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Moraxella Catarrhalis peritonitis

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Summary

Background: Peritonitis continues to be a major complication of peritonitis in peritoneal dialysis patients. Recent advances in connectology and better patient training have decreased the incidence of peritonitis in the last two decades. Peritonitis in PD patients is usually due to gram positive and less often due to gram negative organisms. Herein we report a case of peritonitis due to *Moraxella Catarrhalis* and review the literature on the diagnosis and treatment of this rare cause of peritonitis.

Case Report: Our patient was a 56 year old man with end stage renal disease, on peritoneal dialysis, who was totally asymptomatic and on routine clinic visit was noted to have a high white blood cell count in his peritoneal fluid. Due to the nature of the organism, it took two weeks and two different microbiology laboratories to identify the organism and provide proper treatment.

Conclusions: Peritonitis is the major cause of peritoneal dialysis failure and prompt recognition of the causative agent is of crucial importance to the proper and timely management of this complication.

key words: ***Moraxella*** • **peritonitis** • **dialysis**

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Background

Peritonitis is a major complication of peritoneal dialysis. With improvements in connectology and better staff and patient training, its incidence has decreased in the past two decades but it continues to be the leading cause of patient transfer from peritoneal to hemodialysis treatment. Gram positive organisms are the usual cause of peritonitis, but increasingly, uncommon organisms are emerging as causative agents. We recently encountered a challenging case of *Moraxella Catarrhalis* peritonitis and we would like to review the existing literature and point out some of the recent developments in the diagnosis and treatment of this infection.

Case Report

The patient was a 56 year old diabetic, hypertensive man with a prosthetic aortic valve, on warfarin and on peritoneal dialysis, who during a routine clinic visit, was noted to have hazy, blood tinged peritoneal fluid. The fluid contained 37 white blood cells (WBC), 11% neutrophils and 228 RBCs/c mm. Gram stain of the fluid showed gram positive organisms and he was started on intraperitoneal (IP) vancomycin therapy. At 48 hrs, repeat fluid WBC count was 1250, 15% neutrophils and 1500 RBCs/c mm and the lab reported growth of plump gram variable bacilli and diphteroids. Vancomycin was continued and ciprofloxacin was added but he continued to have high peritoneal fluid cell counts. The culture was sent sequentially to two reference laboratories, identified by one as M. non-liquefaciens after two weeks and definitively by the other as beta-lactamase positive *M. Catarrhalis*. The organism was sensitive to ceftazidime, ceftriaxone, cefuroxime, clarithromycin, amoxicillin/clavulanate, ciprofloxacin, levofloxacin, tetracycline and trimethoprim/sulfamethoxazole. Peritonitis responded to 3 weeks of therapy with IP vancomycin for diphteroids and 3 weeks of IP ceftazidime for *M. Catarrhalis*. Peritoneal fluid RBC count decreased, but persisted after adjusting warfarin dosage. A CT scan of the abdomen failed to reveal any mass lesion in the abdominal viscera that could explain the presence of blood in the peritoneal fluid. Repeat cultures of peritoneal fluid over the next 6 months have remained negative.

Discussion

Moraxella Catarrhalis, formerly known as *Branhamella Catarrhalis*, is an infrequent cause of peritonitis in peritoneal dialysis patients. So far, only five cases have been reported in the literature [1–4]. Moraxella species are gram negative, non-motile diploccocci and may be encapsulated. They are aerobic and except for *Moraxella Osloensis*, they are nutritionally fastidious organisms. They are oxidase positive, catalase negative, best grow at 33 to 35 degrees C and they do not produce acid from carbohydrates. Cells usually occur in pairs of short chains and pleomorphism is enhanced by lack of oxygen and high temperature of the culture medium. Members of the genus include, *M. Catarrhalis*, M. non-liquefaciens, *M. Osloensis*, *M. Atlantae* and *M. Lacunata*. They were originally placed in the genus of *Nisseria*, later transferred to the genus of *Branhamella* and finally placed in a genus of their own [5].

M. Catarrhalis is the most common member of the species and human beings are its exclusive host. Nasopharyneal colonization is seen in 70 to 80% of children and 1–5% of adults. It is more common in winter and spring months. It is a pathogen of the respiratory system, causing pneumonia, bronchitis, laryngitis, tracheitis, sinusitis, otitis and prolonged cough. Underlying cardiopulmonary disease, chronic obstructive lung disease and cigarette smoking are common predisposing factors. *M. Catarrhalis* has also been reported to cause bacteremia, endocarditis, meningitis and keratitis in patients with cancer, neutropenia and respiratory tract diseases [6,7].

Identification of the organism requires culture on blood or chocolate agar plates and usually takes 24 to 48 hrs. Due to this, butyrate esterase spot test is used as a rapid way, up to 30 seconds, to identify *M. Catarrhalis* in pure culture. However the test may give false positive results in the presence of staphylococcus and *Candida Albicans* [8]. Attempts have been made to identify the outer membrane proteins of the organism that are responsible for antibody production in an attempt to produce a vaccine against these infections. The null LOS mutant of Moraxella may be a potential candidate for vaccine production [9–11].

Most strains (>90%) of *M. Catarrhalis* are beta-lactamase producers, mostly of the BRO-1 isotype. Due to this, the organism is resistant to penicillin, ampicillin and co-trimoxaxole but sensitive to cephalosporins, fluroquinolones and amoxicillin/Clavulanate [12,13].

M. Catarrhalis can also cause peritonitis in dialysis patients. McArthur [1] reported two cases of peritonitis in CAPD patients and pointed out the difficulty in treating these patients. The organism is readily identifiable in sputum specimens but sometime, like in our case, identification may take much longer time. This may create problems with what to do with the patient and the peritoneal dialysis catheter. As was shown in our case, continuation of antibiotic therapy and close monitoring of the patient is a prudent course of action. Of note, empirical choice of antibiotic therapy with vancomycin and ceftazidime, as recommended by the International Society of Peritoneal Dialysis guidelines [14], is sufficient and appropriate for the initial treatment of *Moraxella* related peritonitis. Once the organism is identified and its susceptibility is known, treatment should be continued with an appropriate antibiotic for10 to 14 days.

Conclusions

Peritonitis remains a serious complication of peritoneal dialysis. Prompt and accurate identification of the causative organism is of utmost important to the successful treatment of peritonitis. We have presented a case of *M. Catarrhalis* peritonitis and commented on the methods of diagnosis and treatment of this infrequent cause of peritonitis in peritoneal dialysis patients.

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