New C. difficile Strains Traced to Antibiotic Use

Fluoroquinolone use may be involved in the development of the newer, more virulent strains.

BY MIRIAM E. TUCKER
Senior Writer

Fluoroquinolone use may be driving the emergence of newer and more virulent strains of Cladstridium difficile, Dr. John G. Bartlett and Dr. Trish M. Perl said in an editorial accompanying two simultaneous reports in the New England Journal of Medicine.

"Particularly important is antibiotic stewardship with restraint in the use of epidemiologically implicated antimicrobial agents, usually second- and third-generation cephalosporins, clindamycin, or fluoroquinolones, or a combination of the three," said Dr. Bartlett and Dr. Perl of Johns Hopkins University, Baltimore (N. Engl. J. Med. 2005;353:2503-5).

Several recent studies have documented a rise in the number and severity of C. difficile-associated disease cases in the United States and elsewhere. Now two new reports of detailed microbial analysis suggest that a more virulent strain of C. difficile is causing epidemic disease at selected locations and is associated with more frequent and more severe disease.

In one study, 187 isolates were collected from eight health care facilities in six states in which outbreaks of C. difficile-associated enteric disease had occurred between 2000 and 2003. In five of the facilities (two located in Maine and one each in Georgia, New Jersey, and Pennsylvania), one particular epidemic strain accounted for 50% or more of the isolates. Among 29 of those isolates selected for further genetic testing, 25 were related by 90% or more, and all were more than 86% related. In contrast, very few of the other strains were more than 80% related.

Among the 422 patients who died with 30 days of diagnosis of C. difficile-associated diarrhea, the disease was attributed to the cause of death in 157 of the total 1,703 patients. In contrast, the attributable mortality rate was just 1.5% in the 1997 survey of 18 Canadian institutions.

For the cases of antibiotic use noted prior to CDAD onset, the CDC noted.

The findings suggest that the epidemiology of the disease might be changing to include features that have been uncommon in the past, such as close-contact transmission, high recurrence rate, young patient age, bloody diarrhea, and lack of antimicrobial exposure, the CDC warned (MMWR 2005;54:1201-5).

All but 1 of the 33 cases occurred during 2004-2005. Hospitalization was required for 15 (46%) and relapses occurred in 13 (39%). Transmission to close contacts was evident in four cases. Eight of the 33 patients (24%)—including 5 children—reported no exposure to antimicrobial agents within 3 months prior to CDAD onset. Of those eight, two reported close contact with a person who had diarrheal illness.

Control of C. difficile-associated disease also hinges on better recognition of cases and optimal disease management, Dr. Bartlett and Dr. Perl said.

Young Patient Age Is a New C. difficile Risk Factor

BY MIRIAM E. TUCKER
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The diagnosis of Cladstridium difficile-associated disease should be considered in patients with severe diarrhea, even if they don’t have traditional risk factors such as recent hospitalization or antimicrobial use, the Centers for Disease Control and Prevention advised.

During May and June 2005, a total of 10 periparum and 23 C. difficile-associated disease (CDAD) cases from previously healthy individuals in the community were voluntarily reported from four U.S. states following a request from the CDC.

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Pneumococcal Parapneumonic Empyema Up in Some Areas

BY SHERRY BOSCHERT
San Francisco Bureau

San Francisco — The incidence of pediatric pneumococcal parapneumonic empyema doubled in Utah and surrounding areas since introduction of the pneumococcal conjugate vaccine, Carrie L. Byington, M.D., Ph.D., said in a poster presentation at the annual meeting of the Infectious Diseases Society of America.

Serotypes of Streptococcus pneumoniae not covered by the vaccine caused most of the recent cases. The activity of bacterial serotypes varies by geographical region. In the past decade, Utah has had one of the highest rates of pneumococcal parapneumonic empyema (PPE) in children due to S. pneumoniae serotype 1, which the vaccine does not cover. Dr. Byington of the University of Utah, Salt Lake City, and her associates.

A search of the Intermountain Health Care data warehouse found 776 cases of pediatric PPE between March 1996 and June 2005, 62% of which were treated at Primary Children’s Medical Center, Salt Lake City.

In the period 1996-2000, before introduction of 7-valent pneumococcal conjugate vaccine (PCV7 or Prevnar), the center saw 38 cases per year, compared with 72 cases annually between 2001 and 2004, a significant difference.

Among 295 cases of culture-confirmed invasive pneumococcal disease in children at the center, 74 were PPE, representing 18% of invasive pneumococcal disease in the prevaccine years and 32% since the vaccine.

The investigators retrieved and serotyped pleural and fluid isolates of S. pneumoniae from the 74 cases. The proportion of PPE due to serotypes covered by the vaccine decreased from 17% (9 of 50 cases) in the prevaccine era to 14% (7 of 50 cases) in more recent years. Serotype 1 was the most common cause of PPE due to nonvaccine serotypes in both time periods, but disease due to other nonvaccine serotypes has become more common. Serotype 1 caused 11 (46%) of 24 PPE cases in the earlier period and 17 (34%) of 50 cases since the vaccine, she said.

Other nonvaccine serotypes caused only four cases (16%) of PPE in the prevaccine years but 26 cases (52%) of PPE in the postvaccine years.

The pneumococcal vaccine may need to be broadened to cover some of these serotypes, Dr. Byington suggested in an interview.

Clinical records for the 74 PPE cases reported concomitant bacteremia in 28 children, lung abscesses in 3, and petechiosis in 1 child.

Four children developed hemolytic uremic syndrome, and 48 required intensive care, primarily to manage respiratory failure or following surgical decortication.

Four children died, two of them from PPE due to a nonvaccine serotype.