DOI: https://doi.org/10.4038/ajim.v4i1.223

CASE REPORT

Asian J Intern Med. 2025 Jan-Feb; 4(1)

Pseudomembranous colitis: fatal clostridium difficile infection in pregnancy

Jenosha I[1]*, Selvaratnam G[1], Pradeepan JA[1], Kumanan T[1], Pranavan S[1]

Abstract

Clostridium difficile infection (CDI) is a disease primarily affecting the large intestine, characterised by diarrhoea, abdominal pain and fever due to enterotoxins. The severe form of this infection, known as pseudomembranous colitis, carries a high mortality rate if not promptly recognised and treated. Its incidence is on the rise among pregnant women, posing significant risks to both the mother and foetus. Here, we report a fatal case of pseudomembranous colitis in a young pregnant woman. Maintaining a high index of clinical vigilance in pregnant individuals experiencing unexplained diarrhoea enables timely investigations and prompt treatment, averting adverse maternal and foetal outcomes.

Keywords: CDI in pregnancy, clostridium difficile, pseudomembranous colitis, morbidity in pregnancy

Introduction

Clostridium difficile infection (CDI) primarily affects the large intestine, causing inflammation of the mucosal lining due to enterotoxins. Well-known risk factors include recent antimicrobial therapy, prolonged antibiotic use, and multiple antibiotic usage. However, prolonged hospitalisation, chemotherapy and immunocompromised status also contribute to CDI.(1) Globally, the prevalence of CDI is increasing due to rising antibiotic usage and the emergence of hypervirulent strains.(2) Clinical symptoms range from mild, self-limiting diarrhoea and abdominal pain to severe, potentially fatal colitis and toxic megacolon.(3) Recent literature indicates a rise in CDI rates among pregnant women.(1) Pseudomembranous colitis remains poorly studied in Sri Lanka due to limited access to advanced diagnostic investigations in most of the health care centres.(4) Clostridium difficile infection remains a critical concern due to the health care infrastructure limitations as advanced diagnostic tests such as polymerase chain reaction to detect clostridium difficile toxin A and B are not widely available in most of the government hospitals in Sri Lanka, posing a significant diagnostic gap. Here we report a fatal case of Pseudomembranous colitis in a young pregnant woman, which posed challenges in clinical diagnosis and management.

Case presentation

A 28-year-old primigravida at her 21 weeks of gestation presented with symptoms of cold and tested positive for Influenza B. She was prescribed oseltamivir and discharged after three days as her symptoms improved. However, she returned the following day complaining of a watery diarrhoea. She denied using antibiotics or any other over-the-counter medications. On examination, she appeared pale but was hemodynamically stable, with a soft, non-tender abdomen. The rest of the systemic examinations were unremarkable. Considering her recent viral infection and laboratory parameters (WBC-13000, Neutrophil-81.4% and elevated C-reactive protein (CRP 136 mg/dL), she was started on parenteral ceftriaxone. Considering the neutrophil leucocytosis and rise in CRP, CDI was not considered early as the patient denied prior exposure to

*Correspondence:

Ignatius Jenosha
Registrar in Internal Medicine
Teaching Hospital Jaffna
E-mail: jenoignatius@gmail.com
Phone: +94773878476

Full list of author information is available at the end of the article

The Official Journal of
Sri Lanka College of Internal Medicine

antibiotics. Stool microscopy and culture did not reveal any microorganisms. Performing confirmatory diagnostic tests for Clostridium difficile including PCR, toxin or glutamate dehydrogenase, are not readily available in many government health care centres in Sri Lanka.Considering the poor socioeconomic background of the patient, these tests were not done in the private sector.

On the third day of admission, she experienced abdominal cramps and delivered the foetus prematurely. Subsequently, she became hemodynamically unstable. Obstetric emergency care was provided with adequate fluid resuscitation, blood transfusion and the administration of inotropes. Parenteral metronidazole was commenced to alleviate potential obstetric infections, and she was transferred to an intensive care unit. An ultrasound scan revealed free fluid in the abdomen and pelvis, prompting an urgent contrast-enhanced computed tomography (CECT) scan of the abdomen and a mesenteric angiogram, which confirmed pancolitis with ascites. Despite prompt and aggressive resuscitation, her clinical condition further deteriorated. Flexible sigmoidoscopy confirmed the presence of fulminant colitis with evident mucosal oedema, suggesting pseudomembranous colitis. Intravenous Vancomycin preparation was administered rectally and via nasogastric tube due to unavailability of oral and rectal preparations. Despite all the efforts, she succumbed to the illness within 24 hours. Pathological postmortem reconfirmed the clinical diagnosis of fulminant pseudomembranous colitis, depicted in figure 1, 2 and 3.

Figures 1 & 2 - Autopsy findings: diffuse pseudomembranous colitis with yellow patches

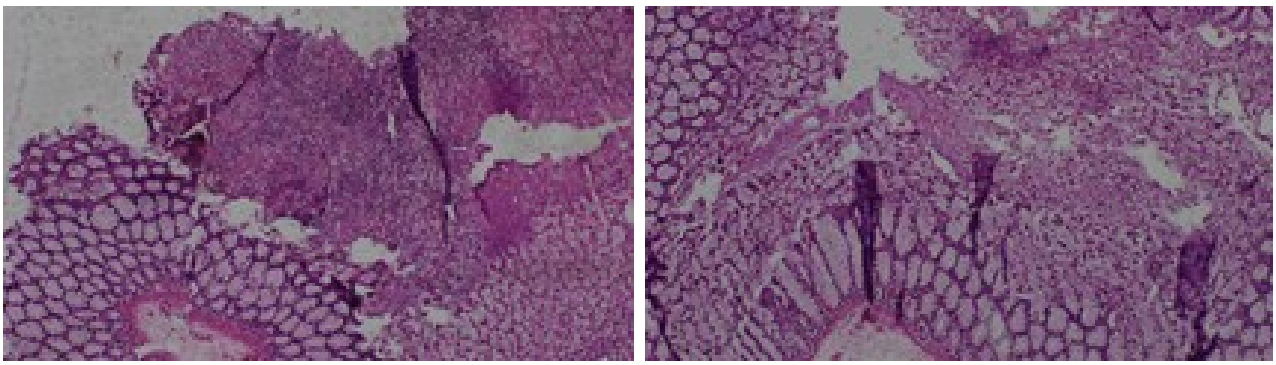

Figure 3 - Magnification into 40, pseudo membranous colitis- mucosal acute inflammation with volcano eruption like exudate(formed of neutrophils, fibrin, mucus and cellular debris), prominent sub mucosal oedema

Discussion

Clostridium difficile infection (CDI) poses significant challenges in diagnosis, particularly in vulnerable populations such as pregnant women. While antibiotic use remains a well-known risk factor, CDI can manifest in immunocompromised individuals even without prior antibiotic exposure.(5)Pregnant women, in particular, experience unique immunological changes that may predispose them to CDI and its devastating complications. Recent studies have shed light on the underlying mechanisms, including altered pro-inflammatory cytokine production, compromised cell-mediated immunity, and hormonal fluctuation during pregnancy, which exacerbate and contribute to the severity of CDI.

Our case highlights the importance of considering CDI as a differential diagnosis in pregnant women with diarrhoea, even in the absence of prior antibiotic use. The diagnostic challenges, include the unavailability of specific tests in all health care centres especially in poor resource settings to detect Clostridium difficile by polymerase chain reaction or its toxin reiterate the need for a high index of suspicion and prompt management. Rapid diagnostic methods (enzyme immunoassay (EIA) toxin assays, nucleic acid amplification testing) are widely available in high resource settings leading to early diagnosis of CDI and prompt initiation of treatment, reducing the progression of disease to fulminant colitis. Anaerobic culture is generally not performed due to the long turnaround time.(8) Bridging the gaps in health care infrastructure in resource poor settings like Sri Lanka is crucial for early diagnosis of CDI and to reduce the mortality related with delayed diagnosis leading to fulminant colitis.

The clinical spectrum of CDI is broad, ranging from mild self-limiting symptoms to fulminant colitis and toxic megacolon. Pseudomembranous colitis, characterized by the formation of pseudo membrane over the colonic mucosa, is a severe manifestation of CDI associated with significant morbidity and mortality. Despite advances in diagnostic modalities and treatment options, the prognosis of pseudomembranous colitis remains guarded, particularly in pregnant women.

The management of CDI during pregnancy indeed presents some challenges and controversies. Oral metronidazole or vancomycin is recommended treatment for Pseudomembranous colitis. Rifamycins and fidaxomicin are gaining attention due to the emergence of treatment failure with metronidazole and vancomycin.(8) Even though bacteriotherapy with faecal micro biota transplantation is effective than the conventional treatment with antibiotics, it still remains a limitation in resource poor settings.(9)

Striking a balance between the risks to maternal and foetal well-being requires careful consideration by a multidisciplinary team involving obstetricians, microbiologist, Infectious disease specialists, and Neonatologists. Maternal CDI can profoundly affect foetal health. Fulminant CDI during the peripartum period associated with adverse foetal outcomes, including foetal loss and the potential need for colectomy.(6) Understanding the pathophysiological mechanisms underlying foetal complications in maternal CDI is essential to inform clinical decision-making and improve perinatal outcomes.(7)

Conclusion

In conclusion, recognizing and managing CDI during pregnancy is a clinical challenge that necessitates a multidisciplinary approach and close monitoring. This case highlights the vital role of diagnostic accessibility and improving health care infrastructure particularly in resource poor settings. Maintaining a high index of suspicion, making diagnostic evaluation tools readily available, and promptly initiating treatment are crucial to mitigate adverse maternal and foetal outcomes. Further research is necessary to better understand the mechanisms underlying CDI pathogenesis in pregnancy, with the goal of improvising diagnostic and management strategies and ultimately enhancing maternal and foetal outcomes.

Declarations

Author contributions
All the authors contributed to data interpretation and writing the manuscript. All authors read and approved the final manuscript.

Conflicts of interest
The authors declare that they have no conflicts of interest

Funding
None

Author details
[1]Teaching Hospital Jaffna, Sri Lanka

References

1. Ruiter-Ligeti J, Vincent S, Czuzoj-Shulman N, et al. Risk Factors, Incidence, and Morbidity Associated With Obstetric Clostridium difficile Infection. Obstet Gynecol. 2018 Feb;131(2):387-391. doi: 10.1097/AOG.0000000000002422.
2. Meda M, Virgincar N, Gentry V, et al. Clostridium difficile infection in pregnant and postpartum women in 2 hospitals and a review of literature. Vol. 47, American Journal of Infection Control. Mosby Inc.; 2019. p. e7–14.
3. Farooq PD, Urrunaga NH, Tang DM, et al. Pseudomembranous colitis. Vol. 61, Disease-a-Month. Mosby Inc.; 2015. p. 181–206.
4. Jayatilake J, Jeyalakshmi S, Sasidaran A, et al. Clostridium difficile associated diarrhea, successfully managed with custom prepared oral vancomycin. Sri Lankan Journal of Infectious Diseases. 2022 Apr 29;12(1).
5. Surawicz CM, Mcfarland L V. Pseudomembranous Colitis: Causes and Cures [Internet].Vol.60,Digestion.1999.Availablefrom:www.karger.comhttp://BioMedNet.com/karger.
6. Mridula T, Pai RR, Mathai AM, et al. Pseudomembranous colitis in a pregnant woman. Kathmandu University Medical Journal;(2012); 8(3), 345–347. https://doi.org/10.3126/kumj.v8i3.6226.
7. Rouphael NG, O'Donnell JA, Bhatnagar J, et al. Clostridium difficile–associated diarrhea: an emerging threat to pregnant women. Am J Obstet Gynecol. 2008 Jun 1;198(6):635.e1-635.e6.
8. Aljarallah KM. Conventional and alternative treatment approaches for Clostridium difficile infection. Int J Health Sci (Qassim). 2017 Jan-Mar;11(1):1-10.
9. Baunwall SMD, Andreasen SE, Hansen MM, et al. Faecal microbiota transplantation for first or second Clostridioides difficile infection (EarlyFMT): a randomised, double-blind, placebo-controlled trial. Lancet Gastroenterol Hepatol. 2022 Dec;7(12):1083-1091. doi: 10.1016/S2468-1253(22)00276-X. Epub 2022 Sep 22. PMID: 36152636.

Received: 01 Oct 2024 **Accepted:** 09 Feb 2025