Resolution of Eosinophilic Peritonitis with Hypoalbuminemia by Oral Prednisone Acetate in an Elderly Patient Receiving Continuous Ambulatory Peritoneal Dialysis

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A 79-year-old patient developed severe hypoalbuminemia associated with eosinophilic peritonitis (EP) after receiving continuous ambulatory peritoneal dialysis (CAPD) for 3 years. The hypoalbuminemia and EP treated successfully with the use of prednisone acetate. This case is reported to emphasize the importance of diagnosis of EP that should be suspected when the peritoneal dialysis (PD) patient presents with severe hypoalbuminemia combined with turbid effluent along with repeated negative cultures. A short course of low-dose oral glucocorticoid may be considered in accelerating the resolution of the episode in such cases.

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Case Report

INTRODUCTION

Eosinophilic peritonitis (EP) is an infrequently described but a vexing problem when occurs in peritoneal dialysis (PD) patients.[1] Although it is usually benign and self-limiting if observed early during the PD course, prolonged episodes and severe comorbidities may occur.[2] We report a case of severe hypoalbuminemia associated with EP that responded to short course of low-dose oral prednisone acetate.

CASE REPORT

A 79-year-old male who had been maintained on continuous ambulatory peritoneal dialysis (CAPD) for 3 years was admitted to hospital with turbid PD effluent for one month. On admission, he denied any history of abdominal pain, fever, vomiting, and change in bowel movements, rash or purpura. Laboratory tests revealed a white blood cell (WBC) count of 10.49 $\times 10^9$/L (58.3% neutrophils, 27.0% eosinophils), a C-reactive protein (CRP) of 4.6 mg/L, peritoneal fluid with 910 $\times 10^6$/L WBC (85% polymorphonuclear cells, differential not performed), and a serum albumin of 23 g/L (38 g/L one month ago). Even with all treatments, such as peritoneal lavage, empirical antibiotic treatment by intraperitoneal injection of cefazolin combined with cefoperazone for 3 days, and then altered the antibiotic treatment to intraperitoneal injection of vancomycin (1 g/ 3d) combined with cefoperazone for 6 days, the PD effluent remained turbid. The dialysate returned a negative culture on the 4th day from using antibiotics.

On the 6th day, a WBC differential on PD effluent revealed total WBC count of 960 $\times 10^6$/L with 90% eosinophils. The repeated microbiological cultures of dialysate presented no growth of bacteria, or fungi, and negativity for acid-fast stain. Physical and chemical examination didn't reveal any sign of malignancy, vasculitis, and other immune-related diseases. The secondary causes of eosinophilia were not found, and then the patient was diagnosed with EP. The patient continued asymptomatic, and the antibiotics were then discontinued. Levocetirizine 5 mg once daily orally was given as anti-allergic treatment, and the total WBC count of PD effluent revealed 840 $\times 10^6$/L with 90% eosinophils after 3 days. From the 13th day of admission, the patient initiated oral prednisone acetate with a daily dose of 20 mg. His PD effluent became clear 2 days after start of oral prednisone acetate. Within a week the dialysate total WBC count decreased to below 50 $\times 10^6$/L and contained no eosinophils, peripheral blood eosinophilia count decreased to normal range

(Figure), and the serum albumin increased to 29 g/L. Prednisone acetate was regularly weaned off and discontinued over an 8-week period. There was no recurrence of EP or infectious peritonitis during the subsequent six-month follow-up period.

DISCUSSION

EP is defined as the presence of a white cell count exceeding 100 $\times 10^6$/L with ≥ 10% eosinophilia in the dialysate of patients receiving maintenance PD,[1,2] which was first described by Lee and Schoen in 1967.[3] This condition is benign, generally self-limiting, and seldom associated with severe comorbidities.[4] It generally occurs within the first 3 months after peritoneal catheter insertion, although it may arise as early as the first day or as late as 63 months.[5,6] The cause of EP is obscure, as it is usually observed during the initial weeks of PD, it has been hypothesized as an allergic reaction of the peritoneal membrane to various stimuli.[7-12] Most of EP cases usually resolve spontaneously after stopping the stimuli of the peritoneal membrane. Occasionally, EP may induce excessive peritoneal protein loss, which may lead to hypoalbuminemia.[8] However, treatment may be essential for patients with severe abdominal pain or to keep catheter unblocked when PD effluent is obviously turbid.[6,13-5] It was reported that EP could benefit from short courses of therapy with: 1) antihistamines, such as ketotifen,[8] diphenhydramine[13]; and 2) montelukast, a leukotriene antagonist.[16] Administration of corticosteroids has been suggested for refractory cases in the presence of severe abdominal pain or to keep catheter patency if the PD effluent is noticeably turbid.[5,17,18] In our case, however, hypoalbuminemia occurred due to EP; the hypoalbuminemia and EP resolved with the use of prednisone acetate. Our case highlights the importance of diagnosis of EP, which should be suspected when the PD patient presents with severe hypoalbuminemia combined with turbid effluent along with repeated negative cultures, and reviewing serum albumin as both a nutritional and inflammatory marker in PD patients, as well. A short course of low-dose oral glucocorticoid may be considered in accelerating the resolution of the episode in such cases.

DECLARATIONS

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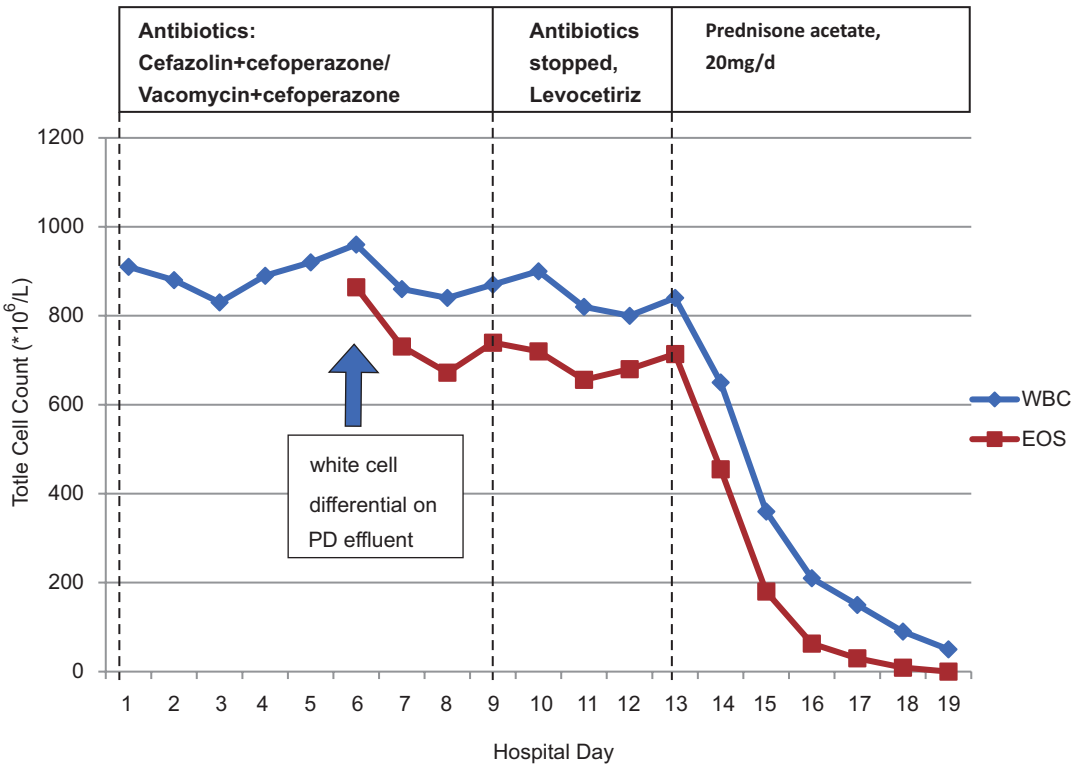
Not applicable.



It shows serial white blood cell (WBC) and eosinophil (EOS) counts in peritoneal effluent.

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Availability of Data and Materials

All data supporting the presented case report is contained within the manuscript.

Authors' Contributions

BY analyzed the data, contributed to wrote and revised the manuscript. JL, YHQ, YRZ, and HTY collected the information regarding the case, contributed to the data acquisition and revised the manuscript. All authors read and approved the final manuscript.

Ethics Approval and Consent to Participate

Human subjects/informed consent statement: All procedures followed were in accordance with the ethical standards of the responsible committee on human experimentation (institutional and national) and with the Helsinki Declaration of 1975, as revised in 2000. Informed consent was obtained from the patient for being included in the study. The authors for this article carried out no animal studies.

Consent to Publish

Written informed consent was obtained from the patient for publication of this case report.

Competing Interests

The authors declare that they have no competing interests.

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