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Managing Antibiotic Associated Diarrhea with Pseudomembranous Colitis: A Case Report

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ABSTRACT

Antiobiotic associated diarrhea is a usual adverse event during antibiotic therapy. We present the case of a 32-year-old female diagnosed with diarrhea induced by antibiotics. After eradication of Helicobacter pylori by using antibiotics, she presented with hemorrhagic stools. The faecal examination was positive for, Clostridium difficile infection (CDI) although no toxins were detectable. Vancomycin was initiated for the C. difficile infection but the condition worsened due to treatment non-compliance. Finally oral metronidazole was prescribed. Stool abnormality improved and faecal test became negative after metronidazole treatment.

KEYWORDS: Antibiotic associated diarrhea, Clostridium difficile infection, Pseudomembranous colitis

INTRODUCTION

Diarrhoea is a very common adverse drug reaction following antibiotic intolerance. Antibiotic induced diarrhoea occurs in about 5-30% of patients either early during antibiotic therapy or within few months after the end of the treatment.[1-3] The prevalence of antibiotic-associated diarrhea across the globe has increased dramatically with the increase in use of antibiotics.[4] Countless preventive approaches to antibiotic-associated diarrhea have been studied. There is a concern that frequent use of powerful antibiotics has led to a vicious circle, in which the use of antibiotics has reduced the effectiveness of traditional antibiotics for C. difficile, and antibiotic-resistant C. difficile has emerged as a global public health issue.[4]

CASE PRESENTATION

A 32-year-old woman presented with the chief complaint of diarrhea. She suffered from frequent bowel movements and lower abdominal pain and tenderness. Diarrhea was bloody and mucous while the lower abdominal pain was cramping in nature. A few months back she has been treated with amoxicillin, clarithromycin and omeprazole eradication therapy for Helicobacter pylori infection. There was no other relevant medical or personal history. Except these antibiotics the patient had not taken any drug in the past few months. No concomitant medication or concurrent condition was reported by the patient. A few months later, she developed frequent bowel movements and hematochezia. Oral intake of food and drinks was poor. Fever and bloating of abdomen were also evident. All other vital signs were normal. Her white blood cell count was 14,100/mm3 with 56.7% segmented neutrophils. Sigmoidoscopy revealed multiple yellowish plaque lesions from the rectum to the sigmoid colon and mucosal biopsy from the sigmoid colon showed chronic inflammation with mucous exudates. A diagnosis of pseudomembranous colitis (PMC) was considered. Faeces examination for C. difficile was positive for glutamate dehydrogenase although no toxins were present. Treatment was started with vancomycin. However, due to inappropriate schedule of drug intake and missing doses frequently, her diarrhea and pain continued to worsen. She was started on metronidazole 500 mg three times daily along with intravenous fluid and electrolytes. In turn, the gastrointestinal symptoms were ameliorated by metronidazole. Hemorrhagic stool disappeared within 10 days. Diarrhea gradually regressed and overall condition improved. Feces examination changed to GDH negative few 4 weeks after treatment with metronidazole. The patient finished the treatment course and her symptoms did not recur. The only metronidazole related adverse events were metallic taste and nausea. However, no action was taken for the same and the therapy was continued.

DISCUSSION

There is increased demand for antibiotic therapy and antibiotics are now used around the world. The increased use of antibiotics alters the balance of the intestinal flora and causes dysbiosis. This also induces many complications including pseudomemranous colitis. Clostridium difficile infection can be blamed for nearly all the cases of PMC. The incidence of C. difficile-associated

diarrhea seems to be increased by acid-suppressing drugs such as proton pump inhibitors. Thus, the causal temporal relationship between omeprazole and pseudomembranous colitis cannot be ruled out. Host factors for antibiotic associated diarrhoea include old age and suppressed immune system.[5] Collectively, CDI appears to increase after eradication of H. pylori infection.[6] We also had a patient with CDI after H. pylori eradication. The newest antibiotics and therapeutic approaches such as faecal microbial transplantation are difficult to implement. Almost any antibiotic may cause C. difficile infection, but the broad-spectrum antibiotics with activity against enteric bacteria are the most frequent causative agents.[7]

The clinical manifestations of pseudomembranous colitis usually appear as diarrhea, hematochezia, lower abdominal pain, pyrexia and leukocytosis, but severe diarrhea can lead to medically significant complications like dehydration, electrolyte loss and imbalance, hypoalbuminemia, shock, acidosis and generalized oedema. Rarely, the affected patients can have life-threatening or fatal complications like toxic megacolon, necrotizing colitis, colon perforation, acute kidney injury, systemic inflammatory response syndrome, sepsis and death.[8] Endoscopic findings usually reveal an elevated yellowish pseudomembrane that is localized to rectum and sigmoid colon. Histologically, this pseudomembrane is composed of debris from epidermis, fibrinoid material and leukocytes and mucosal infiltration of leukocytes.[9]

Antibiotic associated diarrhoea results from disruption equilibrium of the gut microflora. Antibiotics disturb the composition and the function of this flora and enable overgrowth of micro-organisms that induce diarrhoea. Clostridium difficile has emerged as the major enteropathogen of antibiotic associated diarrhoea.[3] Secretion of potent toxins by this pathogen causes mucosal damage and inflammation of the colon. Other infectious agents reported to be responsible for antibiotic associated diarrhoea include Clostridium perfringens, Staphylococcus aureus, Klebsiella oxytoca, candida and Salmonella species. Antibiotic associated diarrhoea can also result from a decrease in metabolism of carbohydrates and bile acids.[10]

Management depends on the clinical signs and symptoms and also the causative agent. In non-serious cases, conventional measures include rehydration or discontinuation of the suspect drug. The primary or first line treatment regimen of Clostridium difficile related diarrhoea focuses on oral metronidazole or oral vancomycin. The uses of probiotics due to their benefits are unproved and are still a debated topic of research as few have been evaluated in double blind placebo controlled studies. The results of the small and open trials of treatment are not yet clear.

CONCLUSION

The prime measure for prevention of antibiotic associated diarrhoea and pseudomembraous colitis is to limit the use of antibiotics. The decision to continue, change, or discontinue antibiotics in a patient with these adverse events should depend on how severe are the symptoms and how much is the need for further antibiotic therapy to treat the underlying indication. Probiotics have proved useful in preventing diarrhoea, but the number of clinical trials is limited. When a patient complains gastrointestinal disturbances like frequent diarrhea with abdominal pain, the concerned healthcare personnel should include PMC in the differential diagnosis.

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