Eosinophilic Peritonitis In A Patient On Continuous Ambulatory Peritoneal Dialysis

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Abstract: Peritoneal eosinophilia with cloudy dialysis effluent is reported in a 71 year old patient with diabetic Nephropathy. This resolved over a period of 4 weeks. Different etiology of Peritoneal eosinophilia is discussed.

Key Words: Peritoneal Eosinophilia, Peritoneal Dialysis

Introduction:

Peritoneal eosinophilia is defined as an eosinophil count greater than 10% of total WBC count when the absolute number of eosinophils is greater than 40/mm3 (1), or an absolute count of greater than classically associated with idiopathic eosinophilic peritonitis. The frequency of eosinophilic peritonitis has been reported as 16-30% in the intermittent peritoneal dialysis population (2) to as high as 61% in continuous ambulatory peritoneal dialysis although it can occur as early as the first day (3) or as late as 6 months (2) and it is usually a benign self-limiting process. We report a case of early-onset eosinophilic peritonitis, which resolved over a period of 4 weeks.

Case report:

A 71 year-old man with end stage renal disease secondary to diabetic nephropathy was admitted for initiation of CAPD. Apart from diabetes, he had past history of coronary artery disease for which he had undergone coronary artery bypass grafting and peripheral vascular disease for which bilateral external iliac artery stenting was done about 5-year back. He was an ex-smoker and examination was unremarkable except for ischemic toes and presence of photocoagulation scars along with background diabetic retinopathy in the retina. He had a history of depressive disorder. There was no history of any disease known to be associated toxicemia, multivitamins, and erythropoietin.

He had evidence of urinary tract infection due to E.coli, for which he was given cefoperazone for a week. There was hemorrhagic effluent when catheter flushing was done with one liter of PD fluid and 1000 units of heparin on second day after insertion of Tenckhoff peritoneal catheter by surgical technique. Due to poor tolerance to acetate-based hemodialysis, patient was given intermittent peritoneal dialysis (IPD) one session during the break in period. After a break in period of 2 weeks, CAPD was commenced (Dianeal 1.5%, Baxter, New Delhi, India). But on third day, peritoneal effluent obtained after over night exchange was cloudy. There was no pyrexia, pain or abdominal symptoms. The exit site was healthy and there was no abdominal tenderness. Vancomycin 1 gm once a week, ceftazidime 1 gm daily were administered intravenous route and heparin was administered intra peritoneally for 2 weeks. The peritoneal effluent analysis done on two consecutive days revealed WBC count of 480/cumm and 550/cumm, with predominantly eosinophils (neutrophils 38%, Lymphocytes 10% and eosinophils 52%). The initial smears were Gram stains negative and cultures for aerobic bacteria were sterile. Smears for acid-fast bacilli were negative. Neither parasites nor their ova could be found in the stool samples. There was no evidence of peripheral blood eosinophilia. Patient remained asymptomatic and antibiotics were stopped at 2 weeks. The dialysate cleared up and Dialysate WBC counts obtained at 1,2,4 weeks of CAPD were 260, 140 (eosinophils 40%), 20 per milliliters respectively. The final cultures for bacteria, acid-fast bacilli, and fungi were negative.

Discussion:

Idiopathic eosinophilic peritonitis is a well-known generally benign complication of PD(4). Its incidence was reportedly very high in the 1980s (2,3,5,6), but attention to this condition markedly declined afterwards. This may have been due to an absence of new information and a consequent loss of interest in this entity, but also to decreased incidence in parallel with improvements in the quality of PD materials. In any case, peritoneal eosinophilia can be easily diagnosed
during the first weeks of PD therapy, after prospective cytological evaluation of, seemingly normal peritoneal fluids or, more frequently, in the presence of mil, transient, and asymptomatic fluid turbidity, which is often appreciated only after the nocturnal dwell. The index case experienced an asymptomatic eosinophilic peritonitis within the first week of CAPD, which resolved over a period of four weeks.

The mechanism of eosinophilic peritonitis remains obscure but has been most frequently attributed to hypersensitivity to PD materials, (4). This hypothesis is supported by the fact that eosinophilic peritonitis presents usually, but not universally, during the first weeks after the initiation of PD therapy (2). Various offending agents linked to peritoneal eosinophilia include: Plastics or plasticizers in the catheter or Dialysate bags, air introduced into the peritoneal cavity at the time of surgery or the course of dialysis, blood oozing into the peritoneum during and after catheter insertion or additives such as heparin or antibiotics, or the dialysis fluid itself (3). However, eosinophilic peritonitis may represent a common response to different noxious stimuli, such as mechanical or chemical irritation, air, uremia, and other factors and might have been the cause in our patient (4,5). Noticeably, eosinophilic peritonitis is occasionally present during icodextrin-related peritonitis. Identifying the role of infection as a cause of eosinophilic peritonitis may help to establish a correct differential diagnosis and to plan therapy for this condition (6, 7, 8).

The clinical pattern of infectious eosinophilic peritonitis differs from idiopathic eosinophilic peritonitis. However, overlap in presentation with infectious eosinophilic peritonitis is significant, which should be taken into consideration at the time of planning therapy for this condition. A subset of cases of eosinophilic peritonitis developing early in the course of PD therapy, with few or absent clinical symptoms, relatively low dialysate leukocyte and neutrophil counts, and marked peritoneal eosinophilia can be confidently left untreated, in the absence of reliable bacteriologic information. On the contrary, cases presenting beyond the third month on PD, with overt abdominal pain, high peritoneal leukocyte counts, and moderate eosinophilia are very likely to have an infectious etiology due to Aspergillus niger, Pseudallescheria boydii, and strongyloides stercoralis (7, 8).

Although mild peritoneal eosinophilia is self-limited and has a uniformly benign prognosis, overt idiopathic eosinophilic peritonitis may follow a persistent or recurrent clinical course, is often symptomatic, and can benefit from short course of therapy with steroids, diphenhydramine, or ketotifen (9, 10).

The incidence of infectious peritonitis has been steadily decreasing with the advent of better connecting systems. Eosinophilic peritonitis should be considered in the differential diagnosis of cloudy peritoneal fluid occurring with the first months of commencing dialysis.

References: