INTERNATIONAL JOURNAL OF PHARMACEUTICAL SCIENCES
[ISSN: 0975-4725; CODEN(USA): IJPS00]
Journal Homepage: https://www.ijpsjournal.com

Case Study

Pseudomembranous Colitis with Toxic Megacolon: A Case Report

Ardra S A[1], Grace N Raju*[2], Bincy B K[3], Shaiju S Dharan[4]

[1,2,4] *Ezhuthachan College of Pharmaceutical Sciences, Marayamuttom, Thiruvananthapuram.*
[3] *Consultant Gastroenterologist, NIMS Medicity, Thiruvananthapuram.*

ARTICLE INFO
Published: 07 Jul. 2025
Keywords:
Pseudomembranous Colitis, Toxic Megacolon
DOI:
10.5281/zenodo.15828125

ABSTRACT

Pseudomembranous colitis is a condition where the lining of the colon becomes inflamed and irritated, often after taking antibiotics. It's marked by the appearance of yellowish-white patches, called pseudo membranes, which are made up of dead cells, immune cells, and protein. These patches form on the surface of the colon as a result of damage caused by toxins from an overgrowth of harmful bacteria, most commonly Clostridioides difficile. Toxic megacolon is a life-threatening complication of pseudomembranous colitis characterized by acute, severe inflammation of the colon, leading to massive dilatation (usually >6 cm) and systemic toxicity. Early diagnosis is essential for effective management and improved therapeutic outcomes. A 73 year old male was admitted to the gastroenterology department with the complaints of cough for 1 week and the patient had symptoms like fever two days back, abdominal distension, abdominal pain and excessive fatigue. The patient had past medical history of Type II Diabetes Mellitus, Systemic Hypertension and COPD. According to the physical examination, symptoms, diagnostic (CECT scan and sigmoidoscopy) and laboratory investigation, the patient was diagnosed with Pseudomembranous Colitis and was managed with IV antibiotics,Corticosteroids, Metronidazole, IV fluids and probiotics.

INTRODUCTION

Pseudomembranous colitis is a condition where the lining of the colon becomes inflamed and irritated due to damage from toxins produced by the pathogenic bacterium *Clostridiodes difficile*. It's marked by the appearance of yellowish-white patches, called pseudo membranes, which are made up of dead cells, immune cells, mucus and protein on the inner surface of the colon. These patches form on the surface of the colon as a result of damage caused by toxins from an overgrowth of harmful bacteria, most commonly *Clostridioides difficile.* [1] The main causes of pseudomembranous colitis are antibiotics use, hospitalization or long term care stay, weakened

***Corresponding Author:** Grace N Raju
Address: *Ezhuthachan College of Pharmaceutical Sciences, Marayamuttom, Thiruvananthapuram.*
Email : gnr090carmel@gmail.com
Relevant conflicts of interest/financial disclosures: The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

immune system, advanced age, use of proton pump inhibitors (PPIs), surgery or procedures involving the gastrointestinal tract, previous history of *Clostridiodes difficile* infection (CDI).[2] The symptoms of pseudomembranous colitis are severe watery diarrhea, abdominal pain, fever, loss of appetite, tenesmus, mucus or blood in stools, leukocytosis, hypoalbuminemia, fatigue, weakness, dehydration, nausea and vomiting.[3] Pseudomembranous colitis is usually diagnosed by evaluating patient symptoms, laboratory investigation test for detecting high WBC count and low albumin levels, testing stool samples for *C. difficile* toxins, through procedures such as colonoscopy and sigmoidoscopy and through CECT scan of abdomen and pelvis.[4] The complications of Pseudomembranous colitis is toxic megacolon, bowel perforation, protein losing enteropathy, colonic stricture, paralytic ileus, hypovolemic shock, sepsis and septic shock.[5] Pseudomembranous Colitis with toxic megacolon is a severe and dangerous form of *C. difficile* infection. In this condition, the colon becomes heavily inflamed and develops yellowish-white patches made of mucus, dead cells, and inflammatory debris. At the same time, the colon becomes excessively swollen and loses its ability to move normally (toxic megacolon), which can quickly become life-threatening due to the risk of colon rupture, severe infection, and organ failure.[6] This condition is managed through stopping unnecessary antibiotics that may trigger *C. difficile*, stopping all anti-motility agents like loperamide, opioids they worsen toxic megacolon, strict bowel rest by taking nothing orally, continuous monitoring of vitals, fluid balance and lab parameters, iv fluids resuscitation by correcting dehydration and electrolyte imbalances, use vasopressors if hypotension persists despite fluids.[7] Antibiotic therapy involves oral or nasogastric tube used as route for administration of vancomycin and iv metronidazole and surgical interventions involves subtotal colectomy with end ileostomy for the conditions like peritonitis, colonic perforation, worsening sepsis or multi organ failure, no improvement on maximal medical therapy within 24-48 hours and persistent massive colonic dilatation (≥10-12 cm), Diverting loop ileostomy with colonic lavage less common surgical technique and is a alternative option in selected patients for the conditions in which the patient is critically ill or very frail who may not tolerate full colectomy, emergency total proctolectomy is a rare surgical procedure involves the complete removal of colon and rectum.[8] Here we are reporting a case of pseudomembranous colitis with toxic mega colon, which was confirmed by the symptoms, lab parameters and through CECT scan of abdomen and pelvis and through sigmoidoscopy.

CASE PRESENTATION

A 73 year old male patient was admitted to the gastroenterology department with complaints of cough, history of fever, abdominal pain, abdominal distension and excessive fatigue. The patient had an recent hospitalization for COPD acute exacerbation. The patient had an past medical history of Type II Diabetes Mellitus, Systemic Hypertension and COPD. The patient had an past medication history includes TAB. TELMISARTAN + CILNIIDIPINE, Insulin and Inhaler.

The patient was conscious, oriented, afebrile, chest was clear and heart sounds were normal and GIT was distended. During admission, the patient had an pulse rate of 94 beats/min, respiratory rate of 24 breaths/min, peripheral capillary oxygen saturation was 88% and the blood pressure was 140/90 mm Hg. The patient's laboratory investigation was showed an elevation in Polymorphs (89%), WBC count (19370 cells/cumm^2),Urea (158 mg/dl), Creatinine (1.5

mg/dl), Sodium (129 mEq/L), Potassium (3.1 mEq/L), ESR (85 mm/hr), CRP (52.0 mg/dl), Amylase (141 U/L), Lipase (302 U/L), Trop I (53.7 ng/dl), Procalcitonin (1.65 ng/ ml) , Prostate specific antigen (PSA – 7.08 ng/ml), HbA1C (6.9 %)Pus cells (5-16 / hpf), RBCs (16-18 / hpf) and showed an decline in Lymphocytes (8.1 %), Sodium (129 mEq/L), Potassium (3.1 mEq/L) and Serum Albumin (2.1 gm/dl).USG chest showed bilateral pleural effusion.

CECT abdomen and pelvis scan was as given in (*Figure 1*) done for diagnosing pseudomembranous colitis with toxic megacolon was found out that edematous bowel wall noted in the ascending colon and descending colon with minimal adjacent fat stranding, normal mucosal enhancement – likely colitis, colonic diverticulosis, mild ascites, atherosclerotic wall thickening in the right distal common iliac artery extending into proximal internal iliac artery causing 70 % luminal narrowing in the right distal common iliac artery and 50 % luminal narrowing in right proximal internal iliac artery.

Figure 1: CECT Scan of abdomen and pelvis

Through Sigmoidoscopy procedure images obtained was as given in (*Figure 2*) shows that in the rectum, whitish elevated plaque like lesions made up of dead cells that is necrotic epithelial cells, fibrin, mucus, inflammatory cells and cellular debris with edematous surrounding mucosa, pseudo membranes sit on the mucosa of the colon and large hemorrhoids was seen.

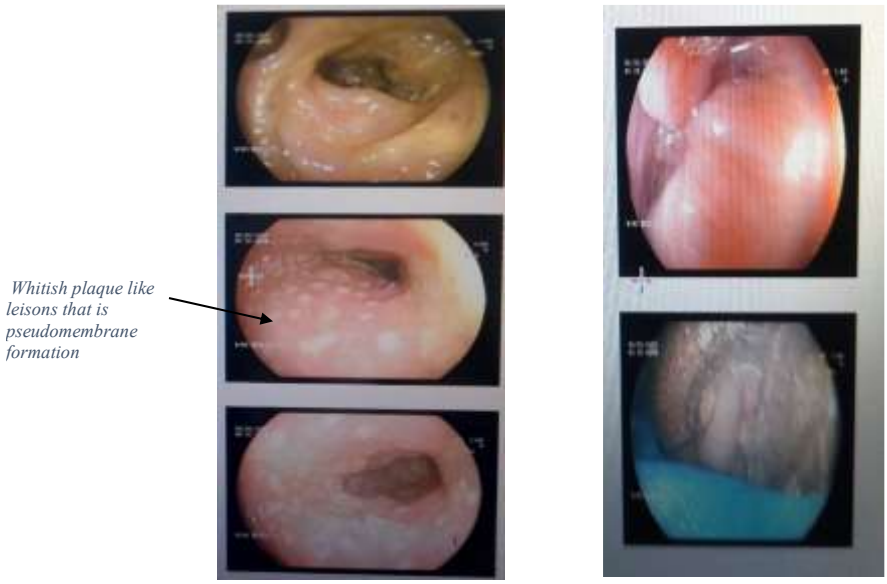

Figure 2 : Sigmoidoscopy images

The patient condition was managed with a combination of IV fluids, intravenous antibiotics, supportive therapy, probiotic supplementation and oral medications .As a part of initial emergency medical care, stat medications was given INJ. MAGNESIUM SULFATE 1gm IV at night time for supporting bowel motility and helps in bronchodilation, INJ. PARACETAMOL 1gm at night timeIV for abdominal pain and fever, INJ. POLYMYXIN 15 mg IV for, INJ. FUROSEMIDE 20 mg IV for fluid retention and IV fluids RINGER'S LACTATE 250 ml IV, NORMAL SALINE +POTASSIUM CHLORIDE 500 ml + 50 ml IV for electrolyte imbalances including hyponatremia, hypokalemia and for fatigue & INJ. ALBUMIN 200 ml IV for hypoalbuminemia. During the days of hospital stay, the patient was treated with , INJ. MEROPENEM 1 gm IV Q8H, INJ. AZITHROMYCIN 500 mg IV OD INJ. POLYMYXIN 7.5 mg IV BD, & INJ. METRONIDAZOLE 500 mg IV Q8H were administered to manage infection. NEB. IPATROPIUM BROMIDE 250 mg Q6H,NEB. LEVOSALBUTAMOL 0.63 mg Q6H & NEB. FORMOTEROL FUMARATE & BUDESONIDE 20 mcg + 0.5 mcg BD ,CAP. FLUVINAVIR 75 mg BD &TAB. ACETYLCYTSIENE + ACEBROPHYLLINE 600mg + 100 mg P/O BD for obstructive airway disease, TAB. BILASTINE + MONTELUKAST 20 mg + 10 mg P/O HS for allergy,TAB. TOLVAPTAN 15 mg P/O OD for hyponatremia, TAB. MIRABEGRON 50 mg OD for overactive bladder, TAB. DUTASTERIDE 0.5 mg P/O OD for Beningn prostatic hyperplasia, TAB. TORSEMIDE 20 mg P/O OD for fluid retention, SYP. LACTULOSE 30ml P/O BD for constipation, INJ. METHYLPREDNISOLONE 40 mg IV Q6H for inflammation, which was later tapered and discontinued.INJ PANTOPRAZOLE 40 mg IV OD for gastric irritation and later shifted to TAB. PANTOPRAZOLE 40 mg P/O BD and was treated with probiotic supplementation CAP. ECONORM (SACCHAROMYCES BOULARDII)250 mg P/O OD for improving gastrointestinal symptoms and for digestion.

DISCUSSION

Pseudomembranous colitis (PMC) is an acute inflammatory condition of the colon, most commonly caused by *Clostridioides difficile* infection following antibiotic use, leading to the formation of yellow-white pseudomembranes on the colonic mucosa. In severe cases, it can progress to toxic megacolon, a life-threatening complication characterized by colonic dilatation, systemic toxicity, fever, abdominal pain, distension, and altered bowel habits. Diagnosis involves clinical suspicion supported by imaging (such as abdominal X-ray or CT showing colonic dilatation), endoscopic findings, and positive stool assays for *C. difficile* toxins. Early and aggressive management is critical, including bowel rest, intravenous fluids, electrolyte correction, and targeted antibiotic therapy with oral vancomycin and/or IV metronidazole; surgical intervention may be required in cases unresponsive to medical therapy or with signs of perforation or peritonitis.

Table 1. comparative summary of 3 reported cases of pseudomembranous colitis with toxic megacolon with our case

PARAMETERS	CASE 1	CASE 2	CASE 3	OUR CASE
	Leena Sayedy etal.[9] ; Toxic megacolon associated Clostridium difficile colitis	Sanchez Perez etal. [10] ; Toxic megacolon secondary to Clostridium difficile colitis. Case report	Massahi Haraguchi etal. [11] ; Colostomy with Vancomycin Administration as an Effective Treatment for Toxic Megacolon	

			Associated with Fulminant Pseudomembranous Colitis: A Case Report	
AGE / GENDER	64-year-old / Female	63-year-old / Female	72-year-old / Female	73 years old / Male
COMORBIDITIES	Dyslipidemia, Systemic Hypertension, Gout	None significant mentioned other than recent infection	None specifically mentioned	Type 2 Diabetes mellitus, Systemic Hypertension, COPD
TRIGGER/ RISK FACTOR	Recent UTI treated with Ciprofloxacin	URTI treated with Amoxicillin – clavulanate	Cefotaim, imipenem, ofloxacin – antibiotics use	Recent hospitalization for COPD exacerbation
INITIAL SYMPTOMS	Abdominal pain, vomiting, profuse diarrhea	Abdominal pain, bloating, diarrhea	Abdominal distension, severe dehydration, shock	Cough, fever, abdominal pain, distension, fatigue
ELEVATED PARAMETERS	WBC count, Lactic acid, PT INR	Lab values were not specified in the case	WBC count, Pulse	WBC count, polymorphs, urea, creatinine, ESR, CRP, amylase, lipase Procalcitonin
DECLINED PARAMETERS	Serum bicarbonate, potassium, magnesium, creatinine, temperature	Lab values were not specified in the case	Temperature – low grade fever	Lymphocytes, albumin,sodium, potassium
DIAGNOSIS	CT scan of abdomen and pelvis Sigmoidoscopy & Colonoscopy	C. difficile toxin A and B tests, CT scan of abdomen & pelvis & Low pressure Sigmoidoscopy	CT scan of abdomen and pelvis, colonoscopy	CECT scan of abdomen and pelvis & Sigmoidoscopy
TREATMENT	IV fluids, dopamine, norepinephrine, IV ciprofloxacin, oral vancomycin, IV metronidazole, vancomycin enemas	Postoperatively the patient received intravenous meropenem and metronidazole and the rectum was irrigated with vancomycin	Intravenously Imipenem and ofloxacin given for low grade fever, post operatively given vancomycin as per oral and via stoma.	IV fluids, IV antibiotics (meropenem, polymyxin, azithromycin, metronidazole), steroids, nebulization, electrolyte correction and probiotics

SURGICAL INTERVENTION	Not required	Abdominal colectomy with ileostomy and after 4 months later done ileorectosomy (early surgery due to rapid deterioration).	The patient was not considered strong enough to tolerate subtotal colectomy with an ileostomy and thus a transverse colostomy was performed.	Not required

In the first case and in our case both patient recovered through medical management alone, avoided the need for surgical intervention by managing only with drug therapy due to the good response of the patient to the drug therapy in despite of comorbidities highlighting the importance of early recognition and aggressive therapy. In the second case and third case both patient recovered through surgical intervention due to rapid deterioration of their condition and increased risk of mortality and in the third case the patient was not considered strong enough to tolerate subtotal colectomy with an ileostomy and thus a transverse colostomy was performed.

THERAPEAUTIC CHALLENGES : The main therapeautic challenges in our case was delayed recognition of pseudomembranous colitis with toxic megacolon due to atypical initial presentation, presence of multiple comorbidities in this patient, required careful antibiotic selection and resistance concerns, high surgical risk related to age and having multiple comorbidties, increased risk of ICU and ventilator support due to respiratory compromise, concerns in monitoring response to therapy and adjustment of multi drug regimen.

CLINICAL SIGNIFICANCE: This case emphasizes the importance of early recognition and aggressive medical management in pseudomembranous colitis complicated by toxic megacolon, a potentially life-threatening condition. Despite severe presentation, the patient's outcome improved with prompt diagnosis, monitoring, and multidisciplinary treatment. It also highlights that surgical intervention may be avoidable in selected patients with good response to medical therapy, reinforcing the value of clinical vigilance, imaging, and individualized care.

CONCLUSION

Pseudomembranous colitis with toxic megacolon represents a rare but severe manifestation of *Clostridioides difficile* infection, often associated with high morbidity and mortality if not promptly addressed. This case underscores the significance of early diagnosis through clinical evaluation, laboratory findings, imaging modalities such as CECT, and endoscopic confirmation. In our patient, prompt initiation of broad-spectrum antibiotics, intravenous fluids, electrolyte correction, corticosteroids, and targeted supportive therapies including probiotic supplementation played a pivotal role in stabilizing the patient without the need for surgical intervention. This case highlights the importance of early recognition, prompt diagnosis, and comprehensive medical management in pseudomembranous colitis complicated by toxic megacolon. Despite the life-threatening nature of the condition, our patient responded well to aggressive supportive care, targeted antibiotic therapy, and symptomatic management, thereby avoiding surgical intervention. The case reinforces the need for heightened clinical suspicion in high-risk elderly patients with recent antibiotic use and comorbidities such as diabetes, hypertension,

dyslipidemia, asthma, COPD and so on. Timely imaging and endoscopic evaluation play a vital role in guiding treatment decisions and improving patient outcomes in fulminant *Clostridioides difficile* infections.

REFERENCES

1. Farooq PD, Urrunaga NH; etal; Pseudomembranous colitis; Dis Mon; 2015;61(5):181-206.
2. Trudel JL; etal; Clostridium difficile colitis; Clin Colon Rectal Surg; 2007;20(1):13-17.
3. Abdul Jabbar S, Sundaramurthi S; etal; An Unusual Presentation of Pseudomembranous Colitis; Cureus; 2019;11(4):e4570.
4. Martínez-Meléndez A, Camacho-Ortiz A; etal; Current knowledge on the laboratory diagnosis of Clostridium difficile infection;World J Gastroenterol;2017;23(9):1552-67.
5. Grieco MB, Bordan DL, Geiss AC, Beil AR Jr. Toxic megacolon complicating Crohn's colitis; Ann Surg; 1980;191(1):75-80.
6. Trifan A, Girleanu I, Cojocariu C, et al;Pseudomembranous colitis associated with a triple therapy for Helicobacter pylori eradication;World J Gastroenterol; 2013;19(42):7476-79.
7. Ubsdell D, Maddox NL; etal; Management of severe and fulminant Clostridioides difficile infection in adults;J Med Microbiol; 2025;74(4):001991.
8. Liggett MR, Alam HB; etal; Management of Severe Colitis and Toxic Megacolon; Clin Colon Rectal Surg;2023;37(6):404-410.
9. Sayedy L, Kothari D; etal; Toxic megacolon associated Clostridium difficile colitis;World J Gastrointest Endosc; 2010;2(8):293-97.
10. Sanchez-Perez MA, Munoz-Juárez M; etal; Toxic megacolon secondary to Clostridium difficile colitis. Case report; Casos Clinicos; Rev Gastroenterol Mex;2010;75;104-06.
11. Masashi Haraguchi, Ko Komuta; etal; Colostomy with Vancomycin Administration as an Effective Treatment for Toxic Megacolon Associated with Fulminant Pseudomembranous Colitis: A Case Report; Asian JSurg; 2004;27(3):236-7.

HOW TO CITE: Ardra S A, Grace N Raju, Bincy B K, Shaiju S Dharan, Pseudomembranous Colitis with Toxic Megacolon: A Case Report, Int. J. of Pharm. Sci., 2025, Vol 3, Issue 7, 842-848. https://doi.org/10.5281/zenodo.15828125