Pleuroperitoneal Leak in a Patient on Automated Peritoneal Dialysis

Rawan Al Agha, MD* Rani Al Agha, MD, FRCSI, CABS**

A forty-year-old Bahraini female with a known case of End Stage Renal Disease (ESRD) on Peritoneal Dialysis (PD) presented with a complaint of shortness of breath. She was found to have right side pleural effusion on a chest X-ray. The effusion was managed initially with Intercostal Drainage (ICD) insertion. The patient was investigated for the cause of the effusion and she was found to have hydrothorax secondary to pleuroperitoneal leak. She was initially treated with pleurodesis and temporary cessation of PD. However, this maneuver failed and the patient had to be shifted to hemodialysis as a permanent solution.

The reported incidence of an acute leak in patients on PD is approximately 1.6%-10%1. The pleural effusion usually occurs early in initiating the PD. The presence of pleural effusion without other signs of heart failure and peripheral edema should be an alert for the presence of pleuroperitoneal leak particularly if it was only right-sided. It is mostly due to congenital defects between the pleura and peritoneum. The combination of negative intrathoracic pressure and high intra-abdominal pressure induced by the installation of the dialysate leads these defects to open up and the fluid flow through to the pleura2. Pleuroperitoneal leak is uncommon and could be easily missed due to misinterpretation of the symptoms.

The aim of reporting this case is to increase the awareness of such possible complication and methods of diagnosis and management.

THE CASE

A forty-year-old Bahraini female was a known case of ESRD secondary to multiple myelomas on APD. She was started on hemodialysis for a few months and then shifted to PD as she preferred to do home dialysis than attending the hospital three times a week. The peritoneal catheter was inserted on 20 October 2013, followed by training for two weeks. On 12 November of the same year, six cycles PD was initiated dependent wholly on the patient. She was regularly complaining of shortness of breath and abdominal pain with the last fill of 1.7 L; due to that, the last fill was reduced to 1.5 L and she was more comfortable. She continuously had negative ultra filtration with concentrate of 1.3-2.2% (varying with each cycle). Bone marrow biopsy in December 2013 revealed no evidence of multiple myelomas; the chemotherapy was terminated.

She presented to the PD unit on 9 January 2014 with intermittent turbid color peritoneal fluid after each dwell. The fluid was analyzed and she was diagnosed to have peritonitis with white cell count of 110 with left shift in the peritoneal fluid. According to the guidelines of International Society of Peritoneal Dialysis (ISPD 2010), she was treated with intraperitoneal antibiotics (Vancomycin 1 g every fifth day and Cefepime 1.5 g daily) for two weeks. In view of this, the last fill volume was increased to 2 L to allow the administration of the medication and the fluid concentrate was changed to 2.2%.

After the fourth day of administrating the antimicrobials, the patient complained of significant shortness of breath. Examination revealed reduced air intensity on the right side of the chest and dullness on percussion. Her room air oxygen saturation was 94%.

A chest X-ray showed significant pleural effusion and most of the right lung was collapsed, see figures 1A, 1B and 1C. ICD was inserted under general anesthesia in the operating room. Drainage of 1700 ml was achieved on the first day.

The reported incidence of an acute leak in patients on PD is approximately 1.6%-10%1. The pleural effusion usually occurs early in initiating the PD. The presence of pleural effusion without other signs of heart failure and peripheral edema should be an alert for the presence of pleuroperitoneal leak particularly if it was only right-sided. It is mostly due to congenital defects between the pleura and peritoneum. The combination of negative intrathoracic pressure and high intra-abdominal pressure induced by the installation of the dialysate leads these defects to open up and the fluid flow through to the pleura2. Pleuroperitoneal leak is uncommon and could be easily missed due to misinterpretation of the symptoms.

The aim of reporting this case is to increase the awareness of such possible complication and methods of diagnosis and management.

THE CASE

A forty-year-old Bahraini female was a known case of ESRD secondary to multiple myelomas on APD. She was started on hemodialysis for a few months and then shifted to PD as she preferred to do home dialysis than attending the hospital three times a week. The peritoneal catheter was inserted on 20 October 2013, followed by training for two weeks. On 12 November of the same year, six cycles PD was initiated dependent wholly on the patient. She was regularly complaining of shortness of breath and abdominal pain with the last fill of 1.7 L; due to that, the last fill was reduced to 1.5 L and she was more comfortable. She continuously had negative ultra filtration with concentrate of 1.3-2.2% (varying with each cycle). Bone marrow biopsy in December 2013 revealed no evidence of multiple myelomas; the chemotherapy was terminated.

She presented to the PD unit on 9 January 2014 with intermittent turbid color peritoneal fluid after each dwell. The fluid was analyzed and she was diagnosed to have peritonitis with white cell count of 110 with left shift in the peritoneal fluid. According to the guidelines of International Society of Peritoneal Dialysis (ISPD 2010), she was treated with intraperitoneal antibiotics (Vancomycin 1 g every fifth day and Cefepime 1.5 g daily) for two weeks. In view of this, the last fill volume was increased to 2 L to allow the administration of the medication and the fluid concentrate was changed to 2.2%.

After the fourth day of administrating the antimicrobials, the patient complained of significant shortness of breath. Examination revealed reduced air intensity on the right side of the chest and dullness on percussion. Her room air oxygen saturation was 94%.

A chest X-ray showed significant pleural effusion and most of the right lung was collapsed, see figures 1A, 1B and 1C. ICD was inserted under general anesthesia in the operating room. Drainage of 1700 ml was achieved on the first day.

* Senior Resident
Department of Internal Medicine
** Consultant, Vascular Surgeon
Department of Vascular Surgery
Salmaniya Medical Complex
Kingdom of Bahrain
E-mail: r_alagha@hotmail.com