CASE REPORT

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Lercanidipine-induced Chyloperitoneum in a Geriatric Patient with Peritoneal Dialysis

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Abstract

Peritoneal dialysis is one of the renal replacement therapy modality for patients with end-stage renal disease. Hypertension is a common comorbidity in these patients and calcium channel blockers are the most commonly prescribed drugs. Chyloperitoneum is a non-infectious cause of cloudy peritoneal effluent. Lercanidipine is a lipophilic, third generation calcium channel blocker and a widely used antihypertensive agent. Herein, we presented a case of geriatric peritoneal dialysis patient admitted to hospital cloudy effluent after the use of lercanidipine for hypertension. The peritoneal effluent returned to normal after after the cessation of lercanidipine.

Keywords: Chyloperitoneum, geriatrics, hypertension, lercanidipine, peritoneal dialysis

Introduction

Peritoneal Dialysis (PD) is the most common type of home dialysis for end-stage renal disease (ESRD) especially, geriatric patients, using peritoneal membrane to remove uremic toxins and fluid overload. Chyloperitoneum is a rare condition characterised by milky peritoneal fluid with a high content of lymphatic fluid and triglycerides. The most frequent causes are cancers such as lymphomas, tuberculosis, cirrhosis, lymphatic obstructions, pancreatitis, trauma, nephrotic syndrome and even the use of drugs such as calcium channel blockers (CCBs) (1,2). In order to make chyloperitoneum diagnosis, it is important to carry out a differential diagnosis in order to rule out other potentially causes. Herein, we report of a patient with PD and admitted to hospital with chyloperitoneum after use of lercanidipine for hypertension.

Case Report

A 78-year-old woman with ESRD secondary to hypertensive nephrosclerosis had been undergoing continuous ambulatory peritoneal dialysis (CAPD) for 3 months. She was admitted our peritoneal dialysis unite with cloudy peritoneal effluent (Figure 1). On physical examination, she was oriented and cooperated, blood pressure was 150/90 mmHg, heart rate was 84 beats per minute and rhythmic, body temperature was 36.7 C and breathing rate was 20 per minute. There was no rebound and tenderness in the abdomen. Also the catheter exit site was clean. Her medication includes valsartan 320 mg once daily, amlodipin 10 mg once daily, calcium acetate 700 mg three times daily, epoetin alpha 4000 IU twice in a week subcuateneously. She has approximately 800 ml/day urine. Her CAPD treatment consisted of four cycles of 2 L exchanges with 1.36 % glucose solution per day. Our patient was not using icodextrin, and so the cloudy effluent could not be attributed to that dialysate constituent. She had no history of peritonitis, complaints of abdominal pain, fever, nause or vomiting. No fibrin clots were evident, and there were no blood particles and leucocytes in the effluent. Gram staining revealed no properties. Triglyceride concentration in peritoneal effluent was 65 mg/dL and the other blood laboratory results were shown in Table 1. Routine cultures of effluent dialysate were negative for bacteria, fungi, and mycobacteria. Cytology revealed no malignant cells. There

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Figure 1.

Table 1. Laboratory results

		Normal range
White blood cell	5.07 x10^3/µL	4.6-10.2 x10^3/µL
Hemoglobin	10.9 g/dL	12.2-18.1 g/dL
Platelets	240 x10^3/µL	142-424 x10^3/µL
Urea	111 mg/dL	15-45 mg/dL
Creatinine	6.2 mg/dL	0.5-1.1 mg/dL
Sodium	139 mmol/L	136-148 mmol/L
Potassium	4.47 mmol/L	3.5-5.2 mmol/L
Calcium	9.1 mg/dL	8.5-10.6 mg/dL
Phosphorus	4.1 mg/dL	2.3-4.7 mg/dL
Albumin	3.8 g/dL	3.5-5.5 mg/dL
Cholesterol	163 mg/dL	0-200 mg/dL
Triglyceride	117 mg/dL	0-150 mg/dL
Parathormone	198.9 pg/mL	15-65 pg/mL
Ferritin	374.9 ng/mL	30-400 ng/mL
C-reactive protein	1.8 mg/L	0-6 mg/L

were no clinical features suggestive of acute pancreatitis, solid-organ malignancy, or lymphoma. Contrast-enhanced computed tomography imaging of the abdomen revealed a normal pancreas. Laboratory results of patient is summarised in Table 1. In medical history it was reported that three days ago amlodipine have been replaced with lercadipine when the patient admitted to emergency room with complaint of unregulated hypertension. This drug was suspected and was stopped. After discontinuation of lercanidipine, the dialysis effluent became translucent within 24 hours.

Discussion

Hypertension is a common comorbidity in ESRD patients who have undergone dialysis and achieving target blood pressure is crucial. Calcium channel blockers are the antihypertensive drugs most commonly prescribed (approximately 70% of the cases) to patients with ESRD and are associated with reduced rate of all-cause and cardiovascular mortality (3). CCBs associated chyloperitoneum is very uncommon. Both dihydropyridine and non-dihidropyridine were linked to this condition. In most cases of the literature, cyloperitoneum developed in patients who received their first CCBs treatment, however some studies reported that chyloperitoneum developed after the CCBs type prescribed to patients was changed (4) or when the dosage of same drug was increased (5).

Lercanidipine is a lipophilic, third generation dihydropyridine-type CCBs and a widely used antihypertensive agent. However, it can rarely cause chyloperitoneum in patients receiving PD. The mechanism underlying the development of CCB-associated chyloperitoneum presumably involves impairment of lymphatic functions in triglyceride disposal and increased ultrafiltration through the peritoneal membrane (6). Especially, highly lipophilic CCBs, such as lercanidipine can easily penetrate the lipid two-layer of the cell membrane and act on calcium channels in both smooth muscle cells of the gut and lymphatic vessels (7).

In a systematic review, the mean prevalance of lercanidipine-associated chyloperitoneum determined was 25.97% and the characteristics such as sex, age, duration of PD treatment and serum triglyceride concentrations were not significantly related to lercanidipine-associated chyloperitoneum (8).

In conclusion, CCBs should be considered as a cause of cyloperitoneum in patients on PD. In this state removing the implicated drug or switching to a less lipophilic CCBs should be considered. When CCB-associated non-infectious chyloperitoneum is misinterpreted as infectious, health care burden can be increased potentially by unnecessary laboratory tests and inappropriate prescriptions of antibiotics.

Ethics

Peer-review: Externally peer-reviewed.

Conflict of Interest: No conflict of interest was declared by the authors.

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