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Case Report

Follow-up of pseudomembranous colitis in children using colonoscopy

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ABSTRACT

Pseudomembranous colitis (PC) is a common nosocomial disease. The most common etiology of the disease is *Clostridium difficile* and also many other causes can be having role in the occurrence of the disease. This disease is not very common in children and is mostly related to the use of antibiotics and hospitalization. Here, we report a case of PC in an 8-year-old boy who had no history of taking antibiotics and hospitalization.

Keywords: Children, Colonoscopy, Follow-up, PC

INTRODUCTION

One prevalent nosocomial illness that affects the colon from the digestive system is PC. *Clostridium difficile* is the disease's most frequent cause. Ischemic colitis, vascular collagen disorders, Behcet's disease, cytomegalovirus, chemotherapy medications, and heavy metals are a few of the less frequent causes of this illness.[1] Every year in the US, infections with *Clostridium difficile* cause 29,000 deaths. This bacterium is the most prevalent pathogen linked to diarrhea in older patients admitted to hospitals and with a history of antibiotic use. During the first two weeks of hospital stay, 13% of patients and 50% of patients during the fourth week have this bacterium colonized.[2]

Old age, the use of stomach acid-neutralizing medications, recent digestive system surgery, immunodeficiency, chemotherapy, and feeding tube use are risk factors for acquiring this bacterium. There is also a chance of contracting the illness in the absence of these risk factors.[1] Toxins A and B released by *Clostridium difficile* cause colon epithelial cells to undergo apoptosis.[3] Although reports of PC have been made in people of various ages, children are less likely to experience it. Patients can have everything from toxic megacolon to moderate diarrhea. The most prevalent drugs linked to PC are ampicillin, amoxicillin, second and third generation cephalosporins, and clinamycin.[4-6]

In this article, we describe the case of an 8-year-old child who had severe abdominal symptoms, including nausea, vomiting, fever, and diarrhea. A colonoscopy revealed that the child had a false membrane, which allowed for an accurate diagnosis and suitable therapy.

CASE REPORT

An 8-year-old kid was admitted to the hospital by his family after he had been experiencing stomach pain, weakness, lethargy, vomiting, fever, and diarrhea (one of which was bloody) for a month. Prior to admission, there was no history of hospitalization or pharmaceutical use (steroid, proton pump inhibitor, or antibiotic) during the six months before. The patient was just taking tablets for iron and zinc.

Body temperature was 38.5 degrees Celsius; heart rate was 92 beats per minute, and breathing rate was 19 beats per minute at the start of hospitalization. There was a 100-mmHg systolic and a 60-mmHg diastolic blood pressure. The patient weighed 24 kg (75th percentile), measured 128 cm (75th percentile) in height, and had a BMI of 14.64.

In physical examination, he was conscious and alert. The patient did not have a toxic condition. No suspicious findings were found in the systemic examinations. Abdominal pain was colicky. There was no guarding, tenderness or rebound tenderness.

In the first step of work up, a blood test was requested for the patient. The results of the initial tests were as follows:

Leukocytes 4900/mm^3 (4000-10000), neutrophils 82% (36.3-75.5), erythrocytes 4.13 mill/mm^3 (4.5-6.3), haemoglobin 12.2 g/dl (12-18), haematocrit 35.3% (39-52), platelets 189000/mm^3 (145000-450000), sodium 131 mmol/l (135-145), potassium 3.3 mmol/l (3.5-5.5) and CRP was positive (+++).

The patient was asked to submit to a stool and urine test. The urine test revealed no signs of a urinary infection. No infections grew in the patient's blood or urine culture while they were in the hospital. On the first day the patient was admitted to the hospital, the stool test revealed a loose consistency. It was colored green. There were no signs of parasites or their eggs. It was noted that there were 2-3 WBC and 0-1 RBC. For more testing, the patient was admitted to the hospital. The patient underwent intravenous hydration therapy and antipyretic medication for their fever and diarrhea. Stool, blood, and diarrhea tests were once more requested. The stool in the new stool test had a brown color and a diarrheal consistency.

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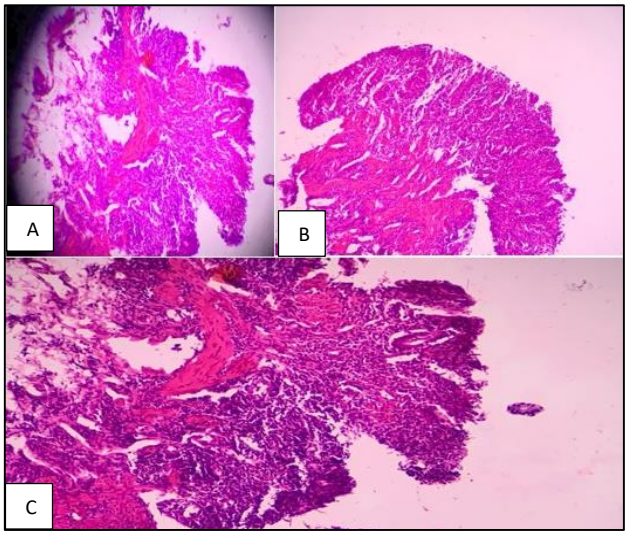

Figure 1 (A-C): Colonoscopy demonstrating PC. Rectal digital examination was unreliable. Diffuse PC with fragility changes and erythema can be seen in the sigmoid colon.

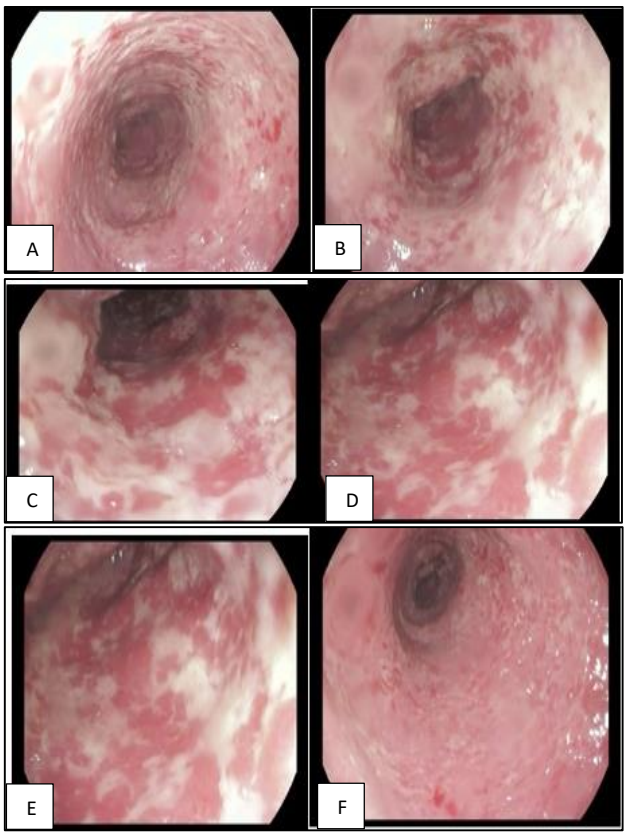

Figure 2 (A-F): Pathology report obtained from biopsy taken in colonoscopy. The pathology report confirms the layers of fibrous-purulent exudate and abrasion of mucous membranes and loss of crypt structure, crypt abscess and infiltration of inflammatory cells in the mucosa.

Despite ruling out conditions like ischemic colitis, intussusception, and inflammatory bowel illnesses, the

patient's presence of *Clostridium difficile* was not verified by PCR. As a result, the precise cause of the PC in this patient was not ascertained.

DISCUSSION

Tagliaferri et al in a case report study concluded that in treated patients, it is important to remember that PC and *C. difficile* are not interchangeable terms, and biopsy can be helpful in differentiating unclear etiologies of colitis.[7]

The pathognomonic term to describe PC is a volcanic eruption of fibrin and pus, which is evident on macroscopic and microscopic appearance, regardless of the cause. However, there are microscopic pathological findings specific to the etiology, such as acute crypt injury and dilation involving the upper lamina propria and crypts filled with exudate seen with *C. difficile*-induced colitis versus additional findings of cell apoptosis and increased intraepithelial lymphocytes seen in drug-induced colitis.[8,9] Neither of these pathological subsets was visualized on the biopsy taken from our patient, in which only evidence of PC was detected without other specific findings. Because our patient was in septic shock during hospitalization, it can be questioned whether he developed superimposed, ischemia-induced colitis. However, on microscopic visualization, one would detect hyalinization of the lamina propria, hemorrhage, and full-thickness mucosal necrosis, none of which were seen on our patient's pathology slides. Although biopsy can help diagnose and direct management in cases where the etiology is unclear, our patient's case was more complex without definitive answers.

Carlos et al in a case study entitleds Severe ciprofloxacin-associated PC in an eight-year-old child" resulted that the safety and efficacy of fluoroquinolones in children has not yet been established. Use of these antibiotics in children outside investigational protocols ("off-label" use) as oral anti-pseudomonas agents is discouraged.[10]

Brook et al in a study reported that, ampicillin, amoxicillin, the second-and third-generation cephalosporins and clindamycin are the drugs most frequently associated with development of PMC, although nearly all antimicrobials have been implicated as causes of diarrhea and colitis. Discontinuation of antibiotics and supportive therapy usually lead to resolution of this disorder. Administration of oral vancomycin or other therapeutic regimens may be needed which was in line with our study results in drug administration.[11]

Zhao et al in a study showed that, colonoscopy found that PMC occurs mainly in the colon, sigmoid colon and rectum in up to 80% ~100% of cases. Colonoscopy is simple and fast. It has the significance of making a definite diagnosis and can be used as the main examination method of diagnosis. Reports of children suffering from PMC are rare. Herein, we report a case of PMC in a child. This report has some clinical value for the study of the spectrum of PMC in patients.[12]

CONCLUSION

The results of this case study demonstrated that PC can occur in kids who haven't been hospitalized or used antibiotics before, and also concluded that the patient's age and lack of these risk factors don't rule out the illness.

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