Non-typhoid Salmonellae are an important cause of bacterial food poisoning worldwide, especially in the developed countries. Recently, large outbreaks of gastroenteritis caused by verotoxin-producing Escherichia coli O-157: H7, which occasionally causes hemolytic uremic syndrome (HUS), were disclosed in Japan. However, despite improvement in sanitation and careful monitoring of food processing, outbreaks of salmonellosis continue to occur. It may be that there is a considerable number of such cases, yet they are over looked. If Japanese clinicians carefully take note of this complication, many more cases will likely be found in the future. Therefore the report by Shibusawa N, et al is an important autopsy case; it includes the uncommon complications such as seen in a fatal case (1).

The exact pathogenic mechanism of gastroenteritis is not clear, but at least two-mechanisms, inflammatory and toxicogenic, are responsible. The ileum and colon are the main sites of infection. Bacteria enter into enterocytes, and invade underlying Peyer’s patches in the mucosa of colon and lower ileum, resulting in neutrophil infiltration. Inflammatory mediators are released, and cause tissue damage. Another mechanism is the production of enterotoxin, which stimulates the adenylcyclase system of the epithelial cells, and inhibits absorption. Both modes of pathogenesis seems to be combined (2, 6, 9, 10).

The clinical features of non-typhoid salmonellosis (gastroenteritis) are widely varied in severity and nature. Two overlapping forms are recognized; Salmonella gastroenteritis and other syndromes. After an incubation period ranging from 8 to 48 hours (on average, 12–48 hours), the illness begins with nausea, vomiting, malaise and abdominal pain and is often associated with headache and fever. Many infections are mild and self-limiting diseases consisting of one to a few loose stools or mild diarrhea which lasts 2 to 3 days. In more severe cases, they are followed by fever (38–39°C), abdominal cramping, and watery diarrhea, occasionally containing mucus and blood in the involvement of the colon (2, 3, 6, 10), and rarely, toxic megacolon occurs (11). The diarrhea usually lasts up to a week, and seldom persists beyond several weeks. Stool culture may remain positive long after recovery, but is negative in 70% of patients 6 to 8 weeks after onset. A chronic carrier state occurs in less than 1% (2, 6, 10). Transient bacteremia in invasive salmonellosis often occurs even in previously healthy individuals. In infants, elderly or immunocompromised patients, the incidence of bacteremia is higher and occasionally it is very similar to typhoid fever. Non-typhoid salmonellae may occasionally cause generalized infection rather than gastroenteritis, some species cause focal infection at specific sites in the body. Diseases of metastatic localization in extra-intestinal sites include endocarditis, pericarditis, infections of arteries (aneurysm), abdomen (liver and splenic abscess), soft tissue, urinary tract, genital organs, pneumonia and empyema, central nervous system infections (meningitis in children), septic and reactive arthritis,
Salmonellosis can lead to serious complications, including dehydration and renal failure, which can result in death. Dehydration often occurs due to fluid and electrolyte loss, especially in the elderly, in infants less than 6 months old, and in immunocompromised hosts.

In the absence of severe disease, antibiotic use prolongs the duration of pathogen excretion and can lead to a rapid increase in antibiotic resistance in children. Reduction of the reservoir of Salmonella excretors should be a priority, and this increase should be avoided. Antibiotics such as chloramphenicol, ampicillin or amoxillin for one to two weeks orally or parenterally benefit to shorten the length of illness. The optimal period of antibiotic use for systemic salmonellosis is unknown. Intravenous antibiotics should be continued for at least one week in septicemia, especially in those at risk for metastatic infection (2, 3). Recently, the increase in the multi-resistance of salmonellosis to conventional antibiotics is well recognized. Therefore, the choice of antibiotics is difficult. Sensitivity must be tested, but generally empirical administration of antibiotics is often necessary prior to obtaining the results of sensitivity test (2, 14).

More recently, many investigators have reported that as an alternative treatment, quinoline drugs have been used for elderly patients, infants and patients who are at a risk for severe disorders and complications of extra-intestinal manifestations of Salmonella infections. However, quinoline drugs are not generally recommended for paediatric use. The third generation cephalosporin, such as cefotaxime, ceftriazone and cefopenazone, have been chosen. However, if these are not effective, quinoline drugs should be used. Mandel’s indication of antibiotics in salmonellosis is as follows: moderate to severe diarrhea in the elderly, patients with known atheromatous disease, immunocompromised patients, patients with gastric hypochlorhydria, children under 6 months, septicaemic patients, patients with metastatic infections, patients with severe colitis, and food handlers who are Salmonella excretors (3, 6).

Human S. enteritidis infection has become an increasingly important public health problem since the early 1980s (15). Several recommendations can be made to prevent the spread of S. enteritidis and to minimize the greatest risk for serious illness such as extra-intestinal disorders of salmonellosis. Especially for prevention of large outbreaks of Salmonellosis as well as verotoxin-producing Escherichia coli O-157:H7 in Japan, raw food which is of fish and animal origin should be thoroughly cooked in all premises including shops, factories, slaughterhouses, restaurants and domestic kitchens, where high standards of hygiene are essential.

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References