Traumatic pleural leak in peritoneal dialysis

Sir,

Hydrothorax is a serious, although usually not life-threatening, complication of peritoneal dialysis (PD). It may be asymptomatic and detected accidentally. In most cases, no triggering factor is identified [1]. We were recently confronted with a patient in whom hydrothorax has been secondary to rib fractures.

Case. A 45-year-old male had been treated by PD for the past 9 years. He had been stable and active for all those years except for prolonged viral upper respiratory tract infections during winter months. Osteitis fibrosa was documented by radiography of distal clavicles. Twelve years ago, then a haemodialysis patient, he underwent a parathyroidectomy with reimplantation in the left arm of parathyroid tissue. His most recent plasma PTH level, 4 months before presentation, was 42 pg/ml. Due to an inadvertent fall he broke his left leg and two of his left ribs (ribs 8 and 9). The fractures of the ribs occasionally caused a cough but were treated conservatively. The leg fracture required open reduction, at which severe osteopenia was noticed. Four weeks after his discharge from the orthopaedic ward, the patient noticed a sudden decrease in volume of dialysate effluent and increasing dyspnea. A large left pleural effusion was diagnosed by examination and chest X-ray. Thoracocentesis disclosed a transudate with a glucose concentration of 256 mg%, whereas the serum glucose concentration was 90 mg%. The diagnosis of a diaphragmatic leak of dialysate was further confirmed by scintigraphy using macroaggregated Tc-99-labelled albumin, which was instilled into the peritoneal cavity (Figure 1).

The patient was transferred to haemodialysis, using a catheter inserted into the left internal jugular vein. The next day, an acute left haemothorax was diagnosed following a sudden drop in blood pressure and haemoglobin level from 9.1 to 8.0 mg%. Bleeding was attributed to a tear of a subcostal vessel in the vicinity of a rib fracture after computer tomography excluded the possibility of bleeding from a major blood vessel due to insertion of the central venous catheter. The bleeding into the pleural cavity was self-limited, but the patient eventually died from blood line sepsis.

Comment. Hydrothorax is a well recognized complication of peritoneal dialysis occurring in 1.6% of patients; it is more common in females than in males, possibly promoted by previous stretching of the diaphragm during pregnancy. In 88% of cases the hydrothorax is right-sided and in 50% it develops within 30 days of initiation of PD [2]. It may be due to an anatomic defect in the diaphragm, apparent when intra-abdominal pressure rises due to instillation of dialysate into the peritoneal cavity. It may also be due to movement of fluid through subdiaphragmatic lymphatics.

The differential diagnosis of pleural effusions appearing with onset of dialysis is not challenging. When hydrothorax occurs later, as in our case, different aetiologies need to be considered, i.e. fluid overload, congestive heart failure, infection or malignancy.

In a previous communication, hydrothorax due to a vigorous coughing episode has been reported, which presumably caused an acute increase of intra-abdominal pressure [3]. Similarly, increased intra-abdominal pressure may lead to hydrothorax in patients with polycystic kidneys or those wearing tight corsets [4,5]. Increased intra-abdominal pressure was unlikely to be the immediate cause of hydrothorax in our patient since during all the years in which he suffered from upper respiratory tract infections, no leak into the pleural cavity has been noticed on numerous chest X-rays.

A traumatic origin of the pleural leak is very likely, given the temporal relationship of this leak with the patient’s accident and the following haemothorax due to teared sub-costal blood vessel(s). The reported case is thus noteworthy because hydrothorax has been caused by flail ribs following their fracture, most probably tearing diaphragmatic muscle fibres at their insertion into the rib cage.

Department of Nephrology Michael J. Hausmann
Soroka Medical Center and Anna Basok
Faculty of Health Sciences Marina Vorobiov
Ben Gurion University of the Negev Boris Rogachev
Beer-Sheva, Israel


Fig. 1. Scintigraphic picture of peritoneal fluid leaking into the left pleural cavity using macroaggregated albumin labelled with Tc-99 instilled into the peritoneal cavity.