Right hydrothorax found soon after introduction of continuous ambulatory peritoneal dialysis: thoracoscopic surgery for pleuroperitoneal communication

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Abstract Hydrothorax due to pleuroperitoneal communication is a rare complication in patients undergoing continuous ambulatory peritoneal dialysis (CAPD). One of the problems of this complication is the need to cease CAPD, which means that the patient must shift completely to hemodialysis. Therefore, a quick, minimally invasive, and complete surgical repair of the pleuroperitoneal communication is required. We recently treated a patient who had developed a right hydrothorax soon after the introduction of CAPD. Clinical examination led to a diagnosis of pleuroperitoneal communication. The patient was successfully treated by complete thoracoscopic repair of the communication. We could precisely identify the defective site on the diaphragm using the dye-added CAPD solution method. CAPD was restarted 5 days after the operation, and there was no recurrence of hydrothorax after the operation.

Key words Hydrothorax · Continuous ambulatory peritoneal dialysis · Pleuroperitoneal communication · Video-assisted thoracoscopic surgery

Case

A 45-year-old woman started CAPD in October 2008 because of end-stage renal failure. The patient newly experienced dyspnea 2 weeks after the introduction of CAPD. She had no fever, cough, or chest pain. Radiographic examination revealed right-sided hydrothorax (Figs 1, 2). Fluid obtained by thoracentesis showed a high glucose level but no other significant findings. To confirm the diagnosis, technetium sulfur colloid scintigraphy was performed, which revealed a pleuroperitoneal communication, as seen in Fig. 3.

Because of the dyspnea, it was not possible to continue CAPD without any treatment. She did not wish to shift to hemodialysis for social reasons. Therefore, surgical repair of pleuroperitoneal communication was planned. A blood access double-lumen cannula was placed for temporary hemodialysis.

Surgery was performed entirely thoracoscopically. Under general anesthesia and separate lung ventilation, the patient was positioned in the left lateral position.
used a technique called the check-air-leakage method. We found no air leakage on the diaphragm with this method, not even from the two points that were already determined to be pleuroperitoneal communications. The lesion was removed using an endoscopic stapler (EndoGIA 60, 2.5 mm; Tyco Healthcare Japan, Tokyo, Japan) covered with a sheet of Neoveil (Gunze, Kyoto, Japan). The tendinous portion was covered with the Neoveil sheet fixed by suturing it to the diaphragm and spraying it with fibrin glue. The operation was completed in 70 min.

Three thoracoports were inserted. By careful detection via injection of the CAPD solution into the peritoneal cavity, we were able to see the exudation of CAPD solution into the pleural cavity from the right central tendinous portion of the diaphragm. Next, 1000 cc of dialysis solution with 5 cc of indigo carmine was injected into her abdominal cavity through the CAPD catheter. This dialysis solution colored with the indigo carmine could be detected from two small leaking points in the thin membranous area mentioned above (Fig. 4). Finally, so as not to overlook other communication sites, we further used a technique called the check-air-leakage method. We found no air leakage on the diaphragm with this method, not even from the two points that were already determined to be pleuroperitoneal communications.

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