Most of the deaths associated with acute diarrhea occur in elderly persons because of the physiologic changes of aging that include abnormalities in water homeostasis and decreased thirst perception. Because of volume depletion, elderly patients are at increased risk for falls due to orthostatic hypotension, electrolyte disturbances, and delirium.

Most cases of acute diarrhea are caused by viral infection; studies of acute diarrhea show positive bacterial cultures in only 1.5% to 5.6% of cases. Viruses commonly causing acute infectious diarrhea include noroviruses, rotaviruses, and adenoviruses. The symptoms typically last approximately 48 hours and clear spontaneously.

Bacterial causes of acute infectious diarrhea include *Salmonella, Campylobacter, Shigella,* enterotoxigenic *Escheria coli*, and *Clostridium difficile*. These are the likely causes of most severe cases of acute diarrhea. Among patients with diarrhea lasting longer than 3 days and high outputs, a bacterial cause was found in 87% of cases. Protozoa are infrequent causes of acute diarrhea.

Because of the short duration of symptoms, good prognosis, and high frequency of viral etiologies found in acute diarrhea, clinical investigation is not needed and is not cost-effective in most cases. The indications warranting a complete evaluation involve clinical signs of severe illness: profuse watery diarrhea and hypovolemia; frequent passage of small-volume, bloody stools containing mucus; bloody diarrhea; fever greater than 101° F; illness lasting longer than 48 hours; severe abdominal pain; hospitalization; recent use of antibiotics; age greater than 70 years; immunocompromise; and systemic illness and diarrhea in pregnancy (listeriosis).

Items from the history that might be helpful to the diagnosis include information regarding travel, work exposure, and pets. Fever usually indicates an invasive organism, such as *Salmonella*, *Shigella*, *Campylobacter*, certain viruses, *Entamoeba histolytica*, or *C. difficile*. Risk factors include food consumption or preparation involving raw or undercooked meats and dairy products or contaminated fruits and vegetables. Pregnant women have a 20-fold increased risk of developing listeriosis from meat or unpasteurized milk, and this bacterial infection always needs to be considered in a pregnant woman with diarrhea and systemic complaints. Ingestion of preformed bacterial toxins from *Staphylococcus aureus, Bacillus cereus, or Clostridium perfringens* typically causes diarrhea within 6 hours. Acute traveler's diarrhea is most commonly caused by enterotoxigenic *E. coli*.

Infectious agents sometimes can cause mucosal inflammation ranging from mild to severe. These include noroviruses, rotaviruses, and the human immunodeficiency virus (HIV). Bacterial mucosal invasion can be present with *Salmonella*, enteroinvasive *E. coli*, *Campylobacter jejuni*, and *Yersina enterocolitica*; *E. histolytica, C. difficile*, *Shigella* spp., *E. coli* O157:H7, *Vibrio*, and *Aeromonas* secrete toxins and invade the mucosa. Patients often relate a history of initially watery diarrhea later progressing to bloody diarrhea.

Noninfectious causes of acute diarrhea are less common. They can include irritable bowel syndrome (IBS), inflammatory bowel disease (IBD), ischemic bowel disease (either ischemic colitis or mesenteric vascular insufficiency), partial bowel obstruction, fecal impaction with overflow diarrhea, and bacterial overgrowth. Most often, these disorders manifest as persistent or chronic diarrhea, but they do have a specific onset. Medications and over-the-counter supplements can be a cause of acute or chronic diarrhea, and the diagnosis may be suggested by introduction of a new medication or an increase in dose. Frequently, oral magnesium replacement, donepezil hydrochloride (Aricept), tube feedings, liquid medications, and chewing gum made with nonabsorbable sugars (e.g., sorbitol) are associated with diarrhea. An accurate medication history (prescription and over-the-counter), including supplements, is necessary.

Evaluation of Acute Diarrhea

Most patients with acute diarrhea do not require a detailed evaluation because their illness is neither severe nor prolonged. There is significant cost involved in laboratory testing, cultures, and procedures, and because a viral infection is responsible for most cases, the results will be unrevealing. These patients typically have watery, nonbloody diarrhea and are not systemically ill. Many patients with traveler's diarrhea have large-volume watery diarrhea due to enterotoxigenic *E. coli*. Some patients who have severity indicators in their history or examination findings, or who are elderly or immunocompromised, should have a laboratory evaluation.

Patients with bloody, frequent, small-volume stools should be evaluated for potential bacterial causes. The same is true for patients who have systemic symptoms (e.g., abdominal pain, fever), fecal leukocytes, an elevated fecal lactoferrin level (a marker for leukocytes), or occult blood in the stool. Stool cultures should be done to look for *Shigella*, *Samonella*, *Campylobacter*, and enterohemorrhagic *E coli*. Identification of *Listeria*, *Yersinia*, and *Vibrio* may require additional testing. Stool should be evaluated for ova and parasites if cultures are negative and if there is persistent diarrhea or a history HIV/AIDS. *Giardia* and *Cryptosporidum* immunoassays and staining for *Microsporidium* are also indicated in these individuals and in patients with a possible exposure history. Because of the risk of community-acquired *C. difficile* infection, testing should be done for the presence of this organism even without a history of antibiotic use.

Finally, if there are no definitive results from the stool studies, endoscopic imaging with either flexible sigmoidoscopy or colonoscopy may be required to evaluate for IBD, ischemic colitis, or cytomegalovirus colitis in immunocompromised patients. Despite an extensive evaluation, no cause can be determined in 20% to 40% of cases.

Treatment

Treatment of acute diarrhea begins with general supportive measures. The most important therapy is hydration, which is best accomplished by the oral route, although intravenous hydration is more frequently used in the United States. Proper oral hydration could decrease the admission rate for children in the United States by at least 100,000 patients per year. Oral hydration solutions are effective because in many small bowel diarrheal illnesses, the intestine remains able to absorb water if glucose and salt are present to allow transport of water from the lumen. The World Health Organization formula that is recommended for oral rehydration consists of the following components:

NaCl 2.6 g (0.092 ounce)

Trisodium citrate dihydrate 2.9 g (0.10 ounce)