Follow-up of Pseudomembranous Colitis in Children Using Colonoscopy

A Case Report

Q Zhao[1], H Yuan[1], H Hu[1], MQ Yan[2]

ABSTRACT

Pseudomembranous colitis (PMC) occurs mainly in adults and is believed to be caused almost exclusively by toxins produced by Clostridium difficile. *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.*

Keywords: Children, colonoscopy, follow-up, pseudomembranous colitis

Seguimiento de la Colitis Pseudomembranosa en Niños Mediante Colonoscopía

Reporte de un Caso

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RESUMEN

La colitis pseudomembranosa (CPM) ocurre principalmente en adultos, y se cree que es causada casi exclusivamente por las toxinas producidas por Clostridium difficile. *La colonoscopía encontró que la CPM se produce principalmente en el colon, el colon sigmoideo y el recto, en hasta un 80% ~ 100% de los casos. La colonoscopía es sencilla y rápida. Tiene la importancia de hacer un diagnóstico definitivo, y puede ser utilizada como el método principal de examen para el diagnóstico. Son raros los reportes sobre niños que sufren de CPM. Aquí reportamos un caso de CPM en un niño. Este reporte tiene cierto valor clínico para el estudio del espectro de CPM en los pacientes.*

Palabras claves: Niños, seguimiento, colonoscopía, colitis pseudomembranosa

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INTRODUCTION

Pseudomembranous colitis (PMC) is an acute mucosal necrosis and cellulose exudative inflammation that occurs mainly in the colon but may involve the small intestine. The disease often occurs after use of antibiotics and may be referred to as antibiotic-associated colitis [AAC] (1–2). Pseudomembranous colitis occurs mainly in adults (3–5), and reports of children suffering from this disease are rare. Herein, we report a case of PMC in a child, and highlight some clinical values for the study of the spectrum of PMC in patients.

CASE REPORT

The investigation was reviewed and approved by the Institutional Review Board of the Children's Hospital of Shanxi Province, Taiyuan, Shanxi.

A nine-year old girl presented with a history of severe interstitial pneumonia, heart failure, respiratory failure, acute attack of asthma, thrush, and drug rash of 17 days duration. The patient received antibiotic treatment for 11 days (imipenem cilastatin for eight days and erythromycin for three days) and likewise methylprednisolone (4 mg/kg decreasing to 0.5 mg/kg). She was discharged after the condition improved and steroid therapy dosage was gradually reduced and withdrawn after one week of discharge.

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She started to show symptoms of fever and diarrhoea the day after her first discharge and was re-admitted to a local hospital six days later with those symptoms. Defecation was 4–5 times a day and the faeces was yellow with pus and blood. The highest body temperature was 38.5 ˚C. She was treated for acute infectious diarrhoea with cefepime, mezlocillin infusion therapy over three days. She was transferred to the Department of Gastroenterology of the Children's Hospital of Shanxi Province for more accurate diagnosis and effective treatment. There was cough occasionally, not accompanied by wheezing, abdominal pain, no vomiting and no rash. Appetite was normal, as was the urine.

On admission, temperature was 36.5 ˚C, pulse was 100 beats/min, breathing was 22 times/min, blood pressure was 116/70 mmHg and weight was 23 kg. She had normal development, moderate nutrition, clear consciousness, normal skin elasticity and body without jaundice, rash or purpura. There was no significant superficial lymphadenopathy. Oral mucosa was smooth, the lung fields were clear and heart sounds were normal without a murmur. The abdominal examination was normal.

Routine blood examination revealed: white blood cells 8.22×10^9/L, neutrophils 67.1%, lymphocytes 24.6%, platelets 228×10^9/L. C-reactive protein was 4.6 mg/L. Liver function, renal function, cardiac enzymes and electrolytes were normal and erythrocyte sedimentation rate (ESR) was 31 mm/hour (Westergren). There was no abnormality in the urine. Stool examination showed red blood cells 2–3, occult blood was positive (+) and rotavirus was negative. A second stool sample cultured *Escherichia coli* - EPEC (-), ETEC (-), EIEC (-), fecal smears mold (-). Pneumonia and bowel dysfunction were confirmed by chest and abdominal computed tomography. Abdominal ultrasound showed the left kidney had mild hydrocephalus, and the right kidney collecting system was separated. On intestinal pathology, there was chronic inflammation with erosion of the mucosa. Colonoscopy was done three times: at admission (Fig. 1), one week after treatment (Fig. 2) and one month later (Fig. 3).

Fig 1a

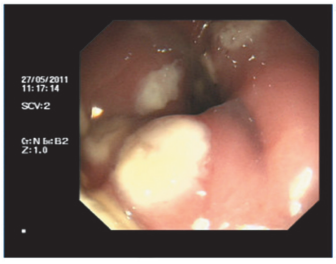

Fig 1b

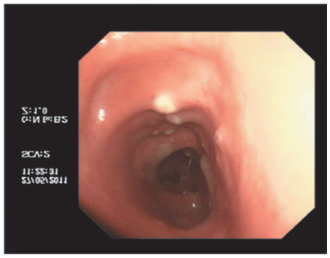

Fig. 1: The first colonoscopy result after admission: micro-raised patches of varied sizes distributed in the sigmoid colon (a) and descending colon (b). The surface is covered with yellow and white moss-like pseudomembranous material, and difficult to remove. The mucosa between lesions is normal.

Fig 2a

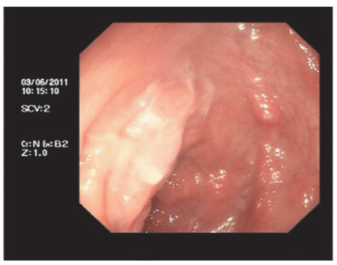

Fig 2b

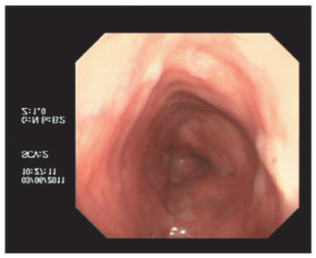

Fig. 2: The second colonoscopy result after treatment of one week: on the surfaces of sigmoid colon (a) and descending colon (b) can be observed micro-raised patches of varying sizes, not covered with yellow and white moss-like pseudomembranous material. The mucosa between lesions is normal.

Fig 3

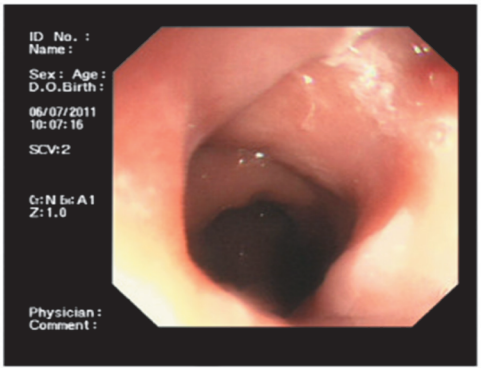

Fig. 3: The second colonoscopy result after treatment of one month: the mucosa of the sigmoid colon is normal with no micro-raised patches.

The preliminary diagnosis was acute infectious diarrhoea after admission. There was no significant improvement in the condition by treatment with cefoperazone infusion, and furazolidone orally for three days. The child had rectal prolapse during defecation and white secretions were visible perianally. She had a history of long-term use of broad-spectrum antibiotics before admission and this could have contributed to antibiotic-associated diarrhoea. Colonoscopy was performed within the first three days of admission and microscopy showed different sizes of micro-embossed plaques scattered in the descending colon, sigmoid colon and rectal mucosa. The surface was covered with yellow moss-like pseudomembranous material difficult to remove. The mucosa between lesions was normal. Based on the above findings, the patient was diagnosed with pseudomembranous colitis. Antibiotics were stopped immediately and she was administered an intravenous injection of metronidazole 350 mg twice a day, probiotic capsules orally and *Saccharomyces boulardii* for one week. Her fever receded and stool became normal. On repeat colonoscopy, the intestinal mucosa improved significantly. She was discharged after her condition improved but she continued to take metronidazole and probiotics orally for one week, and then stopped the medication after a total of two weeks. After two weeks, repeat colonoscopy examination showed a completely normal mucosa.

DISCUSSION

Pseudomembranous colitis occurs mainly in adults and is believed to be caused almost exclusively by toxins produced by *Clostridium difficile* (1, 6–8). Bartlett (9) considered endotoxin detection to be the gold standard for the diagnosis of PMC. Discontinuation of antibiotics and supportive therapy usually lead to resolution of this disorder (10). The clinical spectrum of this disease may range from a mild, non-specific diarrhoea to severe colitis with toxic megacolon, perforation, and death (11). In addition, 80% to 90% of patients may have dull lower abdominal pain, distending pain and vague pain; a small number of patients do not have pain. The vast majority of patients (approximately 80%) have fever and increased white blood cell count. A small number of patients have a severe fulminant onset with symptoms of high fever, severe diarrhoea, acidosis, electrolyte imbalance and shock. Paralytic ileus, intestinal obstruction and acute renal failure may also be associated with the disease. There is a mortality rate of ≤ 1%– 2% (12–14).

The main manifestations of PMC are observed on colonoscopy with a few millimetres to a few centimetres of bowel mucosal lesions, attached to the surface of yellow-white pseudomembranous lesions. The mucosa between lesions is normal or may be oedematous. It appears punctuate at the early stage and later fuses into irregular flakes or exfoliative lesions with bleeding occurring in severe cases as the lesions progress. Colonoscopy is simple and fast and is the main method of making a diagnosis. Due to PMC mainly involving the distal colon, the rectum and sigmoid were the main object of observation. Colonoscopy can be used as a simple method for follow-up and prognosis.

Irrational use of antibiotics is one of the main causes of PMC (15–17) and once PMC is suspected, the original use of antibiotics should be immediately suspended. Patients with mild symptoms may recover after stopping antibiotics. In critically ill patients, in addition to probiotics, the use of specific drug treatment is often required. The authors suggest that rational use of antibiotics is one of the key measures for the prevention and treatment of PMC.

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