C lindamycin is enjoying a resurgence in prescribing popularity in community practice. This may be partly owing to its inclusion in the most recent American Heart Association guidelines for the prevention of endocarditis and its attractive antimicrobial spectrum for the treatment of dental infections. Controversy surrounding its role in dental practice has recently been addressed in this journal. We present the case of a patient who received antimicrobial prophylaxis for endocarditis prior to dental intervention and who suffered significant morbidity secondary to antibiotic-associated Clostridium difficile (C. difficile) colitis.

**Case**

FB is a 71-year-old woman admitted to our tertiary care facility on July 6, 1998, with diarrhea and dehydration. Her past medical history was significant for maturity onset diabetes mellitus, hypertension, cerebrovascular accident with left hemiplegia, ischemic heart disease, congestive heart failure, atrial fibrillation and rheumatic fever at age 19. An echocardiogram performed during a previous hospital admission in early 1998 revealed a left ventricular ejection fraction of 25% and normal mitral and tricuspid valve structures, with trivial to mild regurgitation.

FB reported having a penicillin allergy characterized by hives and difficulty in breathing. Three weeks before admission, she had taken erythromycin and clindamycin as prophylaxis for 2 dental procedures approximately one week apart. The erythromycin was administered as a 1-g dose pre-procedure and a 500-mg dose 6 hours post. The clindamycin was given as a single pre-procedure dose of 600 mg.

FB was alert and oriented on presentation to hospital. She had a temperature of 38.4°C with a respiratory rate of 20 and required a fluid bolus because of orthostatic hypotension. She had been experiencing watery, foul-smelling diarrhea with streaks of blood up to 20 times per day for approximately 10 days. Associated complaints included diffuse abdominal cramping, intermittent nausea and vomiting and inability to eat solid food for the past 5 days. Bowel sounds were normal. The abdomen was mildly distended, soft and diffusely tender. There was voluntary guarding without rebound, masses or organomegaly. Three views of the abdomen revealed gas throughout the bowel but no air fluid levels or dilatation. Her white blood cell count was 16.6 × 10^9 cells/L (neutrophils 14.9). The differential diagnosis was viral disease, C. difficile colitis, diabetic diarrhea or diverticulitis.

FB was empirically started on intravenous cefazolin, gentamicin and metronidazole. Blood cultures taken on admission were negative. Stool cultures were negative for ova and parasites, but positive for C. difficile toxin. The cefazolin and gentamicin were stopped within 48 hours, and therapy with oral metronidazole 250 mg 4 times a day was administered for a total of 7 days for C. difficile. The diarrhea initially improved, but by July 18 the patient was again having up to 7 liquid bowel movements per day with repeat stool toxin...
Discussion

Antibiotic-associated diarrhea (AAD) and colitis are important and increasingly frequent complications of antibiotic use. Infection with the micro-organism Clostridium difficile is responsible for up to 20% of cases of AAD and for virtually all cases of pseudomembranous colitis (PM C). The potential manifestations of C. difficile include asymptomatic carriage, diarrhea, PM C, toxic megacolon and colonic perforation. Although medical management is effective in the majority of patients, surgical intervention may be necessary in 5% to 20% of cases. Relapse following medical management, as was seen in our patient, occurs in about 20% to 23% of patients.

Symptomatic infection with C. difficile has been shown to contribute to increased hospital costs, morbidity and mortality. McFarland and others examined the health care burden of C. difficile diarrhea in 19 Canadian hospitals and found a prevalence of 5.86 per 1,000 admissions. Mortality directly due to C. difficile diarrhea was 1.5%. The cost for readmission alone for nosocomial C. difficile diarrhea per year was estimated at $128,200 per site.

AAD and colitis occur most often in hospital and nursing home environments rather than in the community setting. McFarland and others found that approximately 5% of patients admitted to a general medical ward had community acquisition of C. difficile in the stool and that 21% had acquired C. difficile during their hospitalizations. Kofsky and others reported that of 155 hospitalized patients with positive C. difficile toxin assays, only 8 patients (5.2%) had an admitting diagnosis of C. difficile infection; the remaining 147 patients (94.8%) acquired the infection during the course of their hospitalization. Riley and others reported C. difficile isolation rates of 5.5% and 10.7% in patients presenting with diarrhea in community practice. In a retrospective cohort study of members of a health maintenance organization, the acquisition of C. difficile during their hospitalizations. Riley and others reported isolation rates of 5.5% and 10.7% in patients presenting with diarrhea in community practice. In a retrospective cohort study of members of a health maintenance organization, the incidence of C. difficile diarrhea was 7.7 cases per 100,000 person-years. Eighty-two per cent of the cases identified were due to 20% of cases of AAD and for virtually all cases of pseudomembranous colitis (PM C). The potential manifestations of C. difficile include asymptomatic carriage, diarrhea, PM C, toxic megacolon and colonic perforation. Although medical management is effective in the majority of patients, surgical intervention may be necessary in 5% to 20% of cases. Relapse following medical management, as was seen in our patient, occurs in about 20% to 23% of patients.

The amount of clindamycin dispensed in Canadian retail pharmacies has increased by approximately 133% over a 3-year period from 1996 to 1999. Comparative figures for the province of Ontario demonstrate a 115% increase. It is difficult to predict what the potential impact of the increasing use of clindamycin in community practice will be on the burden of C. difficile infection. We suspect that its use in dental infections and as prophylaxis for endocarditis prior to dental procedures has contributed to some of the observed increase. The American Heart Association guidelines for endocarditis prophylaxis associated with dental procedures has contributed to some of the observed increase. The American Heart Association guidelines for endocarditis prophylaxis historically recommended erythromycin for use in penicillin-allergic patients. In the most recent guidelines, erythromycin is no longer recommended for penicillin-allergic individuals, but clindamycin and other alternatives are offered.

Our patient’s need for 56 days of hospitalization, consultation by specialty services and intensive physical therapy to return her to community living clearly demonstrates the significant impact of C. difficile diarrhea or colitis on health care costs and patient morbidity. Through this report we hope to heighten awareness among dental practitioners to the significance of the disease and to this risk associated with antibiotics, whether they are used for prophylaxis or treatment. Patients should be informed of the potential for diarrhea with antibiotic prescriptions and be instructed to follow up with their family physician should diarrhea occur within 2 months of therapy. Prudent use of narrow spectrum antibiotics, for the shortest possible duration and in only those patients with well-defined indications for prophylaxis or treatment, will minimize the risk
of C. difficile disease. Avoiding the unnecessary use of antibiotics is the most important step that health care prescribers can take to prevent the morbidity and mortality associated with C. difficile disease. 

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References