

Clostridium Difficile - A Neglected Pathogen But Now Alarming In Antibiotic Associated Diarrhoeal Patients

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Abstract

Clostridium difficile is an important pathogen responsible for antibiotic associated diarrhea. Clostridium difficile associated diarrhea (CDAD) has been a drastic change in the recent times due to its increase and severity. The infection rate dramatically increased due to frequent use of broad spectrum antibiotics in patients. Hence this study was done to estimate the incidence of CDAD in hospitalized patients with diarrhea and analyze the clinical course. To estimate the incidence of CDAD in our hospital. To assess the risk factors and clinical course of the CDAD patients. In patients with antibiotic intake having diarrhea were included in the study. Their clinical picture and laboratory tests profile were obtained and were recorded using a structured questionnaire. Single stool sample were collected from 116 patients subjected to culture & ELISA. CDAD was diagnosed in all patients with stool sample positive for toxin A&B. A total of 116 patients with diarrhea were included in the study of which 17(14.6%) developed CDAD. Among the 17 patients 11(64.71%) were male patients while 6 (35.30%) were female. Majority of cases were in the age group of above 60years, H/o surgery done in majority of cases and found 7 (41.11%) undergone abdominal surgery. All the 17 patients had at least one full course of antibiotics, 5 (29.3%), even had 2-3 course of antibiotics. Common antibiotic intake was 3rd generation cephalosporin. All the 17 patients had prolonged hospital stay and had diarrhea for more than 7 days. This study shows significant presence of clostridium difficile infection in the hospital population.

Abbreviation: CDAD: Clostridium difficile associated diarrhea; ELISA: Enzyme linked immune sorbent assay.

INTRODUCTION

Clostridium difficile is now an alarming pathogen responsible for antibiotic associated diarrhea. It was considered as non pathogenic till 1978, but now established as a leading cause of nosocomial infection [1]. The infection rate dramatically on the raise due to frequent use of broad spectrum antibiotics. Clostridium difficile associated diarrhea (CDAD) prevalence in recent studies is 7 - 30% in India, of which 15 – 20% are frequently on antibiotics [2]. Consumption of cephalosporin, Clindamycin, fluoroquinolones are the common predisposing factors of CDAD [3]. Risk factors such as old age, recent intake of antibiotics, prolonged hospital stay, mechanical ventilation, antimotility agents, and hematological malignancies provide a suitable entity for survival of clostridium difficile & cause CDAD [4]. Increased toxin producing activity and high level resistance to antibiotics have made the strain a very powerful organism in the health care settings. During the recent years many treatment options were also available including probiotic & micro biota transplantation [4, 14]. Studies on the incidence of CDAD in developing countries are very low. Hence this study was done in our hospital and the associated risk factors of CDAD.

RESULT

A total of 116 patients with diarrhea were included in the study. Among which 17(14.6%) developed CDAD and were positive by culture & ELSIA.

Among the 17 patients, 11 patients (64.71%) were males & 6 patients (35.30%) were female.

Among the 17 patients, 8 patients were above 60 years of age, followed by 4 patients were 21 – 30 years.

All the 17 patients had taken at least one dose of antibiotics of which 5 (29.3%), had 2-3 course of antibiotics.

Common antibiotic intake was 3rd generation cephalosporin, followed by aminoglycosides, fluoroquinolones and carbapenems.

All the 17 patients had a prolonged stay in the hospital of which 7 (41.11%) undergone abdominal surgery and 4 (23.51%) were hospitalized for fractures, 2 (11.76%) were immune suppressed, 4 (23.51%) were on proton pump inhibitors due to their primary illness.

DISCUSSION

Our study shows CDAD of 14.6% which is concordant with study done by Ramchaudhry et.al. who reported 23/166(13.8)% of CDAD [6], where as Singh et al from Chandigarh reported the prevalence 8.5% in their study [7].

In our study, most common implicated antibiotic were third generation cephalosporin 35.2%, which is concordant with clare pasco et.al who also reported CDAD among 3rd gen cephalosporin usage followed by aminoglycosides [8]. This is concordant with various studies done by Bavishi et al, Rama chaudhry et al who all reported that cephalosporins are the most common group of antibiotics used in patients who developed CDAD [9,6]. Vishwanath et al also reported 3rd generation cephalosporine antibiotic intake was the leading cause of patients with CDAD [10]. Vaishnavi et al in 2012 reported that C.difficile toxin test was positive for 30% of hospitalized patients were receiving either single or multiple antibiotics [11].

The frequency of colonization increases 20-40% in hospitalized patients [12]. In our study CDAD were more in abdominal surgery patients, this is probably due to the longer duration of stay in hospital and exposure to antibiotics during pre-operative& post-operative procedures. Similar findings were reported by Lavanya et al that intraabdominal & deep seated infection has the more incidence of CDAD [3].

It was noted in our study the elderly patients were commonly affected than any other age group. This was concordant with miller et al who also reported in the elderly patient group [13]. This is positivity because of worsening immune status and increasing intake of antibiotic for other illness [14].

Limitation:

Due to small number of samples tested statistical analysis not done.

MATERIALS & METHODS

A Cross sectional study done in our hospital for a period of 1year. After obtaining ethical clearance from the institute and getting consent from patients. All patients with diarrhea (passage of > 3 unformed stools in 24 hours) [5,15] after 3 days of hospitalization and on antibiotics were included in the study. A detailed questionnaire with history of antibiotics in the past is collected. Patient with stool samples positive for another cause (bacterial, parasite, fungal) were excluded in our study.

Single stool sample were collected from 116 patients were subjected to alcohol shock treatment and then reinforced with Robertson cooked meat medium and selective agar. The fecal samples were also subjected to ELISA simultaneously for detection of toxin A & B [6,16].

CONCLUSION

This study shows significant presence of clostridium difficile infection in the hospital population. 3rd generation cephalosporin's were the most common antibiotics associated with development of infection. Suspicion of CDAD should be based not only on duration of hospital stay but with also history of antibiotic intake. Rationale use of antibiotic is recommended & to increase the awareness among health care professionals.

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Table -1 showing no. of patients with antibiotic intake.

Antibiotic intake	Number	%
3 rd gen cephalosporins	6	35.2
Aminoglycoside	5	29.4
Flouroquinolones	3	17.6
Carbapenams	1	5.8
Clindamycin	1	5.8
Ampicillin	1	5.8