Diarrhea Due to Plesiomonas shigelloides in Cancer Patients

KENNETH V. I. ROLSTON1* and ROY L. HOPFER2

Section of Infectious Diseases, Department of Internal Medicine,1 and Department of Laboratory Medicine,2 The University of Texas M. D. Anderson Hospital and Tumor Institute, Houston, Texas 77030

Received 30 April 1984/Accepted 4 June 1984

Plesiomonas shigelloides was isolated from the stools of two patients with gastrointestinal malignancies and from one “healthy” patient with diarrhea. No other enteric pathogens were isolated. One patient was neutropenic after antineoplastic chemotherapy. The two cancer patients had crampy abdominal pain and severe diarrhea and required antibiotic therapy for resolution of symptoms. The third patient responded to symptomatic treatment. Patients with gastrointestinal malignancies may be more susceptible to gastroenteritis caused by P. shigelloides than normal individuals, and these infections may be more severe than those seen in normal individuals.

Plesiomonas shigelloides has been implicated as a cause of occasional gastrointestinal disease, but its role as an enteric pathogen has not been fully established, and well-documented clinical cases are rare (5, 9, 11). Most reports of diarrhea due to Plesiomonas spp., or of carriers, have come from tropical and subtropical regions and Japan (8, 10, 12). There have been no previous reports of gastrointestinal disease in patients with gastrointestinal malignancies. We report two such cases and compare the clinical picture with that of a third patient, who was a normal host.


Case 1. A 62-year-old male with nodular histioytic lymphoma involving the small bowel presented with fever and diarrhea. Since his diagnosis 5 years ago, he had undergone extensive abdominal surgery (splenectomy, left nephrectomy, distal pancreatectomy, proximal small bowel resection, and gastroenterostomy) and chemotherapy and radiation of his abdomen and pelvis. He had been stable for 2 years, with mild pancreatic insufficiency and mild radiation enterocolitis (four to six bowel movements [b.m.] per day). He now had a temperature of 101°F (ca. 38.3°C), abdominal cramps, and 25 to 30 b.m. per day. The leukocyte count was 6,400/mm³. Stool cultures and gastric and duodenal aspirate cultures were positive for P. shigelloides. No other enteric pathogens were isolated. The patient was treated with tetracycline (500 mg four times per day for 7 days). After 3 days of therapy he became afebrile, and the frequency of b.m. returned to his usual four to six per day. Follow-up stool cultures were negative.

Case 2. A 48-year-old male with metastatic carcinoma of the colon was admitted for antineoplastic chemotherapy. He received 5-fluorouracil intravenously for 5 days. He developed nausea, vomiting, abdominal cramps, fever (101°F [ca. 38.3°C]), and diarrhea (15 to 20 b.m. per day). An initial leukocyte count of 7,000/mm³ had dropped to 1,980/mm³ after chemotherapy. P. shigelloides was recovered in pure culture from stool specimens. The patient did not respond to rehydration and symptomatic therapy. He received tetracycline (500 mg every 6 h for 1 week), with resolution of all signs and symptoms of gastroenteritis by day 4 of antibiotic therapy. Follow-up stool cultures were negative.

Case 3. A 33-year-old male presented with diarrhea (four to six b.m. per day) for 3 days after a trip to the Yucatan Peninsula. He had mild abdominal cramps but was afebrile and had no other symptoms. Stool cultures grew P. shigelloides. The patient responded rapidly to symptomatic treatment.

Stool specimens submitted for culturing were routinely inoculated onto tryptic soy agar with 5% sheep blood, Hektoen enteric agar, and MacConkey agar and into gram-negative broth. The gram-negative broth was subcultured after 18 h of incubation. Non-lactose-fermenting colonies were picked from MacConkey agar and Hektoen enteric agar (Scott/Randolph, Houston, Tex.). Oxidase activity was determined with tetramethyl-p-phenylenediamine hydrochloride reagent (Marion Scientific, Kansas City, Mo.). The API 20E system (Analytab Products, Plainview, N.Y.) was used to identify the organisms as P. shigelloides. Selective media for Aeromonas spp. and Plesiomonas spp. were not used in these cases. As some strains fail to grow on the usual enteric media, they may be overlooked when such media are used for culturing stool specimens, leading to underreporting of these organisms. Several selective media are available for detection of Plesiomonas spp., Aeromonas spp., and related organisms, even when these organisms are present in relatively low numbers (13).

Antimicrobial susceptibility testing (Kirby-Bauer disk diffusion) indicated that the organisms were susceptible to tetracycline, trimethoprim-sulfamethoxazole, chloramphenicol, and the aminoglycosides but were resistant to ampicillin.

Several interesting and important considerations are illustrated by our cases. Plesiomonas-associated diarrhea in normal hosts is usually a mild and self-limited disease. Patients frequently respond to symptomatic treatment, and antimicrobial therapy is rarely needed (3, 8, 10). Our healthy patient had traveled to the Yucatan Peninsula, where he probably became infected with P. shigelloides. Organisms belonging to the Aeromonas-Plesiomonas group may play a role in the etiology of traveler’s diarrhea. Symptomatic disease caused by these organisms may be prevented, as these organisms are usually susceptible to trimethoprim-sulfamethoxazole, an agent commonly used as a prophylactic against traveler’s diarrhea.

Patients debilitated by malignant disease and further immu-

* Corresponding author.
nosuppressed by antineoplastic chemotherapy are predisposed to developing infections, particularly during periods of granulocytopenia. One of our patients had received chemotherapy and was mildly granulocytopenic. Both cancer patients had bowel involvement with their malignant disease. Both patients experienced severe gastrointestinal symptoms, with cramping being prominent. Both were febrile and moderately to severely dehydrated. Both required intravenous fluid administration and antibiotic therapy for resolution of symptoms. This is in contrast to the mild symptoms experienced by the normal host.

_P. shigelloides_ is recovered only rarely from the intestines of healthy subjects (2). The disease produced by this organism seems to be much more severe in immunosuppressed patients. Therefore, in the absence of other enteric pathogens, _P. shigelloides_ isolated from immunosuppressed patients with diarrhea should be regarded as pathogenic, and the patients should be treated aggressively with antimicrobial agents (trimethoprim-sulfamethoxazole, tetracycline). This approach may also prevent the development of more serious, systemic infections, such as bacteremia, meningitis, and septic arthritis (1, 4, 6, 7).

**LITERATURE CITED**