Hydrothorax Secondary to a Malpositioned Peritoneal Dialysis Catheter

Hydrothorax is a non-infectious complication of peritoneal dialysis (PD) that involves the passage of peritoneal fluid from the abdomen to the pleural cavity through a peritoneal-pleural leak as a consequence of an increase in intra-abdominal pressure. We present a patient with a late-onset hydrothorax in clear temporal relationship with a malpositioned peritoneal catheter.

A 44-year-old woman with chronic renal failure of unknown origin was treated with PD for 24 months. Her left-side double-cuffed straight Tenckhoff catheter was removed because of refractory peritonitis by *Pseudomonas aeruginosa* and the patient was consequently transferred to hemodialysis (HD). After being treated with HD for 1 month, a second straight Tenckhoff catheter was placed on the paramedian right side by conventional surgical technique. A plain abdominal

radiological examination revealed that the catheter tip was located in the upper abdomen. Despite catheter malposition, PD was resumed 1 month later without any problems. A few days later, she was admitted with right thoracic tightness, dyspnea, orthopnea, and a significant decrease of peritoneal ultrafiltration. The patient had neither fever nor cough. Physical examination was consistent with right-side pleural effusion, which was evident in a chest X-ray. A therapeutic drainage of 1,350 mL of pleural fluid was performed. Pleural effluent had biochemical characteristics of transudate with a pH of 7.48 and a glucose of 103 mg/dL (plasma glucose: 77 mg/dL).

A peritoneopleural leak was suspected so a Tc-99m peritoneal scintigraphy was performed. The presence of the radiotracer activity at the right hemithorax confirmed the existence of a peritoneopleural communication. Since the evolution in PD had been uneventful for 24 months and the pleural-peritoneal leak occurred soon after restarting PD treatment through a right malpositioned catheter, we thought the two facts could be related. To resolve the doubts, a peritoneography was performed, which revealed a malpositioned catheter with the tip between the abdominal wall and the liver. The contrast medium was distributed around the liver and reached the diaphragm. We didn't observe contrast media in the pleural space, probably due to the very small amount of contrast used. Since peritoneography was inconclusive, an abdominal computerized tomography (CT) was performed, which showed the PD catheter localized posterior-lateral to the liver (arrows), with the tip next to the diaphragm (Figure 1).

Figure 1 — Abdominal CT showing a PD catheter localized posterior-lateral to liver (arrows). CT = computerized tomography; PD = peritoneal dialysis.

We assumed that hydrothorax was due to the malpositioned peritoneal catheter. Peritoneal dialysis was stopped and the right peritoneal catheter was removed and a new left-sided catheter was inserted at the same time. Peritoneal dialysis was restarted after 1 month of catheter replacement with progressive increase of volume exchange. The chest X-ray did not show any recurrence of the pleural effusion up to 2 months later.

Hydrothorax is an infrequent PD mechanical complication of PD (1). It usually occurs early after starting PD treatment (less than 30 days), and it is associated with an increase in intra-abdominal pressure in patients with congenital defects of the diaphragm muscle. It appears more commonly in females and in the right hemithorax. On very rare occasions, it has been related to peritonitis episodes (2–3). Treatment consists of peritoneal rest, temporary or definitive transference to HD, pleurodesis or surgical repair of the diaphragm defect (4). Our patient developed a late-onset right peritoneal-pleural leak in clear temporal relationship with a right malpositioned catheter which resolved after removing it. There has been no recurrence of pleural effusion since resuming PD and no surgical repair was required. We propose catheter malposition as a new cause of hydrothorax in PD.

DISCLOSURES

The authors have no financial conflicts of interest to declare.

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