Case Report

Amlodipine Induced Chylous Ascites in a Patient Undergoing Peritoneal Dialysis

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ABSTRACT

Amlodipine besilate, long-acting dihydropyridine type calcium channel blocker is widely used as an antihypertensive agent. In some reports, long-acting dihydropyridine type calcium channel blockers caused chylous ascites in peritoneal dialysis patients but none of the cases was associated with use of amlodipine. Here, we describe a case of a patient who was on peritoneal dialysis for CKD and developed chylous ascites after he was prescribed amlodipine for hypertension. The chylous ascites resolved after cessation of amlodipine therapy. The exact mechanism of this phenomenon is still not established although few speculative theories are known. A thorough clinical, laboratory and imaging assessment of this patient didn't suggest any alternative diagnosis. We conclude that this patient's chylous ascites was amlodipine related and physicians should be aware of the possibility of ascites due to the administration of long-acting dihydropyridine type calcium channel blockers particularly in those undergoing peritoneal dialysis.

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Introduction

Chylous ascites is a very uncommon form of ascites, generally associated with malignancies and surgical trauma and is due to extravasation of milky white chyle into the peritoneal fluid.Any source of lymph vessel obstruction or leakage can potentially cause chylous effusions into the peritoneal or retroperitoneal cavities. Trauma to lymphatics, esp surgical trauma is the second most common source of chylous effusions[1]. There have been very few case reports regarding chylous ascites arising secondary to administration of any drug. In some reports, long-acting dihydropyridine type calcium channel blockers caused chylous ascites in peritoneal dialysis patients. Chylous ascites is a rare complication in patients undergoing peritoneal dialysis. It may occur due to traumatic peritoneal dialysis, catheter insertion or other causes. The presence of a milky- white, creamy appearing ascitic fluid with triglyceride content above 200 mg/dL is diagnostic and in the majority of cases, unless there is a strong suspicion of malignancy, further investigations are not required in patients with cirrhosis. If an underlying cause is identified, targeted therapy is possible, but most cases will be treated conservatively, with dietary support including high-protein and low-fat diets supplemented with medium-chain triglycerides, therapeutic paracentesis, total parenteral nutrition, and somatostatins. Rarely, resistant cases have been treated by transjugular intrahepatic portosystemic shunt, surgical exploration, or peritoneovenous shunt[2].

Case Report

A 65 year old hypertensive male with CKD (chronic kidney disease) reported to medicine opd of ourhospital with complaints of decreased urine output, loss of appetite, nausea and altered sleep pattern. He had a history of hypertension for 15 years and was suffering from CKD for the last 2 years. The patient's medications during the past two months included oral calcitriol, torsemide, sevelamer carbonate and atorvastatin.On clinical examination, the patient was found to have pallor, pedal edema and a sallow complexion with elevated blood pressure of 172/94 mm Hg, pulse of 68/minute, regular and signs of fluid overload. Respiratory rate was 12/minute and buccal temperature was 98.6°F.Laboratory investigations showed elevated serum urea and serum creatinine levels. Serum urea was 200.9 mg/dl and serum creatinine was 7.1 mg/dl, hemoglobin (Hb) was 8.8 g/dl, Total leukocyte count (TLC) was 7000 cells/mm^3 with an ESR of 30 mm 1st hour using Westergren's method. Liver function tests and serum electrolytes were within normal range. Routine urine examination revealed no abnormality and Chest X-Ray, ECG were also reported within normal limits.

The patient was planned for peritoneal dialysis. A Tenchkoff catheter was placed in peritoneum and the patient had 6 sessions of hemodialysis in 14 days. All the previous medications were continued. After 14 days the patient was shifted to peritoneal dialysis with 2.5% Dianeal solution. The initial days of onset of peritoneal dialysis were uneventful. On day 5 of initiation of peritoneal dialysis, he was prescribed amlodipine 5 mg for uncontrolled hypertension with blood pressure of 180/98 mm Hg. On day 8 of initiation of peritoneal dialysis, the patient reported that the peritoneal fluid had become cloudywith thick milky white fluid. On naked eye examination the fluid was found to be milky white in appearance, and was not associated with any new clinical findings in the patient. Laboratory investigations revealed patient's serum urea98.2 mg/dl, serum creatinine 3.8 mg/dl,Hb 8.6 mg/dl, TLC 7800 cells/mm^3 and ESR around 25mm 1sthour by Westergren method. LFT's and serum electrolytes were within range. Routine urine examination was also within normal limits. The fluid was sent for analysis and was found to be negative on gram staining, ZeihlNeelson staining and KOH mount. Investigations revealed no cells in the fluid. Serum Ascites Albumin Gradient (SAAG) was 0.89. Serum amylase levels and triglycerides were 26.6 U/dl and 88.4 mg/dl respectively, whereas effluent amylase and triglyceride levels were 16.3 U/dl and 293.8 mg/dl respectively.

Amlodipine was stopped since the BP had lowered down to 100/60 mm of Hg. Meanwhile, the patient did not report any new complaints and there was no change in his clinical condition. The next day, after 24 hours of withdrawal of amlodipine, the peritoneal effluent started becoming clearer. A repeat analysis of the effluent showed no cells, a triglyceride level had fallen to 2.1 mg/dl and a serum albumin ascitic gradient (SAAG) of 1.4.

The patient underwent a CT Chest and an abdominal MRI which showed no signs of thoracic duct injury, sarcoidosis, malignancy, pancreatitis, retroperitoneal fibrosis, liver cirrhosis, amyloidosis or infections such as tuberculosis etc. Montoux's test was also negative.There was no suggestive history of whipple's disease, filariasis or SLE with a negative ANA value of 0.12 U/L (Range < 1.0 U/L). There was no history of radiation exposure also the echocardiography was normal which ruled out any dilated cardiomyopathy. Nephrotic syndrome was also ruled out with no suggestive investigations.

Discussion

Calcium channel blocker related chylous ascites has occasionally been observed in patients on peritoneal

dialysis. Dihydropyridine calcium channel blockers have been reported to produce cloudy (in fact almost white) effluent because of high triglyceride levels[3,4,5]. The problem was first reported when manidipine was used[6]. Subsequently, benidipine, nisoldipine, nifedipine[7], and lercanidipine[8] were also reported to produce cloudy dialysate. The exact mechanism involved is unclear but is thought to be related to their lipophilic nature. Another possible mechanism is continuous peritoneal lymph-vascular dilation due to amlodipine besilate. Most authors suggest that calcium channel blockers improve peritoneal vascular perfusion and therefore increase renal clearance through an effect on vascular smooth muscle cells.In our patient,there was no history of recent trauma. Malignancy was ruled out by lack of suggestive history and any other suggestive evidence despite extensive investigations. Initiation of therapy with amlodipine was followed by development of low SAAG ascites with high triglyceride levels which changed into high SAAG ascites with remarkably low triglycerides levels after amlodipine was withdrawn. Rechallenge was not done due to ethical reasons. Dechallenge test is an evidence in support of amlodipine being the causal agent of chylous ascites in our patient.This patient didn't have any more episodes of milky white effluent during peritoneal dialysis throughout his stay in our hospital and on follow-up. The incidence and clinical impact of this adverse effect is not known. The mechanism of this phenomenon is unknown but is worthy of further investigation.

Conclusion

To the best of our knowledge the present case report is the first in which chylous ascites in patients on peritoneal dialysis can be attributed to amlodipine and hence should be considered as one of the possibilities in such patients.

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Competing Interests

None declared

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