

International Notes

***Shigella dysenteriae* Type 1 – Guatemala, 1991**

On March 14, 1991, physicians at a hospital in Guatemala City reported to the Institute of Nutrition of Central America and Panama (INCAP) that a 2-year-old boy living in an orphanage in Guatemala City had been hospitalized with dysentery; stool cultures yielded *Shigella dysenteriae* type 1. Another child from the orphanage had recently died from dysentery. During March 18–21, two other young children from the orphanage were diagnosed with *S. dysenteriae* type 1. On March 21, health officials in Rabinal, in the department of Baja Verapaz, reported more than 100 cases of dysentery to the Division of Epidemiology and Disease Control of the Ministry of Health (MOH). This report summarizes the investigation of these outbreaks.

Guatemala City

The orphanage houses approximately 150 children. No new children had been admitted to the orphanage in 1991, and no illness had been reported among staff members. The index patient was treated with trimethoprim-sulfamethoxazole; however, a stool culture yielded *S. dysenteriae* type 1 that was resistant to trimethoprim-sulfamethoxazole as well as to ampicillin, chloramphenicol, and tetracycline. Stool cultures from the two children who became ill after the index patient also yielded *S. dysenteriae* type 1 with the same resistance pattern as the initial isolate. Stool cultures from 39 children most likely to have had contact with the index patient were negative, except for one isolate of *S. flexneri* type 4. No additional cases of dysentery have been reported from the orphanage.

Rabinal, Baja Verapaz

On March 21, the MOH received a request from health officials in the department of Baja Verapaz (116 miles [186 km] north of Guatemala City) for drugs to treat suspected amebiasis; the health officials reported that more than 100 cases of dysentery had occurred in residents of Rabinal, a community of approximately 10,000 persons. To determine the cause of the outbreak, INCAP investigators traveled to Rabinal and collected stool specimens in Cary-Blair transport medium from 16 per-

(Continued on page 427)

Shigella dysenteriae — Continued

sons with dysentery. Eleven samples yielded *S. dysenteriae* type 1, resistant to chloramphenicol and tetracycline. Based on these results, ill persons were treated with trimethoprim-sulfamethoxazole.

On April 2 and 10, investigators from INCAP and the MOH again visited Rabinal. Surveys done by personnel of the local health post showed that at least 540 persons had developed dysentery since early March; two infants had died. Stool samples were obtained from 46 patients with dysentery; 12 grew *S. dysenteriae* type 1. For 10 patients, strains were indistinguishable from those obtained in March. Strains from two patients were resistant to ampicillin, chloramphenicol, tetracycline, and trimethoprim-sulfamethoxazole. One of these resistant strains was from a boy who had taken trimethoprim-sulfamethoxazole prophylaxis for respiratory illness in mid-March. By the end of April, local personnel reported that the number of new cases of dysentery was declining.

Reported by: JR Cruz, F Cano, L Rodriguez, Program on Infection, Nutrition and Immunology, Div of Nutrition and Health, Institute of Nutrition of Central America and Panama; CA Rios, Hospital for Infectious Diseases, Guatemala City; P Guerra, Z Leonardo, Baja Verapaz Health Area, Ministry of Health. Enteric Diseases Br, Div of Bacterial and Mycotic Diseases, National Center for Infectious Diseases, CDC.

Editorial Note: Pandemic *S. dysenteriae* type 1 (the Shiga bacillus) affected Central America from 1969 through 1972. In Guatemala, there were more than 112,000 cases and at least 10,000 deaths (1,2). The outbreak spread quickly, with high attack rates in all age groups and the highest incidence and mortality rates in young children (2,3). The case-fatality rate estimated from village surveys was 7.4% (2). Many cases were misdiagnosed as amebiasis, and treatment with antiamebic drugs contributed to the high mortality (2,3). Treatment was further complicated by resistance of the epidemic strain of *S. dysenteriae* type 1 to sulfathiazole, chloramphenicol, and tetracycline, drugs commonly used at that time to treat dysentery (4).

Since 1972, no major outbreaks of dysentery caused by the Shiga bacillus have occurred in Central America. However, in 1988, the number of these infections reported in the United States increased fivefold over the annual mean from the preceding decade, and most ill persons had recently visited the Yucatán peninsula in Mexico (5). The antimicrobial resistance pattern and plasmid profile were similar to those of the 1969–1972 pandemic strain (4,5). In 1989, the number of imported cases decreased in the United States, and outbreaks of documented Shiga infection have not been reported from Mexico.

Appropriate antimicrobial therapy decreases the severity and duration of dysentery caused by *Shigella* (6). Nalidixic acid is effective therapy for strains resistant to other antimicrobials; the newer quinolones are also effective, but are costly and have not been approved for use in children (6). Moreover, *Shigella* can rapidly acquire resistance, and are likely to do so in settings in which antimicrobials are commonly used and shigellosis is endemic (7). The recent cases in Guatemala underscore the need for continued surveillance for enteric pathogens, especially those associated with dysentery. Once *Shigella* are identified, determination of the antimicrobial resistance pattern and the modes of transmission are important in designing control measures. As during the 1969–1972 pandemic, the recent cases in Rabinal were initially misdiagnosed as amebiasis, a misdiagnosis that may be common in some locations (8). Prompt culturing facilitated the correct diagnosis and appropriate therapy.

Shigella dysenteriae — Continued

The appearance of the Shiga bacillus in two locations separated by more than 100 km suggests this pathogen may be present in other areas of Guatemala. The detection of trimethoprim-sulfamethoxazole-resistant strains early in the outbreak highlights the need for continued monitoring of resistance. The MOH and INCAP have requested that any clusters of bloody diarrhea among persons in Guatemala be reported. Training in techniques to identify *S. dysenteriae* type 1 has been incorporated into the courses for workers from regional laboratories; these courses were initiated in response to the current cholera epidemic.

References

1. Mata LJ, Gangarosa EJ, Caceres A, Perera DR, Mejicanos ML. Epidemic Shiga bacillus dysentery in Central America. I. Etiologic investigations in Guatemala, 1969. *J Infect Dis* 1970;122:170–80.
2. Mendizabal-Morris CA, Mata LJ, Gangarosa EJ, Guzman G. Epidemic Shiga-bacillus dysentery in Central America: derivation of the epidemic and its progression in Guatemala, 1968–69. *Am J Trop Med Hyg* 1971;20:927–33.
3. Gangarosa EJ, Perera DR, Mata LJ, Mendizabal-Morris C, Guzman G, Reller LB. Epidemic Shiga bacillus dysentery in Central America. II. Epidemiologic studies in 1969. *J Infect Dis* 1970;122:181–90.
4. Reller LB, Rivas EN, Masferrer R, Bloch M, Gangarosa EJ. Epidemic Shiga-bacillus dysentery in Central America: evolution of the outbreak in El Salvador, 1969–70. *Am J Trop Med Hyg* 1971;20:934–40.
5. Parsonnet J, Greene KD, Gerber AR, Tauxe RV, Aguilar OCJ, Blake PA. *Shigella dysenteriae* type 1 infections in US travellers to Mexico, 1988. *Lancet* 1989;2:543–6.
6. Salam MA, Bennish ML. Antimicrobial therapy for shigellosis. *Rev Infect Dis* 1991;13 (suppl 4):332–41.
7. Griffin PM, Tauxe RV, Redd SC, Puhf ND, Hargrett-Bean N, Blake PA. Emergence of highly trimethoprim-sulfamethoxazole-resistant *Shigella* in a Native American population: an epidemiologic study. *Am J Epidemiol* 1989;129:1042–51.
8. Peltó GH. The role of behavioral research in the prevention and management of invasive diarrheas. *Rev Infect Dis* 1991;13(suppl 4):255–8.

Perspectives in Disease Prevention and Health Promotion