravasation of milky or creamy appearing peritoneal fluid rich in triglycerides, caused by the presence of thoracic or intestinal lymph in the abdominal cavity. The nature of chylous ascites is usually related to disruption of the lymphatic network, which may arise from traumatic injury, obstruction or external compression, infection, cirrhosis of liver or inflammatory diseases [1].

In CAPD patients, lymphatic obstruction, pancreatitis, trauma from implanted peritoneal catheter and superior vena cava syndrome have been incriminated in the

development of non-infectious chylous ascites [2]. Of note, the opalescence of dialysate effluent associated with the increased triglyceride levels sometimes may wax and wane, in part depending on the fat content of ingested meals [3]. Currently, the most common cause of chylous peritoneal dialysate is lymphatic obstruction secondary to malignant neogrowth, particularly lymphoma.

Lercarnidipine, a dihydropyridine calcium channel blocker (DCCB), is a less-recognized culprit of chylous ascites. Of interest, such adverse events seem not to be a class effect in calcium channel blockers. A previous multicentre study showed that 19 out of 251 CAPD patients treated with certain calcium channel blockers developed reversible chylous dialysate [4]. Four DCCBs were identified, including benidipine (100%), manidipine (42%), nisoldipine (9%) and nifedipine (0.6%). Besides, increased dialysate turbidity was observed within 24 h after one dose of manidipine and disappeared within 24 h of drug withdrawal. Although the mechanism remains unclear, it is tempting to speculate that this type of calcium channel blocker may substantially impede the relatively weak vasomotion of the lymphatic system with resultant altered rheology and permeability or even play a permissive role in governing lipoprotein lipase activity.

It should be addressed that, although intraperitoneal free air coupled with cloudy ascites may be one of the most characteristic features after blunt abdominal trauma, iatrogenic pneumoperitoneum arising from inadvertent filling with air during peritoneal dialysate exchange in the context of DCCB-induced chylous ascites can be quite misleading. To avoid unnecessary intervention and improper management, emergency physicians should keep a heightened awareness of this unusual manifestation.

*Conflict of interest statement.* None declared.

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