

Case Report

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Vancomycin Induced Eosinophilic Peritonitis: A Case Report

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Introduction

Peritonitis is a major drawback of peritoneal dialysis leading to outflow failure, malnutrition, catheter malfunction, and drop-off of peritoneal dialysis [1,2]. Peritonitis is categorized as bacterial, fungal, viral, or chemical. Peritoneal fluid analysis helps to differentiate these categories to avoid overtreatment with antibiotics [3]. Over treatment might contribute to antibiotic resistance and fungal peritonitis [4]. Eosinophilic peritonitis (EP) was first described more than 40 years ago and is developed in response to foreign substances [5].

Drug induced peritonitis is a rare but important complication of CAPD. Hereby, we report a case that developed eosinophilic peritonitis during intraperitoneal administration of vancomycin. With a suspicion of vancomycin-induced eosinophilic peritonitis, vancomycin was discontinued. Antihistamine started and the PD effluent two days after stopping the drug revealed a WBC count of 85/ μ l (10% Eosinophil, 71% Lymphocytes). Systemic signs improved dramatically in less than a week. In conclusion, drug induced peritonitis should be considered in different diagnosis of each patient on CAPD before considering administering another new antibiotic.

Keywords: Vancomycin; Peritonitis; Allergy and Immunology; Child.

Running Title: Vancomycin Induced Eosinophilic Peritonitis

EP is defined as an eosinophilic count more than 100/ mm^3 (or >10% of the total WBC count) with more than 100 WBCs/ μ l in the PD effluents associated with clinical signs of peritonitis [6]. The etiologic factors are different including components of the dialysis system such as the tubing or dialysate bags, air in the peritoneum, dialysate itself, or intraperitoneally administered (IP) medications, including antibiotics. It is important to identify the etiologic factor because unnecessary antibiotic treatment may be given or, conversely, should it persist, may mask genuine

infection. The diagnosis needs to be specifically sought because most laboratories report the total white blood cell count without distinguishing between neutrophils (PMN) and eosinophils (E) in response to a request for routine microscopy and Gram stain of peritoneal dialysate effluent. EP is frequently benign and often resolves spontaneously, although it may occasionally lead to peritoneal protein loss and hypoalbuminemia [7-8]. One of the important drugs that may cause EP is vancomycin. Intraperitoneal vancomycin (IP-V) has been widely advocated for the treatment of peritonitis associated with continuous ambulatory peritoneal dialysis (CAPD). Hereby, we report a case of peritonitis treated by IP-V who developed EP in the course of therapy.

Case Report

The patient was a three-year-old girl with end-stage renal disease secondary to agenesis – dysplastic kidneys who was on CAPD since birth. The first catheter was a two-cuffed straight Tenckhoff catheter inserted surgically. The course of PD was unremarkable except one episode of catheter displacement that relocated by laxative in infancy, the second event was Dacron sheet extrusion at age 3 years. The catheter was replaced with a swan-neck Tenckhoff catheter via open surgery. Four days later, she returned to the clinic because of effluent cloudiness and mild abdominal symptoms. Analysis of the effluent showed a WBC count of 145 / μ l (60% PMN) that increased to 1400 WBCs / μ l (80%PMN). The dialysate culture showed staphylococcus epidermidis resistant to methicillin and aminoglycoside, and sensitive to glycopeptide. Therefore, IP-V was started and continued for 11 days. During therapy, she had a persistently hyperreactive airway. On the 10th day of treatment, pruritic papules appeared on the entire body skin.

The PD effluent turned turbid and the analysis revealed a WBC count of 1700 / μ l (71% E) with a negative culture. With suspicion of vancomycin-induced EP, vancomycin was discontinued. Antihistamine was started and the PD effluent two days after stopping vancomycin had 85/ μ l white blood cells (10% E., 71% L). Systemic signs improved dramatically in less than a week.

Discussion

Chemical non-eosinophilic peritonitis secondary to IP-V has been already reported in the literature. This condition is treated by discontinuation of IP-V or changing it to intravenous vancomycin. [9-11]

EP is widely administered in patients initiating PD with an incidence of 4% – 60% (with more recent studies pointing to a lower incidence since the 1990s). In these cases, PD effluent cultures are negative and the pathogenesis is thought to be either an allergic reaction to a component of the PD system (catheter, solutions, sterilants, or plasticizers) or introduction of air into the peritoneum. In the majority of the cases, the episodes are self-limited and of little consequence. A wide range of infectious agents has been associated with EP [12]. Less common causes of EP include allergic reactions to medications, such as icodextrin instilled into the peritoneum. The exact incidence of EP secondary to drug allergies is unknown. However, in the largest case series of EP, none were caused by drug reactions and in a recent pediatric case series of 13 episodes of EP, none were conclusively identified as being secondary to medications.

Given the frequency of vancomycin administration, allergic reactions are relatively rare but problematic given the limited number of effective antibiotics available to treat resistant infections. Allergic reactions to vancomycin include anaphylaxis, drug hypersensitivity syndrome [drug reaction with eosinophilia and systemic symptoms (DRESS syndrome)], and delayed-type immune hypersensitivity reaction [13-15].

In this current case, the patient's major manifestation of vancomycin allergy was EP with a systemic reaction. In this case, the appearance of a cloudy dialysate may have been a very early indicator of an allergic reaction, and early cessation of vancomycin may have avoided a more systemic reaction.

In summary, drug-induced peritonitis should be considered in different diagnosis of each patient on CAPD before considering administration of a new antibiotic. It highlights the importance of differential cell counts in peritoneal fluid samples, careful assessment of the potential causes of EP, and exclusion of bacterial and fungal etiologies. With the increased incidence of vancomycin use, more such episodes may be encountered.

Acknowledgement

The abstract of this study was presented as poster in the 3rd International Congress of Iranian Society of Pediatric Nephrology, Tehran, Iran [16].

Conflict of Interest

None declared

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None declared

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